

# Indonesia Natural Rubber Export Competitiveness Analysis in World Export Market

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## Abstract

This study aims to determine the level of export competitiveness of Indonesia's natural rubber products, namely TSNR (Technically Specified Natural Rubber), natural rubber latex pre-vulcanized or not, Natural rubber smoked sheets, Mixture of natural rubber latex, and compounded of natural gums. In addition, Comparing Indonesia's natural rubber competitiveness to Malaysia and Thailand in the ASEAN region. The research method used Revealed Comparative Advantage (RCA) and market share using time series data from 2012 to 2021. There are only four types with good competitiveness with  $RCA > 1$ , namely TSNR, Smoked Sheets, Mixture Latex, and Compounded Natural Gums. These four commodities have a comparative advantage with  $RCA > 1$ . This shows that Indonesia specializes in these commodities in the world market. Natural rubber TSNR has the highest market share at 41%. The lowest is Natural Rubber Latex and Compounded of Natural Gums at 1%. Indonesia's natural rubber has a comparative advantage or stronger competitiveness than Thailand and Malaysia. This is shown by Indonesia's average RCA value for ten years from 2012 to 2021, which is 30.37. However, Indonesia's market share has been lower than Thailand's in ten years.

**Keywords:** Competitiveness; Natural Rubber; Market Share; RCA

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## INTRODUCTION

The development of world natural rubber exports is strongly influenced by Southeast Asia (UN Comtrade, 2022). Indonesia is an agricultural country where the agriculture, forestry, and fishery sectors have an important role in the national economic activities. One of the agricultural sub-sectors that are the mainstay is the plantation sub-sector. Natural rubber is one of the plantation commodities that has a significant

contribution to the country's foreign exchange earnings from exports.

Indonesia is one of the largest natural rubber-producing countries in the world, ranked second with total exports reaching US\$7.10 billion, around 3% of total export in Indonesia in 2021 and an increase of 26.42% from 2020 (BPS, 2021). Indonesia's rubber export destinations are the United States, Japan, India, China, Korea,

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Turkey, Brazil, Canada, Russia, and Belgium.

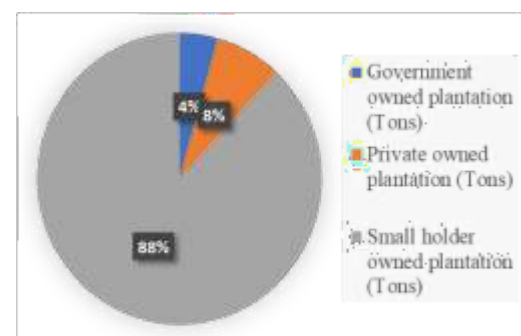
Its high production and exports have led to various uses of natural rubber in the goods industries. Generally, natural rubber is very useful for raw materials from industry to households. The part that is harvested from natural rubber is latex. Natural rubber latex can be used as the main raw material, such as tires, rubber boots, cables, insulating materials for metal wrapping, conveyor belts, transmission belts, dock fenders, and even rubber. Rubber can be used as a mixture in the manufacture of asphalt (Pramananda, 2019).

The Indonesian government should appropriately utilize the large opportunity, especially in developing export competitiveness, so that natural rubber can support the national economy. This condition is part of the strategy that must be taken as a consequence of globalization, which demands competition. The more open the market, the tougher competition for natural rubber. These market conditions will eventually lead to lower market power which can prevent the entry of new competitors. The development of competitiveness is expected to increase not only the comparative advantage but also the competitive advantage of a country. The competitive advantage possessed by a country is expected to enrich the country further and affect the farmer's welfare (Oktaviani & Novianti, 2009).

The nature of the agricultural commodity hampers efforts to seize the export market and increase and stabilize export value. In this case, agricultural commodities are primary commodities

with an inelastic and unstable supply and demand character, resulting in price instability. Inelastic demand is caused by: changes in household income in developed countries, as importers do not cause a real change in their consumption patterns. At the same time, Inelastic supply is caused by internal rigidity or inflexibility in mobilizing resources, especially in plant commodities tough that require a long cultivation period (Prabowo, 2006). Farmers are very sensitive to price changes, so the existence of export and import policies will have an impact on farmers, considering that most rubber plantations are smallholder plantations (Nurdina et al., 2021).

**Figure 1.** Natural Rubber Production based on Land Tenure Status



Source: Pusdatin, Ministry of Agriculture, (2021)

This picture shows that smallholder plantations produced 89% of the total natural rubber production in 2019. So that rubber farmers have no power to influence prices. The market determines the price of natural rubber, while rubber farmers and producers are price takers (Amalia et al., 2013). Given that low rubber prices will have an impact on a reduced income and low welfare (Nurdina et al., 2021). Therefore, the government's policy to

protect world rubber prices is the right policy. Therefore, it is important to know what types of natural rubber-specific commodities have competitiveness in global trade to be supported and maximized by producers, exporters, and the government. The era of globalization demands intense competition between countries. The expanding market demands an increase in the competitiveness of domestic products. With abundant workforce ownership in Indonesia, it needs to be managed optimally to create a competitive advantage that can increase competitiveness in the international market for Indonesia. This study aims to determine Indonesia's natural rubber products' level of export competitiveness in the world market and ASEAN region.

## **LITERATURE REVIEW**

### **Natural Rubber**

The rubber plant (*Hevea brasiliensis*) belongs to the Euphorbiaceae family. Rubber is one of the important plantation commodities as a source of non-oil and gas foreign exchange for Indonesia, so it has bright prospects. Efforts to increase these plants' productivity continue to be carried out, especially in cultivation and post-harvest technology (Dewi, 2017).

Rubber is a product of the sap coagulation process rubber plant (latex). Normal rubber trees are tapped at the age of the 5th year. Products from the coagulation of latex are then processed to produce rubber sheets (sheets), chunks (boxes), or crumb rubber (crumb rubber). A raw material for the rubber industry. Rubber exports from Indonesia

in various forms, namely industrial raw materials (sheet, crumb rubber, SIR) and derivative products such as tires, components, and so on (Fitri, 2019).

### **International Trade Theory**

International trade can be interpreted as exchanging goods and services that occur beyond the boundaries between countries (Lipsey et al., 1987). The increasing standard of living and people's needs, advances in technology and communication, and the occurrence of political changes in the world have caused no one country or any group to be isolated from other countries. International trade is necessary to derive the benefits made possible by specialization. According to Lipsey et al. (1987), international trade provides two benefits for countries that do trade. The sources of these benefits include:

1. Differences in climate and natural resources owned by each country in the world result in advantages in producing certain goods and weaknesses in producing other goods.
2. The decrease in production costs in each country was caused by an increase in the scale of production due to specialization.

International trade can also occur due to differences in the demand and supply of a country. Countries will tend to import an item if a domestic supply is insufficient to meet demand and domestic production costs are relatively more expensive than the same goods abroad. International trade theory shows that a country will obtain a better level of life by specializing in goods with a

comparative advantage and importing goods with a comparative disadvantage.

### **Export Supply**

The supply of a commodity is the number of commodities offered by producers to consumers in a market at a certain price level and time. Several factors that affect the supply of a commodity are the price of the commodity concerned, the price of production factors, the level of technology, taxes, and subsidies (Lipsev et al., 1995).

Based on a broader understanding, exports of a country are excess domestic supply or production of goods or services that are not consumed by consumers from the country concerned or are not kept in stock (Lindert,2020).

### **Previous Research Studies**

Empirical studies relevant to the research methods are based on available research from various scientific journals.

#### *A. Competitive Position of Indonesia Natural Rubber Exports in the Global Market (Lindung, 2018).*

Calculating Revealed Competitiveness Advantage (RCA) from the four main natural rubber exporters, Indonesia, Thailand, Malaysia, and Vietnam, where the four countries have RCA values greater than zero. Indonesia's RCA index fluctuated, whereas, in 2015, Indonesia surpassed Thailand's RCA index. However, in 2016 Indonesia occupied the highest RCA compared to the four countries.

#### *B. Analysis of the Competitiveness of Indonesia's Leading Export*

#### *Commodities in International Markets (Ustriaaji, 2016)*

From the RCA calculation, it can be seen that the Rubber and Rubber Products industry in 2010-2013 (RCA>1) means that the export has competitiveness above the world average competitiveness. The highest competitiveness was in 2011, with a score of 1.89. Furthermore, from 2010-2014, rubber commodities and rubber products had competitiveness in the international market. The RCA calculation shows that the palm oil industry, forest products, footwear, cocoa, coffee, rubber, and textiles in 2010- 2014 (RCA>1) mean that these exports have competitiveness above the world average.

#### *C. Analysis of Indonesia's Natural Rubber Competitiveness and The Variables That Affect It (Apriansyah, 2019)*

The analysis shows that Indonesia has a competitive advantage in natural rubber using RCA compared to Malaysia in 2003, 2007-2010, and 2013-2016, while in 1989-1994 and 2000, the analysis results show that Indonesia's natural rubber competitiveness is inferior to Malaysia. Furthermore, in 1995, 2010, 2013, and 2016, the analysis showed that the competitiveness of Indonesia's natural rubber was able to outperform Thailand, while in 2000 and 2001, the results of the analysis showed that Thailand was able to outperform Indonesia.

### **METHODS**

Based on title of this paper focuses on the assessment of the competitiveness of

export products, where the export products studied are based on the Harmonized System Code (HS Code), which are the five leading Indonesia natural rubber export products, namely TSNR (Technically Specified Natural Rubber) natural rubber with the code HS 400122, Prevulcanized natural rubber latex with code HS 400110, Natural rubber smoked sheets with code HS 400121, Mixture of natural rubber latex with synthetic rubber latex with code HS 400280, and Compounded of natural gums with carbon black or silica, unvulcanized, in primary forms or plates, sheets or strips with HS code 400510. In addition, Analyzing the comparative competitiveness of Indonesia's natural rubber among the main competitor countries in ASEAN, especially Malaysia and Thailand.

The type of research in this study is a quantitative descriptive analysis using data obtained and collected based on time series data from 2012 to 2021 from UN Comtrade. The analytical method used to determine the competitiveness of natural rubber export products in Indonesia, Thailand, and Malaysia Revealed Comparative Advantage (RCA) analysis and Market Share. The author uses data on the export value of 5 leading Indonesia natural rubber products and then compares them with the export value of the same product in the world.

### **Revealed Comparative Advantage**

The RCA index is a method introduced by Bela Balassa. The rationale underlying this method is that a country's export performance is largely determined by its competitiveness relative to similar products made in

other countries, of course, with the assumption (*Ceteris Paribus*) that other factors affect growth exports remain unchanged. RCA is the export of a country of a type of goods. As a percentage of that country's total exports is higher than the share of the same goods in the number of world exports, the country has a comparative advantage over the production and exports of these goods (Tambunan, 2004). The RCA formula is as follows:

$$RCA = \left( \frac{X_{ik}}{X_{im}} \right) / \left( \frac{X_{wk}}{X_{wm}} \right)$$

Where:

X(ik) = export value of product i, country k

X(im) = total export value of country k

X(wk) = world export value of product i

X(wm) = total world export value

RCA requires that the value of 1 is the dividing line between comparative advantage and disadvantage. So, if the RCA index value is greater than 1, it shows that the competitiveness of certain products in a country has relatively strong competitiveness against products measured on average. While the RCA index of less than 1 indicates the absence of competitiveness of certain products in a particular country.

### **Market Share**

Market share is an indicator to see a commodity's competitiveness level in a country. The increase or decrease in market share will indicate the competitive level of a commodity based on the percentage of market share of a

commodity by a country. If the market share increases, then the commodity has competitiveness. Market share can be formulated mathematically in the following equation (Radityo, 2014).

$$MS = \frac{VX_{ki}}{VX_{kw}} \times 100\%$$

MS is the market share of Indonesia's natural rubber in the world market (%), VX(ki) is the export volume of Indonesia's rubber in the world market in year t, and VX(kw) is the total volume of rubber exports in the world market in year t. Findings and Analysis.

## RESULTS AND DISCUSSION

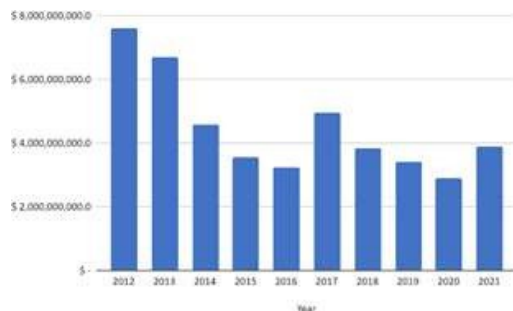
### Trade Flow of Indonesia Natural Rubber

There are 5 HS codes used in this study. The following is a list of HS codes and their descriptions, as well as data on exports of Indonesia natural rubber commodities to the world in the 2012-2021 period:

#### 1. TSNR

Technically Specified Natural Rubber (TSNR) with HS Code 400122 export value and market share displayed in Figures 2 and 3.

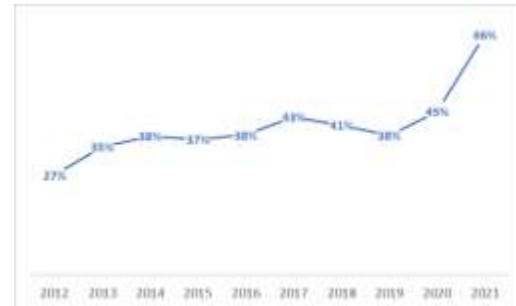
**Figure 2.** Indonesia TSNR Export Value



Source: UN Comtrade, (2022)

There was a decline in exports from 2012 to 2016 but an increase in 2017 and followed by a decline until 2020 and then an increase again in 2021.

**Figure 3.** Indonesia TSNR Market Share



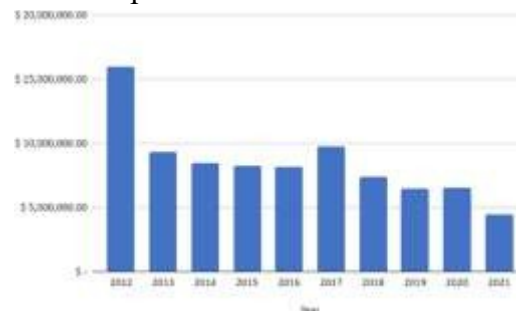
Source: UN Comtrade, (2022)

An increase in the export market share of Indonesia's TSNR in the world from 2012 to 2013, with the highest increase in 2021 with a market share of 66%.

#### 2. Natural Rubber Latex

Rubber; natural rubber latex, whether or not pre-vulcanized, in primary forms or plates, sheets, or strips with HS Code 400110 export value and market share displayed in figures 4 and 5.

**Figure 4.** Indonesia Natural Rubber Latex Export



Source: UN Comtrade, (2022)

There was a drastic decrease in 2013, a steady decline until 2016, an

increase in 2017, and a decrease until 2021.

**Figure 5.** Indonesia Natural Latex Market Share

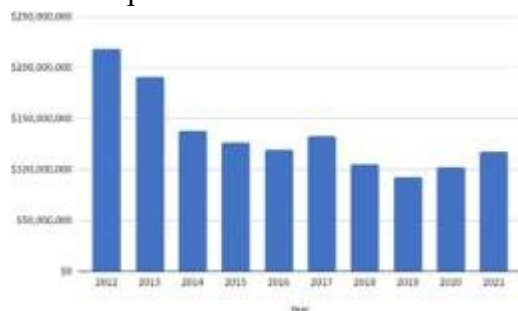


Source: UN Comtrade, (2022)

There was a decrease in 2013, an increase in 2016, and a decrease until 2020. However, there was a drastic increase of 0.8% in 2021.

3. *Smoked Sheets Natural Rubber*  
Rubber; natural (excluding latex), in smoked sheets with HS Code 400121 export value and market share displayed in figures 6 and 7.

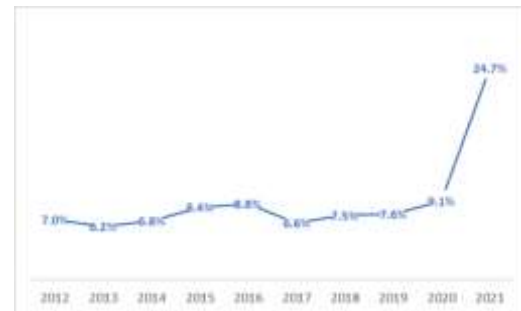
**Figure 6.** Indonesia Natural Rubber Latex Export



Source: UN Comtrade, (2022)

There was a decline in exports from 2012 to 2016 and an increase in 2017, followed by a decline until 2019. However, there was an increase until 2021.

**Figure 7.** Indonesia Smoked Sheets Natural Market Share

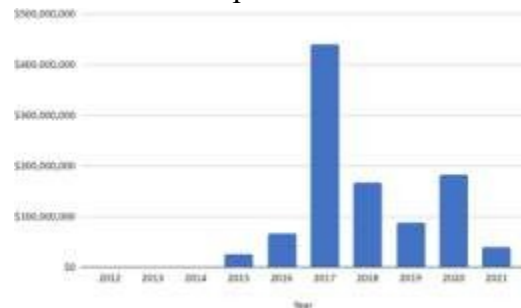


Source: UN Comtrade, (2022)

The market share presentation of smoked sheets natural rubber was relatively stable from 2012 to 2019, between 7% to 9%, and there was a drastic increase in 2021 by 15.6%.

4. *Mixture of Natural Rubber Latex*  
A mixture of natural rubber latex with synthetic rubber latex with HS Code 400280 export value and market share is displayed in Figures 8 and 9.

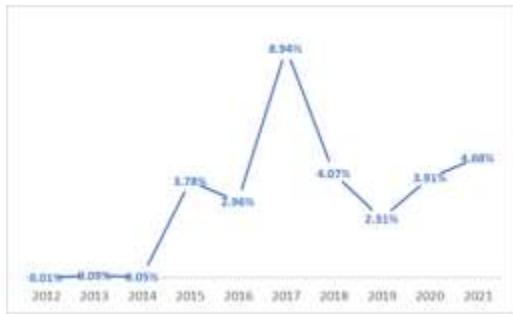
**Figure 8.** Indonesia Mixture of Natural Rubber Latex Export



Source: UN Comtrade, (2022)

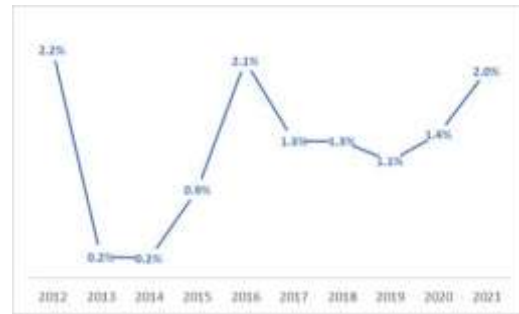
There was an increase in exports from 2012 to 2016 and a drastic increase in 2017. There was a drastic decrease in 2021.

**Figure 9.** Indonesia Mixture of Natural Rubber Latex Market Share



Source: UN Comtrade, (2022)

There was the most significant increase in market share in 2017 at 8.94% and a decrease in 2019, followed by an increase until 2021.



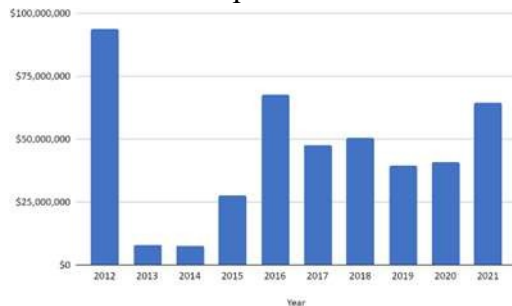
Source: UN Comtrade, (2022)

There was a decrease in market share in 2013 and 2014 and an increase until 2016. There was an increase in market share from 2019 to 2021.

5. *Compounded of Natural Gums*

Compounded of natural gums with carbon black or silica, unvulcanized, in primary forms or plates, sheets, or strip with HS Code 400510 export value and market share displayed in figure 10 and 11.

**Figure 10.** Indonesia Compounded of Natural Gums Export



Source: UN Comtrade, (2022)

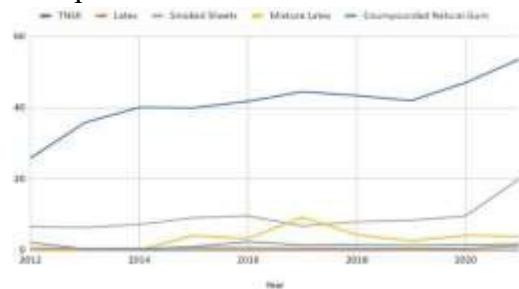
There was a drastic decline in exports in 2013, followed by an increase in exports until 2016. There was a significant increase in exports in 2021.

**Figure 11.** Indonesia Compounded of Natural Gums Market Share

**RCA Analysis**

From the search results and calculations for Indonesia's natural rubber export commodities to the world in the 2012-2021 period according to the 6-digit HS code, it was found five types of export natural rubber commodities with the following analysis results displayed in figure 11.

**Figure 12.** RCA Analysis for Latex, Smoked Sheets, Mixture Latex and Compounded Natural Gum



Source: UN Comtrade (2022)

Based on the table above, it could be seen that in 2017, the ratio of own capital to total assets was 8.42% with a score of 1.25. In 2018, the ratio obtained was 6.71% with a score of 1.25. In 2019, the ratio was 7.69% with

*Technically Specified Natural Rubber (TSNR)*



Indonesia's exports of this type of commodity have an RCA value with an average of 41.3 in the last ten years compared to the value of world exports. This value indicates that TSNR has good competitiveness. The average market share value for natural rubber latex in the last ten years is 41%.

*Natural rubber latex, whether or not pre- vulcanized, in primary forms or plates, sheets, or strips*

Indonesia's exports of this type of commodity have an RCA value with an average of 0.54 in the last ten years compared to the value of world exports. This value indicates that Natural Rubber Latex has no competitiveness. The average market share value for natural rubber latex in the last ten years is 1%

*Natural (excluding latex), in smoked sheets*

Indonesia's exports of this type of commodity have an RCA value with an average of 9.12 in the last ten years compared to the value of world exports. This value indicates that Smoked Sheets have good competitiveness. The average market share value for smoked sheets in the last ten years is 9%

*A mixture of natural rubber latex with synthetic rubber latex*

Indonesia's exports of this type of commodity have an RCA value with an average of 3.05 in the last ten years compared to the value of world exports. This value indicates that a Mixture of Latex has good competitiveness. The average market share value for Mixture Latex in the last ten years is 3%.

*Compounded of natural gums with carbon black or silica, unvulcanized, in primary forms or plates, sheets, or strips*  
 Indonesia's exports of this type of commodity have an RCA value with an average of 1.28 in the last ten years compared to the value of world exports. This value indicates that Compounded Natural Gums have good competitiveness. The average market share value for Compounded Natural Gums in the last ten years is 1%.

**RCA Analysis for Natural Rubber in ASEAN Region**

**Table 1. RCA Average Value of Indonesian Natural Rubber and Its Competitor Countries in 2012-2021**

Year	Indonesia a RCA	Thailand d RCA	Malaysia a RCA
2012	33.89	31.20	9.17
2013	31.45	29.93	8.11
2014	31.29	30.72	6.93
2015	30.46	29.20	6.39
2016	31.39	27.76	6.18
2017	32.19	27.11	5.38
2018	31.86	26.49	5.46
2019	31.32	26.40	5.65
2020	29.00	23.94	5.25
2021	24.43	29.01	5.19
Average	30.73	28.18	6.37

*Source: UN Comtrade, (2022)*

Based on the average RCA value, it can be seen that Malaysia's RCA value is greater than one but is in the lowest position compared to its main competitor countries, namely Indonesia and Thailand. Comparative advantage or having strong competitiveness because it has an RCA value of more than one even though its competitiveness is still below its main competitor countries, namely Indonesia

and Thailand. Meanwhile, the average value for ten years RCA Indonesia obtained the highest score among other competing countries, namely Thailand and Malaysia.

**Figure 13.** RCA Value of Indonesian Natural Rubber and Competitor Countries in 2012-2021



Source: UN Comtrade (2022)

Indonesia’s average RCA value from 2012 to 2021 is 30.37, indicating that Indonesia's natural rubber has a comparative advantage or stronger competitiveness between Thailand and Malaysia because the average share of rubber exports compared to all Indonesian export commodities is higher. Larger than the average share of rubber exports compared to all world export commodities. However, in 2021, RCA Thailand was ranked higher than Indonesia in the last ten years. There are better indications than this. There is a need for a re-examination regarding the causes of the decline in Indonesia's competitiveness compared to Thailand. The competitiveness of Indonesia's natural rubber must be increased so that the amount of Indonesia's natural rubber exports can continue to increase.

Calculating comparative competitiveness using the Revealed Comparative Advantage (RCA) method shows that Indonesia's comparative

competitiveness is higher than other competing countries. This can be seen from the average value of Indonesia's RCA, which is higher than other competing countries.

**Market Share Analysis for Natural Rubber in ASEAN Region**

**Table 2.** Market Share of Indonesian Natural Rubber and Its Competitor Countries in 2012-2021

Year	Indonesia Market Share	Thailand Market Share	Malaysia Market Share
2012	36%	40%	12%
2013	31%	37%	10%
2014	30%	38%	9%
2015	28%	39%	8%
2016	29%	38%	7%
2017	31%	37%	7%
2018	30%	35%	7%
2019	29%	34%	7%
2020	28%	32%	7%
2021	30%	41%	8%
Average	30%	37%	8%

Source: UN Comtrade (2022)

Based on the average market share value, it can be seen that Thailand has the highest average market share than other competitors. Malaysia's market share is in the lowest position compared to its main competitor countries, Indonesia and Thailand. Meanwhile, the average value for ten years market share Indonesia obtained a second place among other competitors.

**Figure 14.** Market Share of Indonesian Natural Rubber and Competitor Countries in 2012-2021



Source: UN Comtrade (2022)

Indonesia's market share in ten years is always below Thailand's natural rubber export. Thailand significantly increased its market share by 9% in 2021, while Malaysia placed the lowest with a stable market share. The competitiveness of Indonesia's natural rubber must be increased so that the amount of Indonesia's natural rubber exports can continue to increase. For this reason, the role of government is needed to improve the quality and quantity of Indonesian natural rubber exports to all the main export destination countries.

Indonesia's market share in ten years is always below Thailand's natural rubber export. Thailand significantly increased its market share by 9% in 2021, while Malaysia placed the lowest with a stable market share. The competitiveness of Indonesia's natural rubber must be increased so that the amount of Indonesia's natural rubber exports can continue to increase. For this reason, the role of government is needed to improve the quality and quantity of Indonesian natural rubber exports to all the main export destination countries.

## CONCLUSION

From the result and discussion above, this research concluded that there

are only four types with good competitiveness with  $RCA > 1$ , namely TSNR, Smoked Sheets, Mixture Latex, and Compounded Natural Gums. This shows that Indonesia specializes in these commodities in the world market. Natural rubber TSNR has the highest market share at 41%. The lowest is Natural Rubber Latex and Compounded of Natural Gums at 1%.

Indonesia's natural rubber has a comparative advantage or stronger competitiveness between Thailand and Malaysia. This is shown by Indonesia's average RCA value for ten years from 2012 to 2021, which is 30.37. Although Indonesia's market share is lower than Thailand's in ten years

Then, the government and other stakeholders can support the producers to increase their production and export their products. Especially four natural rubbers with  $RCA > 1$  and a low market share.

Export and import policies will impact farmers by protecting world rubber prices. Indonesia, Thailand, and Malaysia, as the three main natural rubber-producing countries in the world, should work together to implement relevant joint policy strategies to achieve price stability and increase natural rubber farmers' welfare.

Finally, there is a possibility to do further research using Export Product Dynamics (EPD) to measure a country's product market position for certain market goals, compare export performance among countries around the world, and know how dynamic or not display a product.

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