(RESEARCH ARTICLE)

Trend TSR 20 rubber prices between producing countries in Southeast Asia

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Abstract

Natural Rubber is one of the world's largest commodities used for industrial needs. The price of TSR 20 rubber continues to fluctuate, which has a significant impact on some farmers in various countries. This study analyzes the price trend of TSR 20 rubber in Southeast Asia. The purpose of this study is to analyze trends and fluctuations in STR 20 rubber prices in Southeast Asia, such as Standar Thailand Rubber (STR 20), Standar Indonesia Rubber (SIR 20), Standar Vietnam Rubber (SVR 20), and Standar Malaysia Rubber (SMR 20) for 72 months from January 2017 - December 2022. This research uses trend analysis with simple linear regression method. This research uses the historical method by conducting research on a source which is then critically analyzed. Data collection techniques are obtained by tracing data and documents that have been stored by agencies including the Ministry of Agriculture, Ministry of Trade, International Rubber Study Group (IRSG), Singapore Commodity Exchange (SICOM), Association of Natural Rubber Producing Countries (ANRPC), Food and Agriculture Organization (FAO), The World Bank, and Gapkindo as well as existing literature and sites. The results obtained are positive trends where each development between countries has experienced a positive price increase, such as, STR 20 has a polynomial line equation $Y = 0.0331x^2 – 95,28x + 68596$, then SIR 20 $Y = 0.0231x^2 -66,443 + 47966$, SVR 20 $Y = 0,0301x^2 – 86,824x+ 62648$, and SMR 20 $Y = 0,0279x^2 – 80,411x + 58010$.

Keywords: Rubber; Trend; Fluctuations; TSR 20; Price

1. Introduction

Rubber is a strategic agricultural commodity as a source of income and currency of the country. Indonesia is known as the world's largest producer and exporter of rubber. Today Indonesia is the second largest producer of rubber after Thailand. Rubber commodity is known for its elasticity and is one of the contributors of raw materials in various industries. In the broad sense rubber is distinguished into two, namely, natural rubber and synthetic rubber. Both types of rubber each have a role in the global and international markets. Indonesia's contribution to the world rubber is 21.4 percent. Some of the causes of the low quality of Indonesian rubber are that 99.6% of the material produced by smallholders is in the form of slabs, 48% is immersed in water which causes a decrease in rubber quality; the level of hygiene is 64% and the frequency of of sales every week is 55% (Antoni and Tokuda, 2019).[1]. Not only that, but one of the rubber issues that has been heavily debated around the world is the fluctuations in rubber prices that have greatly affected farmers. Rubber trees require high temperatures between 26-30℃ and a humid environment in order to produce optimally, these climatic conditions are suitable for Southeast Asia, where about 70% of the world's rubber is produced (Harahap and Bhima, 2018). [2]. Natural rubber production in 2022, as the main producer country Thailand contributed 41%, Indonesia contributed 21.40%, Vietnam contributed 10, 42% and Malaysia around 3.41% or around 76.23% of global natural rubber production is produced by Southeast Asian countries. (SIPH, 2023). [3]. In recent years, the price of rubber in the international and domestic markets has shown a negative trend, causing farmers' work ethic to decline because the income earned from tapping rubber does not meet their living needs. Even though the price of

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natural rubber is low, farmers in several major producing countries, especially in Southeast Asia, must make strategic efforts to maintain and increase the income they get in order to survive. Based on this description, the researcher aims to analyze the trend of rubber prices between producing countries and the condition of TSR 20 rubber price developments that occur between major producing countries in Southeast Asia.

2. Material and methods

Researchers used secondary data from the main producing countries in Southeast Asia, namely Thailand, Indonesia, Vietnam and Malaysia. The location selection was done deliberately (purchasing) with the consideration that Southeast Asia is one of the regions that produces the largest natural rubber of about 76.2% of the global output in 2022.

The historical method is defined as a procedure used to conduct research on sources or relics of the past that are critically analyzed based on the results obtained (Dangu, I Ketut, and Ruli, 2022). [4]. Data collection techniques are carried out by tracing data and documents that have been stored by agencies including the Ministry of Agriculture, Ministry of Trade, International Rubber Study Group (IRSG), Singapore Commodity Exchange (SICOM), ANRPC, Food and Agriculture Organization (FAO), The World Bank, Gapkindo, as well as literature and sites related to this research. The type of data collected in the form of quantitative data includes data on FoB natural rubber TSR 20 prices between producing countries in Southeast Asia for 72 months, namely from January 2017 to December 2022.

Data analysis used is using price trend analysis using simple linear regression methods. The simple linear regression equation is as follows:

$$Y = a + bX$$

Information:

Y : Dependent variable (TSR 20 natural rubber price)
X : Independent variable (time period)
A : Constant value (a=ÿY/N)
B : Coefficient value (b=Ÿxy/ÿx2)
N : Number of samples

3. Results and discussion

3.1. Development Pattern of Rubber Price STR 20 among Producing Countries in Southeast Asia

The TSR 20 rubber price development pattern is obtained from monthly time series data from January 2017 - December 2022. From the data then studied and analyzed so as to make a consistent pattern. The following are the results of the analysis of the TSR 20 rubber price development pattern:
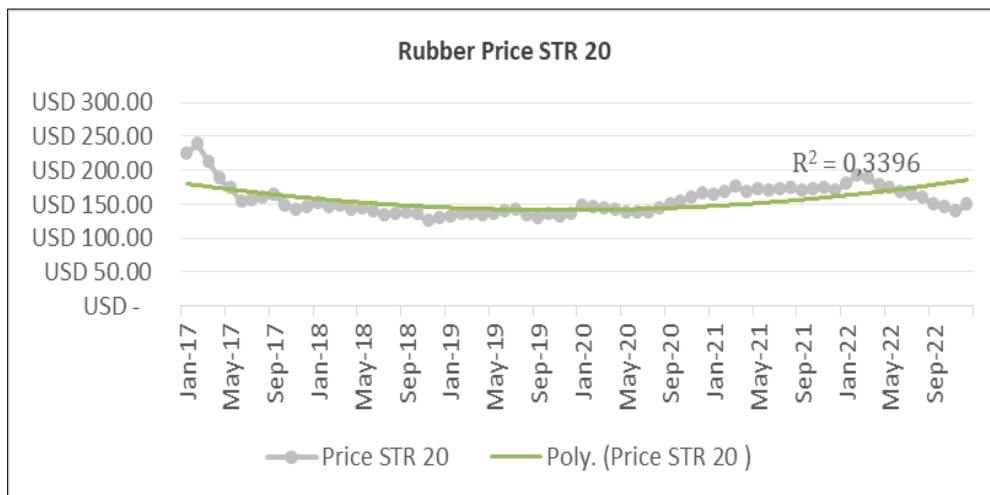

Source: Secondary data, 2023.

Figure 1 Development Pattern of Rubber Price TSR 20 in Southeast Asia

The pattern of TSR 20 rubber price development between producing countries is obtained from monthly time series from January 2017 - December 2022 in Southeast Asia. From this data can be studied and analyzed so that a consistent pattern or shape is obtained for the price of TSR 20 rubber. The results of the graph of the TSR 20 rubber price development data pattern between producing countries in Southeast Asia such as Thailand (STR 20), Indonesia (SIR 20), Vietnam (SVR 20), and Malaysia (SMR 20). When viewed on this graph, the average price of STR 20 Rubber in 2017 is 175.47 USD, then the average price of STR 20 in 2018 is 139.00 USD, the average price of STR 20 in 2019 is 146.45 USD, the average price in 2020 is 137.47 USD, the average price of STR 20 in 2021 is 167.89 USD and the average price of STR 20 in 2022 is 157.50 USD. So it can be concluded that the price of STR 20 rubber fluctuates every year. The lowest STR 20 rubber price was in 2020, this was due to the impact of COVID-19 which caused almost all prices in each commodity to decline in price. Then after the COVID-19 period began to improve, the price of rubber slowly increased, although not too high. Furthermore, the average price of SIR 20 rubber in 2017 was 166.48 USD, then the average price of SIR 20 in 2018 was 137.24 USD, in 2019 the average price of SIR 20 was 143.91 USD, then in 2020 the average price of SIR 20 was 138.88 USD, in 2021 the average price of SIR 20 was 176.47 USD, and the average price of SIR 20 in 2022 was 168.57 USD. When viewed from this average price, the price of SIR 20 rubber fluctuates. Then the average SVR 20 rubber (Standard Vietnam Rubber) in 2017 amounted to 161.58 USD, the average price of SVR 20 in 2018 amounted to 135.46 USD which when viewed from the results of the average price of a decrease in the price of SVR 20 rubber, then in 2019 the average price of SVR 20 rubber was 137.76 USD which means that the price of SVR 20 in 2019 has an increase in price. Then in 2020 the average price of rubber was 136.74, this was due to the impact of COVID-19 which caused the price of each commodity to fall. Then in 2021 the average price of rubber increased to USD 171.26 and in 2022 the average price of rubber was 162.31 USD. Then the average price of SMR 20 (Standard Malaysia Rubber) rubber in 2017 amounted to USD 158. The average price of SMR 20 in 2018 was 131.88 USD then the average price of SMR 20 in 2019 was 141.42 USD, In 2020 the average price of SMR 20 fell to 131 USD this is because at the beginning of 2019 before the onset of COVID-19 the price of rubber in almost every world increased but this did not last long due to the impact of COVID-19 which caused prices in almost every commodity to fall. Then in 2021 it increased to 168.60 USD this is because after COVID-19 the price of each commodity slowly began to improve, and in 2022 the average price of SMR 20 rubber was 158.68 USD.

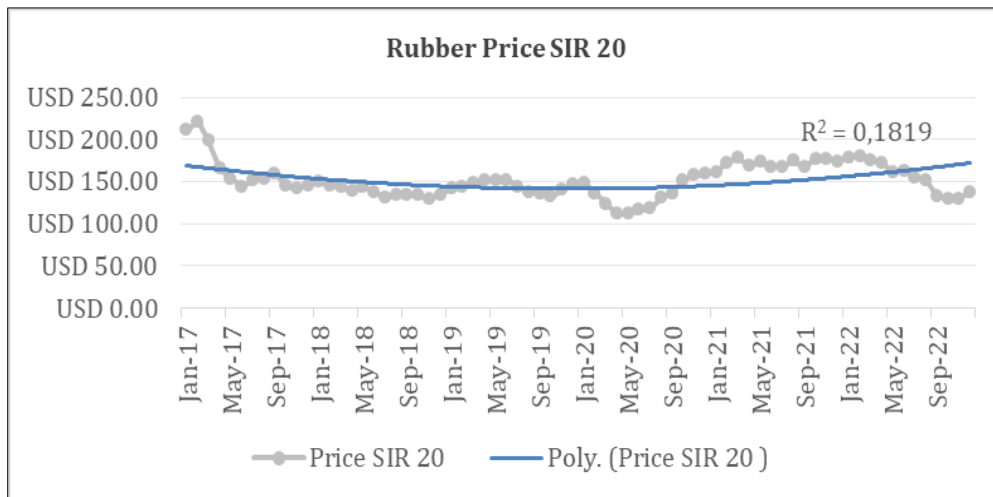## 3.2. Development pattern of Thailand Rubber Price (STR 20)

Source: Secondary data, 2023.

Figure 2 Price of Rubber STR 20 from Januari 2017 – December 2022

From Figure 2 it can be seen that the trend of STR 20 rubber prices from January 2017 - December 2022 fluctuates. From the above analysis, a polynomial line equation $Y = 0.0331x^2 – 95,28x + 68596$ $R^2 = 0.3392$ is obtained. The R2 value of 0.3392 means that the effect of the time independent variable (X) together on the dependent variable STR 20 rubber price (Y) is 33,92 %. The results of the STR 20 rubber price development data pattern graph every year fluctuate, where in January 2017 the price of STR 20 reached 225.02 USD but after that the price of STR 20 continued to fluctuate until December 2017 at a price of 141.57 USD and continued until the COVID-19 attack. In July 2020 the price of STR began to show an increase in price where in December 2020 the price of STR 20 was 164.90 USD then in January 2021 the price of STR became 174.30 USD, then in February it increased by 4.73% to 187.40 USD and in December 2021 the price of STR reached 189.30 USD, The highest price of STR 20 was in February 2024, which amounted to 191.20 USD but in 2022 rubber prices continued to experience erratic price fluctuations caused by several factors, causing the price of STR 20 rubber in December to 155.20 USD.

## 3.3. Development pattern of Indonesia Rubber (SIR 20)

Source: Secondary data, 2023.

Figure 3 Price of Rubber SIR 20 from Januari 2017 – December 2022

From Figure 3 it can be seen that the trend of SIR 20 rubber prices from January 2017 - December 2022 is fluctuating. From the above analysis, a polynomial line equation Y = 0.0231x^2 -66,443 + 47966 R^2 = 0, 1819. The R^2 value of 0, 1819 means that the effect of the time independent variable (X) together on the dependent variable SIR 20 rubber price (Y) is 18, 19 %. The results of the data pattern graph of the development of SIR 20 rubber prices fluctuate annually, where in 2017 the price of SIR 20 reached 200.00 USD, the development of rubber prices experienced dominant price fluctuations down to the COVID-19 period which attacked all commodities in the world. The price of SIR 20 rubber has reached its lowest point, namely at 118.89 USD in May 2020, which is due to the unstable price of rubber due to the impact of COVID-19. After that, the price of rubber slowly increased until the price reached a price of 162.37 USD in December 2020, then in early 2021 the price of rubber rose to 173.00 USD and continued to survive with price fluctuations that were not too dominant so that at the end of 2021 the price of SIR 20 was USD 179.05. Then at the beginning of 2022 the price of SIR 20 reached a price of 180.00 USD and the highest price was in February 2022 amounting to 185.84 USD but in 2022 the price of rubber experienced a decline which began in February 2022.

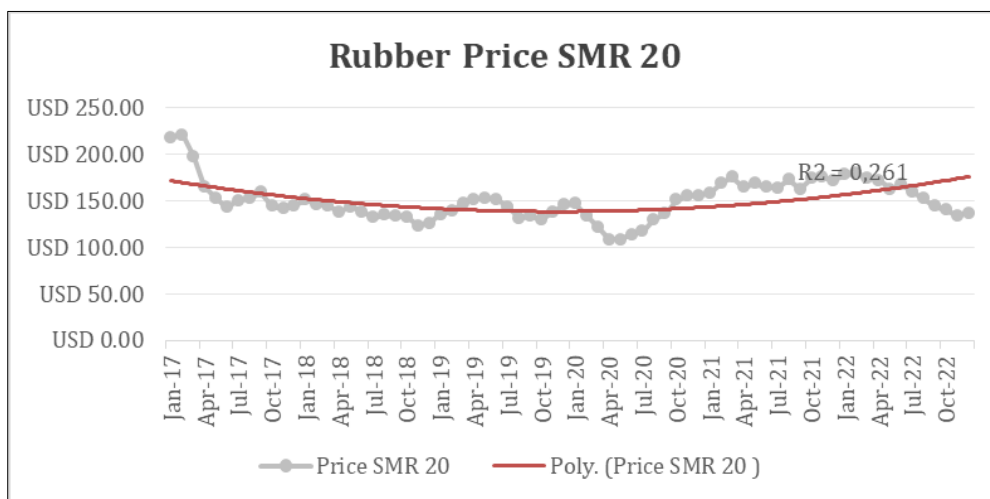## 3.4. Development pattern of Vietnam Rubber (SVR 20)
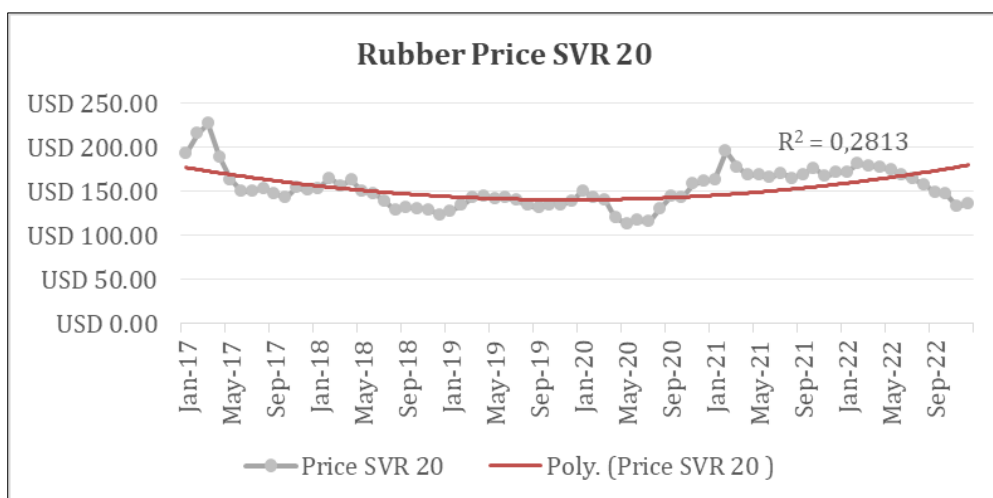
Source: Secondary data, 2023.

Figure 4 Price of Rubber SVR 20 from January 2017 – December 2022

From Figure 4 above has a polynomial line equation Y = 0,0301x^2 – 86,824x+ 62648 R2 = 0.2813. The R2 value of 0.2813 means that the effect of the time independent variable (X) together on the dependent variable SIR 20 rubber price (Y) is 28,13 %. The results of the graph of the data pattern of the development of SVR 20 rubber prices every year fluctuate,

where in 2017 the price of SVR 20 reached 207.80 USD then in the following month continued to decline in price until July 2017 which amounted to 143.10 USD then in August the price of SVR became 153.60 USD. Every month the price of rubber experiences price drops and unstable increases. In January 2018 the SVR price was 136.10 USD at the beginning of the month until the middle of 2018 the price of SVR rubber was quite stable in price, but at the end of 2018 the SVR decreased so that the price was 123.80 USD. Then in January 2019 the SVR was 128.80 USD and continued to increase until the middle of the month before the COVID-19 virus attacked. The impact of COVID-19 is felt by almost every country, one of the impacts of COVID-19 is the decline in SVR prices in 2019 and 2020. Throughout 2020 the SVR rubber price has decreased, causing the SVR price in May 2020 to be 113.50 USD, then in 2021 the SVR price continues to increase.

3.5. Development pattern of Indonesia Rubber (SMR 20)

Source: Secondary data, 2023.

Figure 5 Price of Rubber SMR 20 from January 2017 – December 2022

From Figure 5 above, it can be analyzed using the polynomial line equation $Y = 0.0279x^2 - 80.411x + 58010$ $R^2 = 0.261$.. The R2 value of 0,261 means that the effect of the time independent variable (X) together on the dependent variable SMR 20 rubber price (Y) is 21,6 %. When viewed in the pattern of development of SMR 20 rubber prices above each year has an unstable price where at the beginning of January the price of SMR rubber was 199.94 USD then decreased by 1.87% in February so that the price of rubber was 196.20 USD, the price of SMR rubber in 2017 continued to decline so that in December 2017 the price of SMR 20 was 132.33 USD. Then in January 2018 the price of SMR 20 rubber increased by 6.46% to 140.88 USD but in December 2018 it decreased again so that the price of SMR 20 rubber became 127.30 USD. In January 2019 the price of SMR 20 rubber increased by 3.86% to 132.22 USD this lasted until mid-2019, but after the COVID-19 virus the price of SMR 20 rubber continued to decline for several months. In May 2020 the price of SMR 20 rubber was the lowest price at 110.34 USD and after that the international rubber price slowly rose. January 2021 the price of SMR 20 was 158.40 USD then in December 2021 the price of SMR 20 rubber was 172.08 USD. The price of SMR 20 Rubber experienced a price increase of 0.95% so that in January 2022 the price of SMR 20 was 178.12 USD per kg.

4. Conclusion

Based on the results and discussion above, it can be concluded that the pattern of rubber price development among major producing countries in Southeast Asia during the period January 2017 - December 2022 generally experienced price fluctuations that tended to be unstable. Many things cause fluctuations in the price of rubber commodities such as weather factors, pests, diseases, lack of care and consumer demand and others. One factor that greatly affects prices is the occurrence of a world polemic that has an impact on the increase in the exchange rate of the American dollar. When viewed from the discussion above, the highest rubber price pattern in both STR 20, SIR 20, SVR 20, and SMR 20 occurred in 2021 this is because after the onset of COVID-19 which caused almost every sub-sector to begin to improve, we can be seen from the R^2 value in STR of 0,3396, SIR 20 is 0,1819, SVR 20 is 0,2813, and SMR 20 is 0,261. The largest R^2 value is for the price of rubber in Thailand, is shows that the price trend that occurs there is better other producing countries.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

References

[1] Antoni, M., Tokuda H. Identification of Obstacles and Drivers of Smallholder Rubber Farmers to Become Members of A Processing and Marketing Unit in Indonesia. Applied Economics and Finance. 2019; 6(2), 79-85.

[2] Dangu, S., I Ketut., Ruli, A. History of Indonesian Education at the Beginning of Independence in 1945-1950. Journal of Research Inovation. 2022; 3(2) 4718.

[3] Harahap, N. Bhima A. Anlysis of the Competitiveness of Indonesian Natural Rubber Commodities to the Global Market. Journal of Transborders. 2018; 1(2) 133.

[4] Societe Internationale de Plantations d'Heveas (SIPH) [Internet]. Distribution Of Global Production; © 2022 [cited 11 June 2024]. Available from https://siph.groupesifca.com/caoutchouc-naturel/la-production.