

# ANALYSIS OF WEST KALIMANTAN RUBBER EXPORT COMPETITIVENESS TO CHINA

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**Abstract.** Trade is the activity of exchanging goods and services between regions or countries. The purpose of this research is to help the needs of the community by encouraging economic growth. Increasing exports has an important role for the survival of the country. West Kalimantan also experienced problems in the trade sector that occurred in 2014. In 2014 West Kalimantan's exports decreased to 51.65 percent from 2013. The analytical methods used were RCA, RSCA, ISP, ECI, EPD, CEP and CMS. The result of research based on RCA analysis is 29.48 which means it has competitiveness and comparative advantage. Based on the RSCA analysis, 0.88 means that it has competitiveness and comparative advantage. Based on the ISP analysis of 0.91 which means that West Kalimantan is an exporting country, the ECI analysis produces a value of 1.92 which means that West Kalimantan has.

**Keywords:** international trade; competitiveness; trade specialization.

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## INTRODUCTION

Trade is the activity of exchanging goods and services between regions or regions. country. Trade is used to help people's needs by promoting economic growth. Improved trade performance boosts economic growth and has an impact on progress in economic development. International trade is a cooperative relationship between countries that is formed by the existence of transactions of goods and services so as to help improve people's welfare ([Singh, 2010](#)); ([Fisher & Garner, 2007](#)).

Increasing exports has an important role for the survival of the country. Increased exports encourage increased competitiveness to compete with other countries in export or international markets. The key to competition in the international market is increasing the productivity of goods and services in the country ([Voinescu & Moisoiu, 2015](#)); ([Dzwigol, Dzwigol-Barosz, & Kwilinski, 2020](#)); ([Smit, 2010](#)).

West Kalimantan is one of the provinces on the island of Borneo. West Kalimantan has several potential natural resources that can help the economy, namely oil palm, rubber and bauxite ([Martini, Tjakraatmadja, Anggoro, Pritasari, & Hutapea, 2012](#)). West Kalimantan is a strategic province in international trade because West Kalimantan is included in the Indonesian Archipelago Sea Lane (ALKI I) which is located on the west side and is the gateway to the East Asia Region. In addition, West Kalimantan has the international port of

Kijing which will have a positive impact on the surrounding area and West Kalimantan as one of the supporters of the inflow and outflow of goods (Wisnubroto, Ruslan, Irawan, & Wijayanti, 2021).

West Kalimantan's export development was supported by the increase in export value based on market share (export destination countries). The share of West Kalimantan's export market that has the highest value is China. China had the highest value from 2016 to 2020. The largest export value of West Kalimantan to China was in 2020 amounting to 735.2 million US\$. Market share can indicate the level of competitiveness and competitive position in the export market. The high level of competitiveness proves that these products can compete in the export market and have strong comparative and competitive advantages. China is Indonesia's largest trading partner and export destination and has good bilateral relations.

West Kalimantan Province is one of the provinces in the top five provinces with the largest rubber plantations in Indonesia. The area of rubber plantations in the five provinces with the largest land area is Jambi with an area of 0.9 million Ha and the second rank is South Sumatra with an area of 0.86 million Ha. The third rank is North Sumatra with an area of 0.4 million Ha, the fourth rank is West Kalimantan with an area of 0.385 million Ha and finally Riau with a land area of 0.33 million Ha ([Hidayat, Endris, & Dwiyantri, 2018](#)).

## METHODS

### Revealed Comparative Advantage (RCA)

This analysis is used to determine and measure the level of product competitiveness in the export market of a country or region. RCA analysis can use the following formula (Satryana and Karmini, 2016):

$$RCA = \frac{\frac{X_{ij}}{X_j}}{\frac{X_{iw}}{X_w}}$$

Where  $X_{ij}$  is the value of West Kalimantan's rubber exports in the world market,  $X_j$  is the total value of West Kalimantan's exports in the world market,  $X_{iw}$  is the value of China's exports of rubber commodities and  $X_w$  is the value of total Chinese exports. If the RCA equation results index with a value equal to or more than one ( $RCA \geq 1$ ) means that West Kalimantan has a comparative advantage above the average and is highly competitive if the RCA index shows a value of less than one ( $RCA < 1$ ) then the competitiveness of a the product of that country is below the world average (weak). Since the RCA index is not proportional on both sides of the neutral value (ie one) then the RCA index is made symmetrical, and is known as Revealed Symmetric Comparative Advantage. So that the index can be compared with a value range of minus one to positive one, the RCA is modified to:

$$RSCA = \frac{RCA - 1}{RCA + 1}$$

RSCA index value can vary from one to minus one (-1 RSCA 1), RSCA  $ij$  value greater than zero means West Kalimantan has a comparative advantage in rubber

products. On the other hand, if the RSCA  $ij$  value is less than zero, it indicates that West Kalimantan does not have a comparative advantage in rubber products (Paradita and Setyari, 2018).

### Trade (ISP)

Specialization Index Trade Specialization Index (ISP) is a general method used as a means of measuring the level of competitiveness. This index is used to see whether a type of product in a country tends to become an exporter or an importer country. The provisions of the ISP index are between 1 and +1, if the value is positive (above 0 to 1), then product I has strong competitiveness and the country has the potential to export that product. Vice versa if the ISP index value is negative (below 0 to -1) then product I does not have competitiveness, and the country tends to be an importing country. (Aprilia, Arifin and Sunarti, 2015). Where  $X_{ia}$  is the value of West Kalimantan's rubber exports and  $M_{ia}$  is the value of West Kalimantan's rubber imports.

$$SP = \frac{X_{ia} - M_{ia}}{X_{ia} + M_{ia}}$$

### Export Competitiveness Index (ECI) ECI

Analysis is used to measure the competitive advantage of rubber commodities in West Kalimantan. The ECI index shows the comparison of the export share of West Kalimantan's rubber commodities in a certain period (t) with the share of West Kalimantan's rubber exports in the previous period (t-1). The ECI index shows the ability of certain commodities in a country to compete with other countries

that are competitors (Lindung & Jamil 2018). Where is the export value of rubber in West Kalimantan, is the value of rubber exports in the export market (China), t is the current period and t-1 is the previous period.

$$\frac{\left(\frac{X_{ki}}{X_w}\right)_t}{\left(\frac{X_{ki}}{X_w}\right)_{t-1}}$$

### Export Product Dynamic (EPD)

Export Product Dynamic (EPD) is used to measure the dynamics of West Kalimantan's rubber market position in export destination countries (China). The EPD matrix uses market attractiveness (measured by demand growth) as the horizontal axis (X axis) and business strength (measured by growth market share) as the vertical axis (Y axis), resulting in 4 categories of market position (Figure 5) namely rising star, falling star, lost opportunity, and retreat (Rifin, 2019). The ideal market position is a rising star which indicates a country has a high market share for dynamic products (demand is growing fast). The lost opportunity position is the most undesirable market position because it indicates a country is losing market share in dynamic products. The position is falling star also undesirable, although it is better than the lost opportunity because a country's market share increases for non-dynamic products. The position retreat may not be desirable, but it can be an input for switching to other dynamic products (Gebauer, Paiola, & Sacconi, 2013).

The x-axis represents the growth of business strength or is called the export market share i:

$$\frac{\sum_{t=1}^t \left(\frac{X_{ij}}{W_{ij}}\right)_t \times 100\% - \sum_{t=1}^{t-1} \left(\frac{X_{ij}}{W_{ij}}\right)_{t-1} \times 100\%}{T}$$

The y-axis represents the growth in market attractiveness or is called the product market share:

$$\frac{\sum_{t=1}^t \left(\frac{X_t}{W_t}\right)_t \times 100\% - \sum_{t=1}^{t-1} \left(\frac{X_t}{W_t}\right)_{t-1} \times 100\%}{T}$$

Where  $X_{ij}$  is the export value of West Kalimantan rubber commodities to China,  $W_{ij}$  is the export value of world rubber commodities to China;  $X_t$  is the total value of West Kalimantan's rubber exports to China;  $W_t$  is the total value of world exports to China and  $T$  is the number of years of analysis from 2014 to 2020 (Amiti & Freund, 2010).

### Comparative Export Performance (CEP)

CEP is used to evaluate a country's export specialization on a particular product. If a country has a CEP value greater than one, then that country has a relative advantage in its exports. To calculate, the following formula is used:

$$\frac{\frac{X_I^B}{X^B}}{\frac{X_I^W}{X^W}}$$

Where is West Kalimantan's rubber commodity exports, is West Kalimantan's total exports, is total world exports of rubber and is total world exports.

### Constant Market Share (CMS)

In international trade there are various factors that affect the growth of a country's exports. Among these various factors, factors that affect export growth include market distribution factors, commodity composition and competitiveness. Each of

these three factors can be measured how large the effect on the export growth of a country. One method to measure the magnitude of the effect of each factor is the Constant Market Share method (Wang, Zheng, Pei, & Jin, 2017). Constant Market Share (CMS) is a method used to decompose a country's export growth into several determinants of that country's export growth. This method can also decompose the export growth of certain

commodities from a country (Besedeš & Prusa, 2011).

1. Standard Growth
2. Effect of Commodity Composition
3. Effect of Market Distribution
4. Effect of Competitiveness

Where  $E_i$  is the export value of West Kalimantan,  $E_{ij}$  is the value of West Kalimantan's rubber exports,  $t$  is the current year and  $(t-1)$  is the previous year.

## RESULTS AND DISCUSSION

**Table 1.** Level Export Competitiveness West Kalimantan Rubber Commodity MarketChina

CommodityRubber		Xij	Wij	Xiw	XW	RCA	Description
<b>366.231.837</b>	2014		23,597,423,9				
			39			651,986,280	RCA > 1
			2,342,292,69				
			6,320 55.76				
<b>2015</b>	2015	274 835	565 967 755	20 347.	2.273.468.22	54.26	RCA > 248,945,904 623,422,909 18,728,636,6 33 2,097,637,17 1,895
		965		644 863	4.113		
<b>2016</b>	2016				1	44.72	RCA > 210,678,322 827,303,497 20,654,471,4 95 2,263,370,50 4,301
<b>2017</b>	2017				1	27, 91	RCA > 1
<b>2018</b>	2018	55,457,	1,013,231,57	22,276,120	2,494,230,19		
		989	6	,166	4,966	6.13	RCA > 1
<b>2019</b>	2019	86,265,	1,168,526,64	22,160,537	2,498,569,86		
		449	7	,807	5,637	8.32	RCA > 1

<b>CommodityRubber</b>						
	Xij	Wij	Xiw	XW	RCA	Description
<b>2020</b>	92,928, 771	1,155,832,30 6	22,539,339 ,685	2.590.600.66 6.465	9.24	RCA > 1
<b>Average</b>					29.48	RCA > 1

Results of analysis rubber RCA West Kalimantan shows that from the year 2014 to 2020 more RCA value of 1 so that it can be identified that the commodity West Kalimantan rubber in the Chinese market has a comparative advantage above the average and strong competitiveness. The largest RCA value of West Kalimantan rubber in the Chinese export market was 55.76 in 2014 and the smallest in 2018 of 6.13. From 2015 to 2018 the RCA value decreased with each value being 44.72;

27.91 and 6.13. In 2019, the RCA value increased and was followed by an increase in 2020 of 9.24. The RCA value which is more than 1 is also due to the high value of rubber exports in West Kalimantan. The results of the RCA analysis are related to the fact that rubber is the main commodity in West Kalimantan so that it has high competitiveness to survive and compete in the Chinese export market.

**Table 2.** Index of Export Competitiveness of West Kalimantan Rubber Commodities in China Market

<b>Year</b>	<b>RCA</b>	<b>RCA - 1</b>	<b>RCA + 1</b>	<b>RSCA</b>	<b>Ket</b>	
<b>2014</b>	55.76	54.76	56.76	0.96	RSCA > 0	Has Comparative Advantage
<b>2015</b>	54.26	53.26	55, 26	0.96	RSCA > 0	Has Comparative Advantage
<b>2016</b>	44.72	43.72	45.72	0.96	RSCA > 0	Has Comparative Advantage
<b>2017</b>	27.91	26.91	28.91	0.93	RSCA > 0	Has Comparative Advantage
<b>2018</b>	6,13	5.13	7.13	0.72	RSCA > 0	Has Comparative Advantage
<b>2019</b>	8.32	7.32	9.32	0.79	RSCA > 0	Has Comparative Advantage
<b>2020</b>	9.24	8.24	10.24	0.80	RSCA > 0	Has Comparative Advantage
<b>Average</b>	29.48	28.48	30.48	0.88	RSCA > 0	Has Comparative Advantage

The results of the RSCA analysis also show a positive value, which is 0.88 which indicates that there is a comparative advantage for West Kalimantan rubber commodities. The results of the analysis are also supported by the fact that West Kalimantan has great natural potential in the form of forest areas that have been converted into plantation areas and has collaborated with Malaysia (Prabowo,

Maryudi, & Imron, 2017). The rubber plantation area of West Kalimantan province in 2019 has an area of 0.385 Ha and is included in the top five provinces that have the largest plantations in Indonesia (Ramdani & Hino, 2013). West Kalimantan is a province on the island of Kalimantan with the largest rubber production. In 2015, West Kalimantan's rubber production was 275,748 tons and in

2019 it was 247,127.

**Table 3.** Specialization in Export Trade of West Kalimantan Rubber Commodities in China Market

Year	Xia-Mia	Xia+Mia	(Xia-Mia)/(Xia+Mia)	Ket
2014	119,215,063	119,356,725	1.00	Exporters
2015	64,298,803	67,645,675	0.95	Exporters
2016	49,036,914	49,036,914	1.00	Exporters
2017	91,142,121	92,504,993	0.99	Exporters
2018	3,150,333	4,049,479	0.78	Exporters
2019	4,174,666	5,652,530	0.74	Exporters
2020	8,148,462	9,187,050	0.89	Exporters
<b>Average</b>			0.91	Exporters

ISP analysis aims to determine the position or stages of commodity development in trade. The ISP value is measured by a value between -1 to 1 where if the ISP value is more than 1 then the country is an exporter country which has strong competitiveness and potential in exporting the product. The results of the ISP research show that the ISP index value from 2014 to 2020 has a value of more than 0 with a value of 1.00 each; 0.95; 1.00; 0.99; 0.78; 0.74 and 0.89. The results of the ISP analysis show that West Kalimantan tends

to be an exporting country. The average ISP index value is 0.91 which is almost close to 1, so that West Kalimantan rubber has a strong advantage with a tendency as a rubber commodity exporting country because domestic supply is greater than domestic demand. Rubber commodities are also included in the category of products that are already in the maturity stage. The results of the ISP analysis are supported by the fact that rubber is the main commodity in West Kalimantan which has high advantages and competitiveness.

**Table 4.** Competitive Advantage West Kalimantan Rubber Commodity Markets Chinese

Year	Xij / Xaj	ECI	
2014	3.07		
2015	4.16	1.36	> 1
2016	5.07	1.22	> 1
2017	2.29	0.45	< 1
2018	15.40	6,71	> 1
2019	17.55	1.14	> 1
2020	10.72	0.61	< 1
<b>Average</b>		1.92	> 1

The results of the ECI analysis show that

in 2017 and 2019 West Kalimantan's rubber

commodity has a value of less than 1, which means in that year there was a tendency to decrease competitiveness with values of 0.45 and 0.61, respectively. Overall, the ECI value is more than 1, which is 1.92. The ECI index value that exceeds 1 indicates that West Kalimantan's rubber commodity has a tendency to increase competitiveness. The results of this study are related to the study

of Protect and Jamil (2018) which examined Indonesian rubber using ECI analysis. The results of the analysis show that the ECI value is greater than 1 so that it has a tendency to increase competitiveness. The increase in the competitiveness of rubber commodities is the result of the government's efforts to boost export performance.

**Table 5.** Dynamics of West Kalimantan Rubber Commodity Market Position in China Market

<b>Year of</b>	<b>Growth X</b>	<b>Growth Y</b>	<b>EPD</b>
<b>2014</b>			
<b>2015</b>	1.10	2.78	Rising Star
<b>2016</b>	0.91	-3.41	Falling Star
<b>2017</b>	-2.78	-1.56	Retreat
<b>2018</b>	13.11	1.29	Rising Star
<b>2019</b>	2.15	-0.95	Falling Star
<b>2020</b>	-6.84	4.25	Lost Opportunity
<b>Average</b>	1.28	0.40	Rising Star

The results of the EPD analysis show that West Kalimantan in 2015 is in a position rising star which is in an ideal market position which achieves a high market share for rubber commodities due to high demand for rubber. In 2016, West Kalimantan's rubber commodity was in a position falling star where market share increased for non-dynamic products. In 2017 the position of export commodities experienced a shift to a position retreat where in that position they still received input to switch to other dynamic commodities. In 2018 there was another shift to the ideal market, namely the rising star and in 2019 there was a shift in

the position falling star. In 2020 the position shifted again and was in a position lost opportunity where West Kalimantan rubber lost its dynamic market share. The average EPD value shows that West Kalimantan's rubber commodity is in an overall ideal market position, namely a rising star where it gains a high market share for dynamic products (rubber). Demand for West Kalimantan rubber in the Chinese export market increased by 1.28 per year, followed by an increase in market share of 0.40 per year. This shows that West Kalimantan's rubber commodity has strong competitiveness in the Chinese export market.



**Table 6.** Specialization of West Kalimantan Rubber Commodities in China Market

Year	Xib/ Xb	Xiw/Xw	CEP	Ket
2014	0.56	0.77	0.73	<1
2015	0.49	0.81	0.60	<1
2016	0.40	0.28	1,43	>1
2017	0.25	0.22	1.15	>1
2018	0.05	0.01	4.69	>1
2019	0.07	0.01	7.51	>1
2020	0.08	0.05	1.63	>1
<b>Average</b>			2.53	>1

The results of the CEP analysis show that in 2014 and 2015 the rubber commodity had a value of less than 1 with a value of 0.73 and 0.60 respectively, which means that in that year the production and export of Kalimantan rubber commodities The West is unspecialized. From 2016 to

2020 the CEP value is greater than 1 with an overall value of 2.53. A CEP value of more than 1 indicates that the production and export of West Kalimantan's rubber commodities are specialized, meaning that West Kalimantan's rubber commodities are competitive.

**Table 7.** Decomposition of Export Growth of West Kalimantan Rubber Commodities in China Market

Year	CMS			
	PS	EK	EDP	EDS
<b>2014</b>				
2015	-0.447	-0.118	-0.042	-0.211
2016	-0.257	-0.196	-0.017	-0.077
2017	0.873	-0.481	0.061	0.022
2018	-0.961	-0.962	-0.020	-0.821
2019	0.365	0.402	-0.001	0.015
2020	0.764	0.088	0.003	0.010
<b>Average</b>	0.048	-0.211	-0.002	-0.177

The results of the CMS analysis from 2014-2020 experienced fluctuations. The average value of CMS standard growth is 0.048, meaning that West Kalimantan rubber has increased exports in the Chinese export market. The value of the rubber commodity effect shows a value of -0.211 which means that West Kalimantan's

rubber commodity is less attractive and tends to have a smaller export value compared to the total export value for all West Kalimantan export commodities.

The value of the effect of competitiveness has a value of -0.177 which means that there is no advantage of West Kalimantan curry in terms of quality

and price. The conclusion obtained from the results of the CMS analysis is that the most influential factor on export growth is standard growth and West Kalimantan's rubber export commodity still has the ability to increase exports in the Chinese market. The results of this analysis are

## CONCLUSIONS

1) West Kalimantan rubber commodity has a competitive advantage and comparative advantage in the China market. 2) West Kalimantan rubber commodity specializes in trading as a rubber exporting country in the China market. 3) West Kalimantan rubber commodity has a competitive advantage in the China market. 4) West Kalimantan rubber commodity has a dynamic position rising star where demand high in China market. 5) West Kalimantan rubber commodity has export specialty in China market. 6) West Kalimantan rubber commodity has standard growth in China market.

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