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ANALYSIS OF FACTORS AFFECTING INDONESIA'S CRUDE PALM OIL (CPO) EXPORT VOLUME TO CHINA (1990-2023)

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ABSTRACT

This study aims to describe the characteristics of the development of Indonesia's CPO export volume to China, Indonesia's CPO production, CPO exports, exchange rates, Indonesia's inflation, and output from 1990-2023. This study uses secondary data obtained from UN Comtrade with HS Code 151110, the World Bank, the Central Bureau of Statistics and other sources related to this study. Data processing was carried out using multiple linear regression analysis tools with the ECM (Error Correction Model) method using Eviews Version 12 software. Statistical testing in this study used short-term estimates. The results of the study show that the development of Indonesia's CPO export volume to China, Indonesia's CPO production, CPO export prices, exchange rates, China's GDP, and Indonesia's inflation fluctuate every year.

Keywords: Crude Palm Oil (CPO), Export, International Trade, China

INTRODUCTION

International trade is one of the various important sectors in increasing the country's foreign exchange where there are export and import activities that provide benefits to the people of a country. Every country spread across the world is correlated with each other, and the relationships that are established are not only limited to the government level, but also involve companies and individuals. Relationships between companies generally occur in the form of trade. This trade can involve one or more countries, known as international business (Dewi & Nawawi, 2022).

Indonesia is one of the developing countries that has a wealth of natural resource potential. The largest natural resources in Indonesia are in the plantation and agricultural sectors. Therefore, Indonesia has a very large and fertile plantation land for planting various commodities such as coffee, cloves, oil palm, tea, rubber, and plantation crops. One of the various commodities that is always used as a prima donna export in Indonesia is oil palm plants in the form of palm oil or CPO (Juli et al., 2017).

Crude Palm Oil (CPO) or commonly known as palm oil is one of the plantation commodities derived from oil palm fruit extract. CPO is commonly used in raw materials for cooking oil, vegetable fat for ice cream and milk, as well as food raw materials, to raw materials for biodiesel oil. The large production of CPO makes Indonesia the country that exports the most CPO in the world compared to other countries (Hutapea et al., 2023).

Based on data from the United States Department of Agriculture (USDA), in 2024 Indonesia was ranked first as the largest CPO exporting country in the world with a CPO production of 46.8 million tons. The second position was occupied by Malaysia with a CPO production of 18.8 million tons, which means it has a production difference of 59.8% with Indonesia. According to the data United Nation Commodity Trade, 2024 it proves that Indonesia is the largest CPO exporting country in the world when viewed based on the amount of CPO production each year. According to UN COMTRADE, 2024 China is the largest CPO importing country with CPO export volume fluctuating and tending to increase from 2019-2023, followed by India, Pakistan, the United States, and the Netherlands each year. The volume of CPO exports to China in 2023 was 4,284.6 thousand tons or 30.15%. The total export volume increased by 23.02% from 2022 with an export volume of 3,482.9 thousand tons or 26.29%.

The pricing system in trade and commerce is a very crucial thing to pay attention to. Based on the law of supply, the higher the price of an item, the higher the quantity of goods that will be provided from the seller's side. Producers tend to make more offers at high prices compared to low prices. This relationship is called the law of supply (cateris paribus). Exports occur because in a country there is excess production where the world market price is much more expensive than the local price. Therefore, to balance economic growth in Indonesia, export activities are carried out, because of the high demand from various importing countries, so that automatically the need for CPO in the country is also met and can be exported to importing countries so that it can increase income for the country (Dewi Purnomowati et al., 2015).

Based on the background description above, with the increasing volume of CPO production in Indonesia every year, making Indonesia the largest CPO exporting country in the world, Indonesia has the potential to support strong competitiveness as the largest CPO exporting country in the world, although the volume of CPO exports in Indonesia has fluctuated, but for 2023 it will increase again by exporting CPO to various countries, so it is necessary to identify how the potential for Indonesian CPO exports to China is useful for increasing exports in Indonesia so that the foreign trade system continues to run smoothly in the international market. Therefore, the author is interested in conducting a study entitled "Analysis of Factors Affecting the Volume of Indonesian Crude Palm Oil (CPO) Exports to China (1990-2023)".

RESEARCH METHOD

The object of this study is CPO, which focuses on the analysis of factors that influence the volume of CPO exports with the 6-digit Harmonized System (HS) coding code, namely HS code 151110 (type of CPO or crude palm oil). This research is geographically located in Indonesia intentionally (purposive) with the consideration that the data analyzed will cover CPO export activities from various palm oil producing regions in Indonesia and how these exports can contribute and be exported to China to the global market.

This study uses secondary data as a source of data collection. The data was collected through time series data with a period of 34 years with a time range from 1990-2023. The data collection method used in this study was obtained through the data literacy process method through the Central Statistics Agency (BPS), United Nation Commodity Trade (UN Comtrade), FAO (Food and Agriculture Organization), and the World Bank, where data on CPO export volume, Indonesian CPO production, CPO export prices, exchange rates, Indonesian inflation, and export duties were obtained. The analysis methods used are descriptive analysis and inferential analysis using multiple linear analysis with the ECM (Error Correction Model) method. The ECM formula can be mathematically formulated as follows:

$$\Delta Y_T = \alpha_0 + \alpha_1 \Delta X_1 + \alpha_2 \Delta X_2 + \alpha_3 \Delta X_3 + \alpha_4 \Delta X_4 + \alpha_5 \Delta X_5 + \gamma ECT\text{-}1 + u$$

Information:

Δ = Change ($\Delta Yt = Yt - Yt\text{-}1$)

YT = Volume of Indonesian CPO Exports to China (tons/year)

X1 = Indonesian CPO Production (tons)

X2 = CPO Export Price (US$/ton)

X3 = Exchange Rate (Rp/US$)

X4 = Indonesian Inflation

X5 = Dummy for the imposition of Indonesian CPO export duties in year t

0 = No export duties

1 = There are export duties

ECT-1 = Error correction term lag 1 of the long-term residual

γ = ECT Coefficient (Must be negative and significant)

u = short-term error

RESULTS AND DISCUSSION

A. Development of Indonesian CPO Export Volume to China

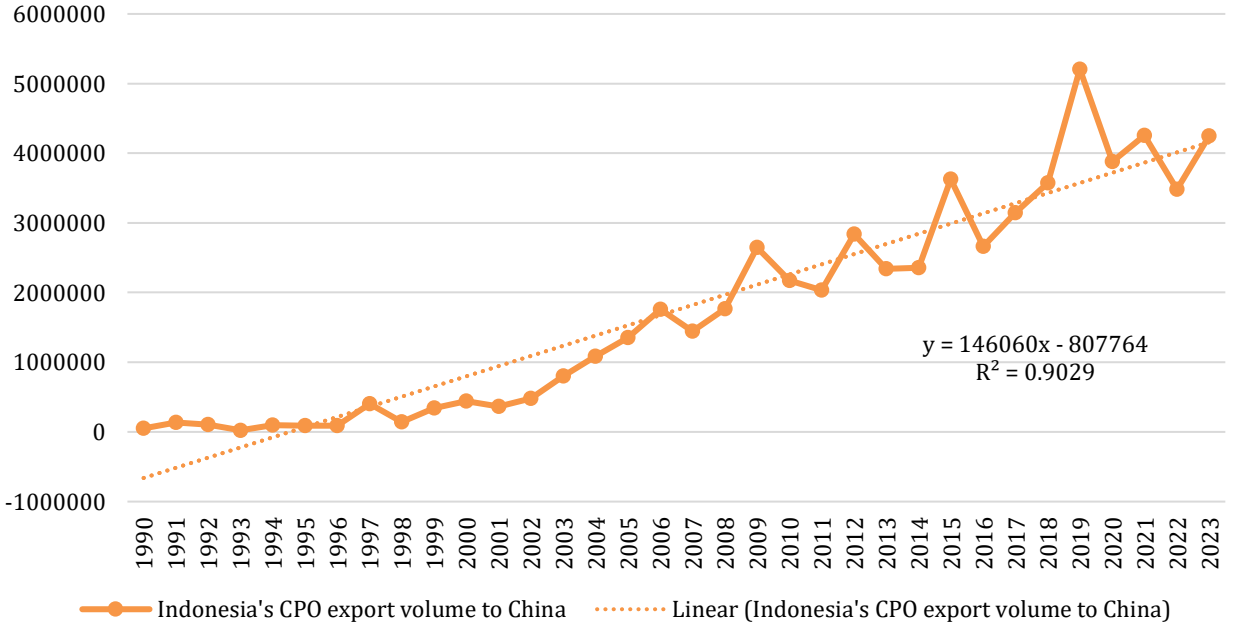

Figure 1. Indonesian CPO Export Volume Development Curve to China 1990-2023

Source: United Nations Commodity Trade (UN COMTRADE, 2025)

Figure 1 describes the development of CPO export volume in the period 1990-2023 experienced fluctuations that tended to increase. In the early period, namely 1990-2000, the volume of CPO exports was still relatively low with a slow increase in the trend. Then, in the period of 2009 there was an increase in exports, seen from the trend that rose slightly sharply. Then, followed in the following years by the development of CPO export volumes that fluctuated and tended to increase. Then, in the period of 2019 the export volume reached its peak and increased significantly, one of the reasons was because China also took palm oil from Malaysia (Andriana et al., 2021). In addition, the cause of the increase in CPO export volume in 2019 was due to the trade war between China and the United States which risked affecting palm oil prices and markets this year, this turned out to have an impact on the Indonesian palm oil industry in 2019. Thus, the trade war resulted in fluctuations in palm oil export prices and volumes throughout 2019 (Direktur Jenderal Perkebunan Kasdi Subagyono, 2019).

The development of Indonesia's CPO export volume produces the equation Y = 146,060x - 807,764. This equation has a positive slope, which means that Indonesia's CPO export volume to China has an increasing trend every year. However, in this equation the intercept value is -807,764, which shows that at the beginning of the period or in 1990, the CPO export volume was still very low or close to 0 (zero). The slope value in this equation is 146,060, which means that the average volume of Indonesia's CPO exports to China has increased by 146,060 tons each year. The coefficient of determination of Indonesia's CPO export volume to China is 0.9029, which shows that this regression model explains about 90.29% of the variation in CPO export volume data, which means that there is a very strong relationship between time and the increase in Indonesia's CPO export volume to China.

B. Development of Indonesian CPO Production

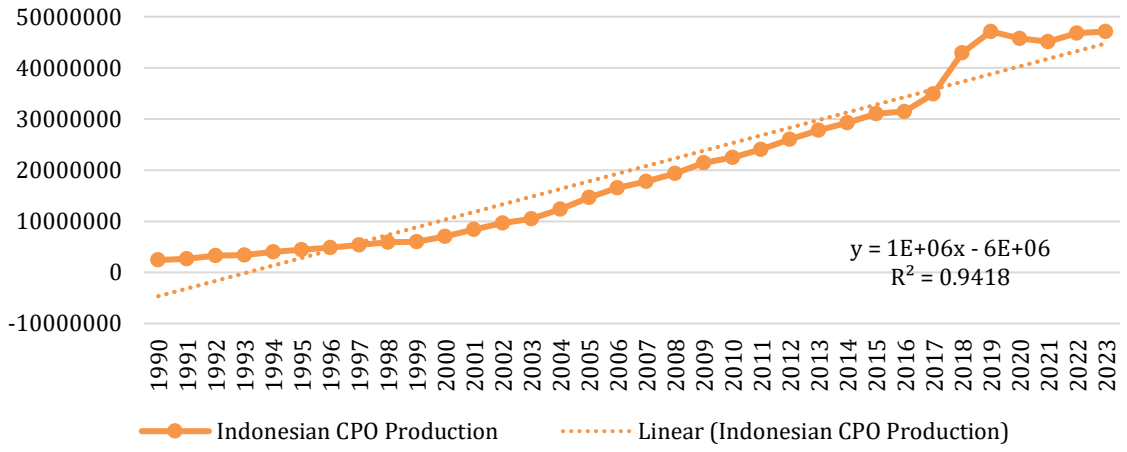

Figure 2. Indonesia CPO Production Development Curve 1990-2023

Source: Food and Agriculture Organization (FAO, 2025)

Figure 2 describes the Indonesia's CPO production from 1990-2023 experienced fluctuations that tended to increase. In the early period from 1990-2000, Indonesia's CPO production was still relatively low, with a fairly stable but not too sharp increase. Then, in the next period from 2001-2015, CPO production began to increase steadily every year. Then, in the period 2016-2020, Indonesia's CPO production increased drastically and peaked in 2019 and 2020. This was due to the expansion of oil palm plantation areas in those years, so that the amount of CPO production in 2019 and 2020 increased compared to previous years (Rafidah et al., 2022). After production surged in the previous year, in 2021 CPO production experienced a decline due to the effects of the global Covid-19 pandemic. Although palm oil production decreased, Indonesia's CPO export volume increased in 2019, due to the excessive export ban policy. However, Indonesia's CPO production has continued to increase after the Covid-19 pandemic because the world's need for cooking oil has increased and the cheapest and most productive supplementary vegetable oil is only palm oil.

The development of Indonesian CPO production has the equation Y = 1,000,000x – 6,000,000. This equation has a positive slope, which means that Indonesian CPO production tends to increase every year. The slope value in this trend is 1,000,000, which means that the average increase in Indonesian CPO production is 1,000,000 tons each year. However, in this equation the intercept value is -6,000,000, this shows that at the beginning of the period or in 1990, Indonesian CPO production was still very low or close to 0 (zero). The determination coefficient of the CPO production trend is 0.9418, which means that the precision of the Indonesian CPO production development trend graph has a confidence level of 94.18%.

C. CPO Export Price Development

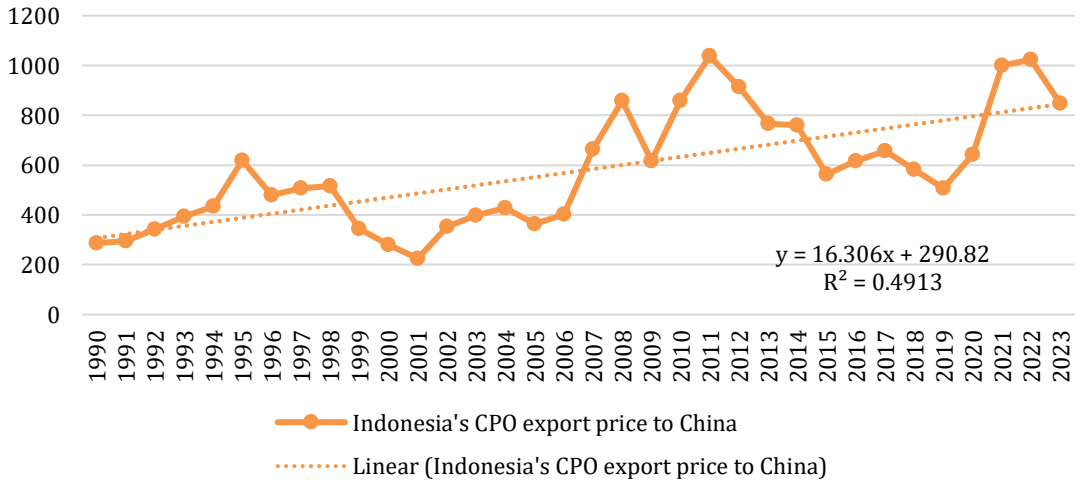

Figure 3. Chart of Development of Indonesian CPO Export Prices to China 1990-2023

Source: United Nations Commodity Trade (UN COMTRADE, 2025)

Figure 3 describes the Indonesia's CPO export prices to China in the period 1990-2023 experienced fluctuations tending to increase. Around 1995 there was a fairly sharp price spike. According to the World Bank report, the debate on Indonesian CPO began in 1994/1995 when there was an increase in the price of cooking oil resulting in an export tax policy. The effect of this policy was indeed effective in suppressing domestic prices, but its effect on inflation and consumer welfare was very low (Advent et al., 2021). Then, the international price of Indonesian CPO to China decreased again in 1999-2001, this was related to the post-crisis economic recovery and fluctuations in the world vegetable oil market. A drastic increase occurred again in 2008, this was due to the global financial crisis that occurred in mid-2008 causing a depreciation of the currency value which not only occurred in Indonesia, but also in several palm oil importing countries, causing the purchasing power of its people in general to decrease (Andriana et al, 2021). After that, in 2021 and 2022, there was another increase because throughout 2022, policies often changed. Thus, the Ministry of Trade (Kemendag), the Ministry of Industry (Kemenperin), and the Ministry of Finance (Kemenkeu) implemented a series of policies in response to the price spike and to ensure the availability of affordable cooking oil supplies.

The development of Indonesian CPO export prices to China has the equation Y = 16.306x + 290.82. The equation in this trend has a positive slope, which means that the international price of Indonesian CPO to China tends to increase every year. The slope value is obtained at 16.306, which means that the average increase in the export price of Indonesian CPO to China is US$16.306/ton each year. The coefficient of determination in this trend is obtained at 0.4913, which means that the precision of the trend graph of the development of international prices of Indonesian CPO to China has a degree of confidence of 49.13%.

D. Exchange Rate Development

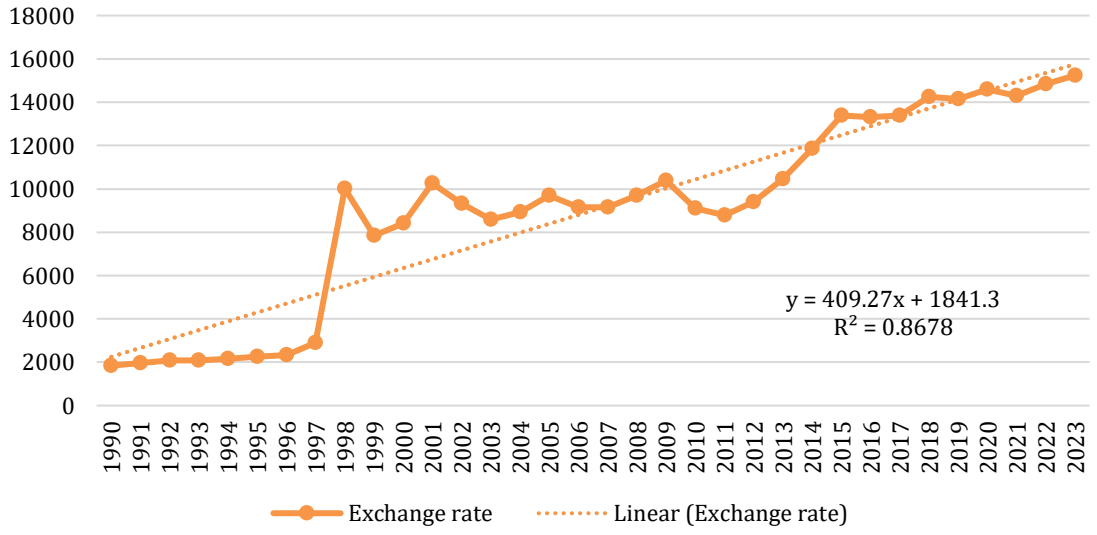

Figure 4. Exchange Rate Development Curve 1990-2023

Source: World Bank, 2025

Figure 4 describes the exchange rate development from 1990 to 2023 experienced fluctuations tending to increase. The exchange rate tended to be stable with a gradual increase from 1990 to 1997, with a range of IDR1,900/USD – IDR2,900/USD. However, in late 1997, Indonesia began to experience a monetary crisis, which peaked in 1998. In 1998, there was a drastic spike in the exchange rate, indicating a sharp depreciation of the rupiah due to the Asian economic crisis. The development of the monetary crisis in 1997/1998 was marked by a worrying situation as an impact of the rupiah crisis which then spread rapidly into a very deep financial crisis. The exchange rate crisis has caused various very severe economic difficulties, and stagflation has colored the Indonesian economy so that economic activity has declined sharply. After the crisis, the exchange rate fluctuated but remained in the range of IDR8,000 - IDR10,000/USD. From 2018 to 2023, the rupiah experienced a fluctuating trend, where the exchange rate began to increase to above IDR14,000/USD.

The exchange rate development has the equation Y = 409.27x + 1,841.3. The equation in the trend has a positive slope which means the exchange rate tends to increase every year. The slope value is obtained at 409.27 which means the average increase in the exchange rate is IDR409.27/USD every year. The coefficient of determination in this trend is obtained at 0.8678 which means the precision of the exchange rate development trend graph has a degree of confidence of 86.78%.

E. Development of Indonesian Inflation

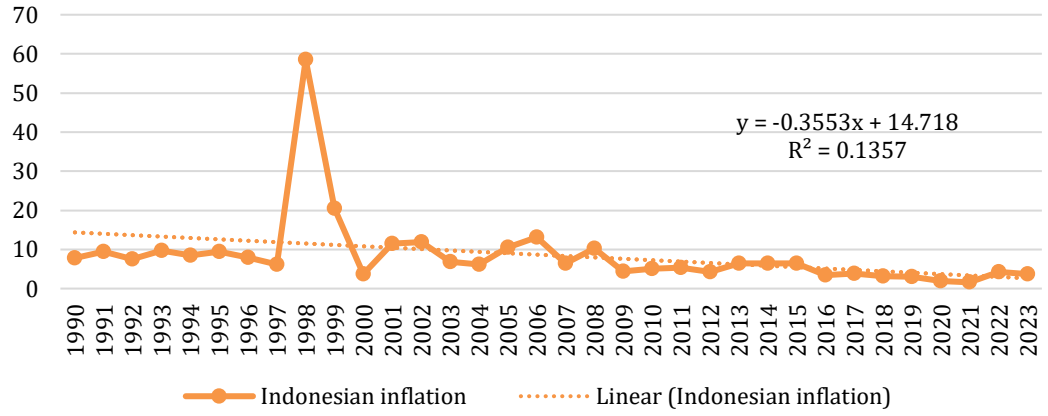

Figure 5. Indonesian inflation development curve 1990-2023

Source: Central Bureau of Statistics (BPS, 2025)

Figure 5 describes the Indonesia's inflation development from 1990-2023 experienced fluctuations tending to decline. In the period 1990-1996, inflation was at a relatively low and stable level, ranging from 5-10%. This reflects the stability of the macro economy before the monetary crisis. Inflation jumped sharply to more than 60% in 1998, which was the peak of the Asian economic crisis. This was due to the sharp depreciation of the rupiah, rising prices of imported goods, and political instability. In 1998, inflation was high and the rupiah depreciated. This resulted in transmission to Indonesia with cooperation carried out with these countries, such as cooperation between Indonesia and Thailand and Indonesia and the United States. Moreover, at that time, Indonesia's economic fundamentals were weak, making Indonesia more susceptible to the crisis. After the crisis, inflation began to decline but still fluctuated in the range of 5–15%. Inflation is increasingly controlled in the range of 3–5% in 2011–2023, reflecting better economic stability (Salma et al, 2024).

The development of Indonesian inflation has the equation Y = -0.3553x + 14.718. The equation in the trend has a negative slope of -0.3553, which means that Indonesian inflation tends to decrease every year. The coefficient of determination in this trend is 0.1357, which means that the precision of China's GDP development has a degree of confidence of 13.57%.

D. Development of Export Duties

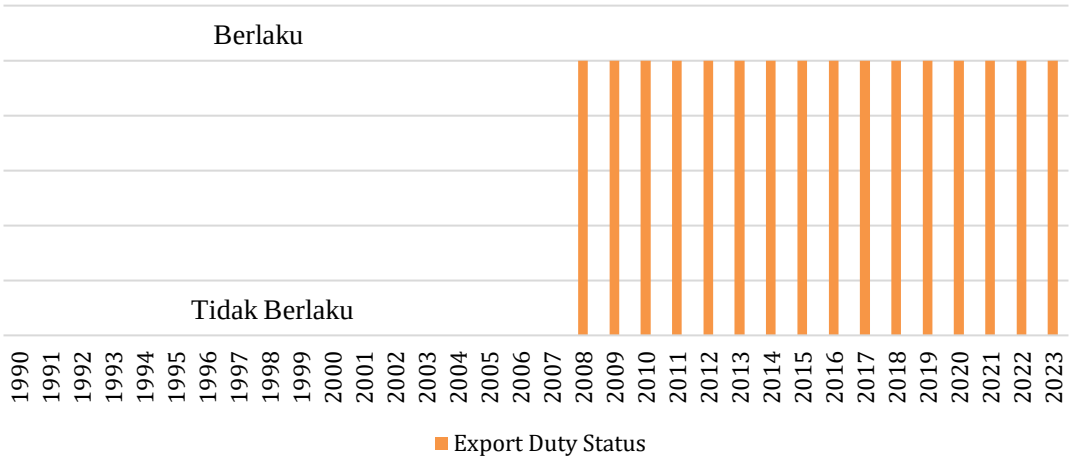

Figure 6. Development of Export Duties

Source: Ministry of Trade (Kemendag, 2025)

Figure 6 describes the Indonesia's CPO export duty policy has undergone significant development from 1990 to 2023. In the early 1990s, the government had not yet imposed export duties, because the main focus was on encouraging exports to increase foreign exchange. However, increasing exports caused a shortage and spike in cooking oil prices domestically, so in 1994 the government began imposing fixed export duties through the Decree of the Minister of Finance, as an effort to stabilize domestic supply and prices. Entering the early 2000s, export duty policies began to be progressive, adjusted to the reference price of CPO in the international market. Important reforms occurred in 2010 when the export duty rate for CPO was increased to 25%, while derivative products were subject to lower rates to encourage the down streaming of the palm oil industry in line with PMK Number 67/PMK.011/2010 which was stipulated on March 22, 2010 and came into effect on April 1, 2010, this regulation re-determined export goods subject to export duty and export duty rates, and regulated the calculation of export duties based on ad valorem rates and specific rates. When the domestic cooking oil crisis occurred in 2022, the government had banned the export of CPO and its derivative products, before finally lifting the ban and tightening the Domestic Market Obligation (DMO) scheme (Salma Raivana & Sani, 2024).

CONCLUSION

The volume of Indonesian CPO exports to China fluctuates and tends to increase from 1990-2023. The increase or decrease in the volume of Indonesian CPO exports is also accompanied by changes in the variables of Indonesian CPO production, CPO export prices, exchange rates, Indonesian inflation, and export duties.

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