THE EFFECT OF CPO EXPORT TO CHINA ON INDONESIA'S ECONOMIC DEVELOPMENT

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THESIS

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DECLARATION OF AUTHENTICITY

Hereby I proclaim the originality of the thesis; In order to acquire my university degree, I did not present anybody else's work, nor did I present anyone else's words, ideas, or expression without acknowledgement. All quotations are properly credited and listed in the thesis' references.

In the unlikely event that this assertion turns out to be untrue, I am ready to bear any penalty that complies with the chosen regulation or its repercussions.

Nanjing, July 06 2023

Azzallie Sedayu Putri Kemadi

ABSTRACT

Crude palm oil export activities from Indonesia to China has been a beneficial trade activity for the national economy. The development between two countries bilateral economy relations can be seen from China as Indonesia's priority on CPO export destinations country. The researcher aim to understand the effect of CPO export to China on Indonesia's economic development. We expect to contributes to the literature by providing a CPO export perspective in different research variable. The researcher uses secondary data from Indonesia statistical yearbook with 2012-2021 Indonesia GDP, CPO export value to China, inflation, middle rates, and CPO production volume as the sample data. We use multiple linear regression as the analysis technique to conduct the research. The researcher obtained the following results: (1) Our findings on the effect on CPO export value to China towards Indonesia economy development was significant. (2) The effect on CPO production towards Indonesia economy development was significant and positive, particularly after the increase of CPO production volume that increases a country's income. (3) The effect on middle rates towards Indonesia economy development was significant and positive. (4) The effect on inflation towards Indonesia economy development was significant. (5) There is a positive simultaneously significant effect on CPO export value, production, middle rates, and inflation towards Indonesia economy development.

KEYWORDS

Crude Palm Oil export; Indonesia's economy development; China and Indonesia economy relations

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CHAPTER I

INTRODUCTION

1.1 BACKGROUND

1.1.1 EXPORTS IN INDONESIA

Nowadays export includes goods and services mainly act as a major activity to strengthen a country's economic development. A nation engages in commerce with other nations for two primary objectives: one, to profit from trade, and two, to benefit from economies of scale (Krugman, 2000). As said that the international market will be the source of financing and extending export productivity (Ing, Hanson, & Indrawati , 2018), an export helps the country to utilize its resources in goods and services. By exporting some goods and services there are also some methods that use the help of human resources, this will enchanted the skill of workers in its country itself. Importantly, exports help a country to develop on national and also international scales. Exports in producing and supplying goods and services towards other countries which include in one of the actions of international trade are important for providing people and business actors in a larger international market (The Economic Times, 2023). Indonesia is widely known for its natural resources, Natural resources are defined as natural components or services that exist naturally and provide economic advantage (Statista Research Department, 2022). They include raw resources, the area, function, and quality of environmental components such as soil, air, and water, as well as genetic variety (Statista Research Department, 2022). Indonesia benefitted the most from the trade especially on the crude palm oil export. In 2022, Indonesia hit a trade surplus with a record of US$54.46 billion. There is a 53.7% increase from 2021 in a number of US$35.42 billion (Haizan, 2023). This happened because there are some increases on some commodities such as coal, crude palm oil (CPO), etc. Crude palm oil is one of the favourite export commodities, palm oil is a common cooking ingredient in some places in Asia, Africa, southeast Asia, etc. Palm oil is an oil that is extracted from the pulp of the palm oil fruit itself (The Economic Times, 2023). Indonesia exports on crude palm oil itself reported in 2021 hit US$28606.0 million and 26990.0 thousand tons (BPS, 2022). There are several factors that can cause a quick grow on Indonesia’s CPO, first will be the natural environment of the crude palm oil and the second will be the growing tendency among farmers who view CPO as the product that have a steady price and an ongoing demand on the global market (Prabowo, Hardyastuti, & Darwanto, 2020). Indonesia is listed as one of the top exporter countries when it comes to exporting commodities such as crude palm oil (CPO). Crude palm oil is one of Indonesia’s specialities, Indonesia’s crude palm oil is famous for its good quality and affordable

price. As crude palm oil requests increase, Indonesia decided to focus more on the export of crude palm oil itself. The significant exports of CPO are likewise consistent with this large production. Investments in agro-industrial properties, assistance from the government, and rising worldwide demand are some of the elements contributing to the Indonesian palm oil industry's economic success. But still, there are numerous difficulties producing palm oil. Individual farmers rarely have the initial investments necessary for intensive palm oil production (McCarthy and Cramb 2009; Feintrenie et al. 2010). Industries that profit the most predominate in the Indonesian CPO market. Additionally, this action brings up a number of bigger issues, including the preservation of primary forests, biodiversity, environmental degradation, poverty reduction, and energy production. This emphasises the requirement for socioeconomic and agronomic research into palm oil (Baudoin, bosc, bessou, & levang, 2017).

1.1.2 CPO EXPORT STATUS TO CHINA

Indonesia and China relations began when both countries signed the Indonesia and China strategic partnership in 2005. It could be seen as for both countries become a comprehensive strategic partner. Comprehensive strategic partnership itself is a relationship that involves a strategic level with various cooperation from both countries. China also proposed to upgrade several terms of relations to ASEAN countries in general. They want to Increase some comprehensive strategies between countries in ASEAN which will reshape each other's relationship. Indonesia and China relations are labelled as positive and mutual which could shape each other's economic future development. China and Indonesia form relationships on foreign trade, they mainly focus on making mutual benefit. Foreign trade is an exchange of goods, services, and capital between international borders (iedunote, 2022). Foreign trade will boost countries' gross domestic product (GDP), technology development, globalization, etc. China and Indonesia relations can be seen with various things such as an agreement for the bullet train in Indonesia. The construction itself strengthens the economic relations between each country. With this, China does not only seek for its own development but also to aim for a win-win agreement with Indonesia. Based on last year's data, by 2022 Indonesia successfully exported 30.8 million tonnes of palm oil. The majority of Indonesia’s palm oil is exported to some major countries such as China, India, Pakistan, Malaysia, and also the Netherlands. The Indonesian government also supports the export of crude palm oil itself, because as we can see that palm oil is one of Indonesia’s major income when it comes to international trade. Some major palm oil plantations are located on Sumatra which is one of the largest islands in Indonesia. There are about 70% of the palm oil plantations in Sumatra and 30% on Kalimantan island (Indonesia investment, 2017). Based on Indonesia’s statistics book, in 2021 there is an increase in the total planted area of palm oil from

14663.3 thousand ha from 14586.5 in 2020. Riau province will have the largest area of 2862.1 thousand ha in 2020 but decrease to 2860.8 in 2021. Riau produced 8629.1 thousand tons of palm oil in 2021 as the biggest producer of palm oil in Indonesia. Due to their small number of plantations, state-owned companies have a very limited impact on the Indonesian palm oil industry. Large private companies, including the Wilmar Group and Sinar Mas Group, are prominent in the meantime and account for somewhat more than half of Indonesia's total palm oil production. Around 40% of the overall production is produced by smallholder farmers. The majority of these smallholder farmers, however, are extremely exposed to worldwide declines in palm oil prices since they lack the access to financial reserves (or bank loans) that the large planters do (Indonesia investment, 2017).

Indonesia has various country destinations when it comes to exporting commodities such as crude palm oil. China as Indonesia's partner in crude palm oil export has been in the top list as the biggest export value on Indonesia crude palm oil destination. Based on Indonesia statistics report stated that in 2021 export value to China in crude palm oil is US$4825.9 million and in total of 4703.1 thousand tons as the largest destination in crude palm oil export from Indonesia (BPS, 2022). Initially, the primary export good that generates significant foreign cash for the nation is palm oil (Nurcahyani, Masyhuri, & Hartono, 2018). There are many things that influence a country's economic development. Various natural resources, a skill full of human resources, a high volume of exports, and other investments including foreign investment will improve the growth of the economy in its country (Hesse, 2008). An example can help a country in overcoming export instability or the detrimental effects of trade conditions on basic goods (Hesse, 2008). The trade activity is related to its country's GDP, as exports once again act as the engine of the growth. China and Indonesia relations are really good, with mainland China recently reaching its position on the 3rd rank on Indonesia's exporting country list that increased since last year in 2021 (BPS, 2022). With this there are many impacts that can be seen with this relation between China and Indonesia Although there are various CPO trade activities from both countries, what kind of effect will boost Indonesia's economic growth as Indonesia is known as a developing country. This paper will find out the effect of CPO export to China on Indonesia's economic development. The paper will review some literature, arguments, and also some recent news for crude palm oil export to China as well as providing some analysis and focuses on the role of crude palm oil export to China for Indonesia's economic development in the last ten years from 2012 to 2021. The paper organized as follows: chapter II discusses theoretical framework, concepts, and the relation of export and economy development in a country, whereas chapter III provides research method by collecting some data from statistical yearbook of Indonesia's government that taken from official Indonesian government website, chapter IV will discuss about the result of the research and discussion, ,

chapter V will conclude all of the analysis, while chapter VI provides limitations and future research suggestion.

1.2 PROBLEM STATEMENT

Nowadays the relationship of Indonesia and China economy activities are having a mutual benefit especially on its crude palm oil trade activity . Based on president Xi and president Jokowi talks on G20 summit in Bali stated that two countries are ready to increase and continue the development of the regional comprehensive economic corridor (Embassy of the People's Republic of China in the Republic of Indonesia , 2022). On the other hand China view Indonesia as a crucial belt road initiative (BRI) partner (Yee, 2021). President Xi stated that China is prepared to continue establishing a connection between the Global Maritime Fulcrum of Indonesia and the Belt and Road Initiative in order to hasten the construction and operation of the Jakarta-Bandung High-speed Railway (Embassy of the People's Republic of China in the Republic of Indonesia , 2022). Various Chinese investors view the capital city of Indonesia Jakarta as a key centre for extending operations into the rest of the region (Yee, 2021). With the development of bilateral economic relationships by the Belt and Road Initiative (BRI), Indonesia has become the second largest destination for Chinese investment in ASEAN in mining, manufacturing, and industrial parks that will unleash a new digital economy and energy (Jingjing, 2022). But what kind of contributions on these CPO export activity for Indonesia economy development to boost its economy. Therefor the research questions will be stated below.

- What kind of relations does Indonesia have with China in terms of trading activity of crude palm oil?
- Does CPO export to China can help Indonesia boos its economic development?

1.3 RESEARCH OBJECTIVE

As the latest researches said that Indonesian CPO exports are still only a small fraction of overall Chinese consumption on the crude palm oil itself, there are several potential that could increase and expand its number as a result of China as a strategic trading partner in the future (Purba, 2019). The trend analysis demonstrates that in several years there will be a substantial impact on both export volume in Indonesia with China’s CPO market as the most accessible and ideal for Indonesia’s economic development (Prabowo, Hardyastuti, & Darwanto, 2020). We aimed to understand the relationship between Indonesia and China in

the crude palm oil trade activity and also to understand the effect of CPO export to China on Indonesia's economic development. As seen with the positive relation between Indonesia and China these past years, this paper will analyse some effect towards Indonesia economy that could help Indonesia develop rapidly in the crude palm oil industry.

1.4 RESEARCH CONTRIBUTIONS

We expect that our research contributes to the literature in several way. First, the researchers provide a CPO export perspective in different research variables which are CPO export value to China (X1), CPO production volume (X2), middle rates (X3), inflation(X4) and Indonesia economy development (Y). Although these research variable have been suggested in past research (Hardiyanto,2021), other research variables are added. Furthermore, many research on crude palm oil export are not using variable such as middle rates (Prabowo, Hardyastuti, & Darwanto, 2020).

Second, our research contributes to the understanding of CPO export situations by providing a specific destination country, in particular, China. Other research uses main destination countries in 2001-2018 (Rosyadi, Mulyo, Perwitasari, & Darwanto, 2021), which China at that time is not included in the research. As a result, our research shows different results on CPO export activity specifically on China.

Finally, our research can contribute to the field by investigating the latest data in this field which is from 2012-2021. In particular, we address the latest and current situations regarding the export of CPO to China. As a result, the researchers shows changes on CPO export activity in both CPO export volume and CPO production.

1.5 SYSTEMATIC OF WRITING

This research consists of five chapters. Each chapter with different content and understanding. The six chapters are as follow:

CHAPTER I: INTRODUCTION

This chapter explains the problem, background of the research, goal, particular objectives, and general description of the research itself. Chapter I consists of background of the research, problem formulations, research objectives, research contributions, and systematic writing. Chapter I offers an overview of earlier studies in the same area of inquiry.

CHAPTER II: LITERATURE REVIEW

Chapter II consists of understanding the existing theories and previous research studies with the same based theories. With previous research as one of the tools that help this research accomplish. It consists of theoretical review, prior research, and conceptual framework.

CHAPTER III: RESEARCH METHODOLOGY

Chapter III consists of explanations of the method that is used in this research studies. In this research, the method that is used is multiple regression analysis. Data collection will be obtained from the statistical yearbook of Indonesia's government that was taken from the official Indonesian government website.

CHAPTER IV:DATA ANALYSIS RESULT

This chapter will focus on describing and explaining the research findings with the collected data. It includes general explanations of the research findings.

CHAPTER V: CONCLUSIONS AND DISCUSSIONS

This section discusses the conclusions and implications of the research that the we conducted.

CHAPTER VI: IMPLICATIONS AND LIMITATIONS

The last section discusses the implications, limitations and future research suggestions for concerned parties.

CHAPTER II

LITERATURE REVIEW

2.1 THEORETICAL BACKGROUND

2.1.1 EXPORT IN INTERNATIONAL TRADE

Exports are products and services that are manufactured in one nation that are sold to consumers in another countries. International trade is made up of both exports and imports. Instead of remaining within their own boundaries, countries frequently seek out foreign markets that are worldwide for business, giving for larger revenue and transactional prospects (Segal, 2022). The theories that best describe the purposes of this research would be Heckscher-Ohlin (H-O), Adam Smith and David Ricardo . Heckscher-Ohlin theory overall describes comparative advantage in international trade practice which relates to labour and capital with export capital intensive and import labour intensive (Syahnur, 2012). Countries with abundant labour and scarce capital will tend to export labour-intensive goods and import capital-intensive goods. Bertil Ohlin (1899-1979), a Swedish economist, established the idea on the basis of his master, Swedish economist Eli Filip Heckscher (1879–1952). According to this hypothesis, the most significant aspects of trade are relative disparities in factor endowments and factor of production prices . In accordance with this idea, countries should create and export products that call for abundant resources (factors) and imports that involve costly and scarce factors. An example of this theory is Indonesia that has an excess supply and natural resources of crude palm oil but has a very little supply of advanced technology such as a high speed train. Therefore Indonesia should export its crude palm oil to other countries and import advanced technology to develop its technology and economy. The approach emphasizes that as each nation makes the greatest effort to export commodities that are domestically abundant in nature, everyone benefits globally and through international trade. When nations import the commodities they lack natively, everyone gains.

Adam smith is one of the social philosopher who widely known on his economics writings. Adam Smith theory stated that the main source of a country’s wealth comes from economic growth and facilities that can be achieved through its international trade. The idea overall describe on how international trade requires a division of labour or superiority, in which countries requires to produce according to its country capabilities and capacities. The application of its performance according to its capacities is called as an absolute advantage, it aims to maximize its country economic growth so their country can compete with other competitor who only produce a few products. This theory focuses on absolute advantage which states

that a country will gain an absolute advantage if a country able to produce goods at a lower cost than other countries. According to this theory, if the prices of goods of the same type do not differ in various countries, then there is no reason to carry out international trade (Yuni & Hutabarat, 2021).

Another theory came from a man named David Ricardo, a famous English economist who stated a classical form on the rising science of economics in the 19th century. Based on David Ricardo theory on comparative advantages predicts which countries will become fully specialized rather than producing a variety of goods. David Ricardo theory stated that a country can also show the same international trade if the country can show excellence in providing different image without directly includes some supporting factors such as labour and capital in the country. In other words, a country that can produce goods with minimal cost can show excellence in international trade. This shows that countries that are required to have good skills in international trade in accordance with the aim of creating the uniqueness of each product. Countries specialize in their distinctive product, primarily because of lowest comparative cost considerations, and not just because of absolute advantage over other countries (Juniarty, 2022)

2.1.2 RELATIONS BETWEEN EXPORT ACTIVITIES AND ECONOMIC DEVELOPMENT

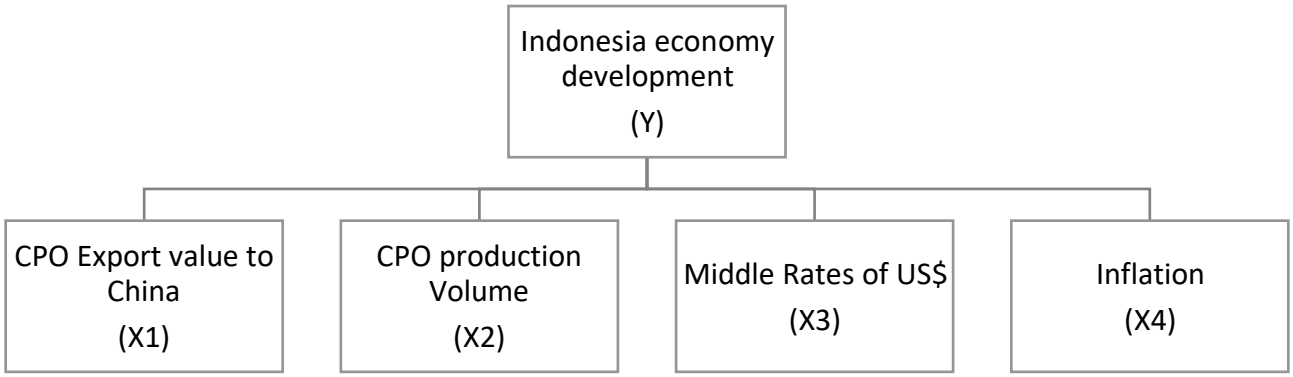
Export activities and economic development relationships have been viewed differently with various researches. An economic strategy known as "export-led growth" seeks to hasten the industrialisation of a nation by having that nation export goods where it has a competitive edge (Tran, 2010). Export-led growth generally entails opening the home economy to foreign markets and engaging in competition with them. This can be considered as an economic tactic used by many developing nations to fill a market gap for the export of a particular good or group of goods. By this tactic, nations hope to have a robust enough foreign exchange market to import goods at competitive prices (Hoang & Nguyen, 2012). exporting could help start-ups by enhancing their growth, financial performance, and competitive performance (Zahra, Neubaum, & Huse, 1997). There has been a lot of research on the factors that motivate businesses to export as a result of the significance of exporting for enhancing corporate success. The majority of prior study has concentrated on identifying the organisational characteristics, including the firm's age, size, resources, management systems and structure, and formal planning processes (Bijmolt & Zwart, 1994). Exports contribute to the growth of domestic industries, increased productivity, and job creation, all of which have a favourable impact on the nation's foreign exchange reserves and prosperity. Generally speaking, exporting businesses outperform non-exporting businesses; in particular, they tend to be more productive, capital-intensive, inventive, and efficient (kneller & pisu, 2007). A favourable influence of entrepreneurship in general on economic growth, as well as demonstrating that export

orientation contributes significantly to economic growth. This implies that export-driven new businesses, in particular, will contribute to knowledge spill overs, increased competitiveness, and enhanced diversity, ultimately leading to higher economic growth rates (Hessels & Stel, 2009). In relatively high countries, new initiatives with a strong export orientation contribute significantly to the economy's growth, although this is not necessarily the case in relatively low countries. Relatively high countries have more readily available technologies than less developed countries, and businesses are increasingly focusing on knowledge-based operations. As a result, overseas operations of new ventures may be founded on the existence of particular technological expertise, talents, and significant resources within the company (oviatt & mcdougall, 1997). There is also research stating that GDP, exports, and exchange rate are cointegrated. Any increase in export growth would be beneficial to economic development in both the long and short run (elbeydi, hamuda, & gazda, 2010). International competitiveness is becoming increasingly dependent on the capacity to generate and sell technology. Trade development between countries boosts economic growth by providing consumers with greater quality and cheaper goods, while also boosting a country's competitiveness. Governments that desire a larger share of this competitive environment must devote more resources to high-tech product exports (Sahin, 2019). Experience with well-managed export networks in Asia and anywhere else has demonstrated their usefulness in establishing export-related jobs and supporting rising wage growth for industrial employees as skills and improved productivity. Manufacturing wages within the most successful nations have been steadily rising, with a trend towards more skilled manufacturing techniques. Export platforms do not generally solve a country's unemployment and development concerns, but they can contribute a significant amount both directly and indirectly by serving as a model for other exporting enterprises (Radelet, 1999). Most of the research concludes that a high quality and a well-organized export could help boost the economic development of one country. Especially if they have a specialization commodities that they could focus on.

2.2 CONCEPTUAL FRAMEWORK

Figure 2.1 shows the conceptual framework of this research study.

Figure 2.1



Conceptual framework

The theoretical review has indicated what is the fundamental problem in this research. This conceptual framework will be used to execute the basic ideas that have been provided and are congruent with the research challenge. The conceptual framework shows that there are several factors that impacted the Indonesia economy development.

2.3 HYPOTHESIS DEVELOPMENT

Export activities such as exporting crude palm oil from Indonesia to China is one of the most beneficial trade relations between each country. Even though there are some challenges that will happen in 2022, Indonesia governments still commit and think that exporting commodities to China will bring great profit for the country. Chinese companies also commit to import crude palm oil from Indonesia, this can be seen with some Chinese companies joining a China chamber of commerce for import and export for foodstuffs, native produce & animal by-products (CFNA). Some Indonesian company that exports crude palm oil also joined some association such as a joint venture of Indonesian Palm Oil Entrepreneurs

gabungan Pengusaha Kelapa Sawit Indonesia (Gapki), Indonesian Vegetable Oil Industry Association *Gabungan Industri Minyak Nabati Indonesia* (GIMNI), Indonesian Edible Oil Industry Association *Asosiasi Industri Minyak Makan Indonesia* (AIMMU), and Indonesian Oleochemical Producers Association *Asosiasi Produsen Oleochemical Indonesia* (Apolin) (Nasution, 2022). Some other derivative products in one category are palm oil that is oleochemical. Oleochemical is a product that is taken from the oil of vegetables such as palm trees for daily household use such as soap, detergent , and cosmetics. Recently oleochemical has been a favourite export commodity to China with its price that is three times higher than crude palm oil. Last year's oleochemical export value was recorded at US$4.2 billion, of which US$1.5 billion came from China.

In April 2022 Indonesia announced a sudden ban of export activities from a particular commodity which is crude palm oil. At that time Indonesia was having a shortage of crude palm oil in the domestic market. As a result, Indonesia has a crisis on its major commodities for cooking. The ban started with an increase of maximum retail price (HET) for non-brand palm cooking oil from 11500 rupiah/litre (5.21 RMB) and 14000 rupiah for brand cooking oil to a whooping 19.800 rupiah (8.97 RMB) as the highest price. At that time, because of the high price of crude palm oil in the global market, producers of palm oil decided to just export most of their crude palm oil produce to other countries. Annual exports increased by 0.9 million tons to 34.9 million tons in 2021. On the 23rd of may 2022, Indonesia decided to revoke the CPO export ban. The supply of cooking oil in the country is Stable which in march 2022 was only 64.5 thousand tons/month rose to 211 thousand tons/month. The price of cooking oil at that time also became more stable from 19800 rupiah (8.97 RMB) to an average of 17600 rupiah/litre (7.97 RMB). There is also an increase of total workers in the palm oil industry. There are some impacts on these bands that happened in 2022, most of the workers, including 2.67 million farmers lost their job. Because of the ban, Indonesia export requests also decreased at that time. This could mean that crude palm oil really has a huge impact on most of Indonesia's farmers and Indonesia's economy. Indonesia's economy at that time became unstable as seen with other good prices starting to increase as well. Based on theoretical thoughts and referring to empirical studies that have been conducted by other scholars. The researchers would establish several hypotheses to achieve the goals of this research project. As a result, there is a positive and significant association between CPO exports towards economic development.

The hypothesis will help to explain the relationship between the independent variables which are CPO export value to China (X1), CPO production volume (X2), middle rates (X3), inflation (X4) and the dependent variable (Indonesia economy development (Y).

1. The relation between CPO export and economic development

An increase of export activity can be one of the additional contributions to an economy's growth and development, because it brings in more foreign exchange earnings. Both developed and developing countries mainly have similar factors which are export, GDP, and exchange rate that affect their economic development. These findings are supported with the research from Mustika; Haryadi; Siti Hodijah (2015) in a journal research shows that the Oil export and import value significant effect on Indonesia's economic growth. Other journal research from Bella Balassa (1978) proved that Intercountry differences in the increase of earnings have been significantly influenced by trade orientation. Furthermore, it is clear that countries that have consistently pursued an export- oriented policy have been able to increase income at a significantly lower investment cost. proving that, in addition to the contributions of both domestic and foreign capital and labour, export expansion has a positive impact on the pace of economic growth (BALASSA, 1978),which a hypothesis would be stated as follows:

H1: there is a positive influence between CPO exports to China towards Indonesia economic development.

2. The relation between CPO production and economic development

Palm oil production contributes mostly to the gross regional domestic product that will help economic development in a country. Stated by Stanislaus Risadi Apresian (2020) that the palm oil industry does generate employment opportunities, however the majority are low-skilled positions. It is obvious that the economic benefits of palm oil production may significantly enhance the lives of many smallholders in plantation provinces in Riau. Most of them see household income as the primary indication of progress, and their incomes rise when there is a high market for palm oil (Apresian, Tyson, Varkkey, Choiruzzad, & indraswari, 2020). which a hypothesis would be stated as follows:

H2: there is a positive influence between CPO production towards Indonesia economic development.

CHAPTER III

RESEARCH METHODOLOGY

3.1 TYPE OF STUDY

This research was conducted to analyse the effect of CPO export to China on Indonesia's economic development. We aimed to explain why an event, symptom, or phenomena happens, typically yields results that take the form of cause and effect, which is why we use explanatory research. Quantitative data will also be provided which refers to be calculated in a form of numerical data that will be processed using statistical analysis software. The researcher tested the theory by testing the hypothesis whether it was supported or refused the hypotheses.

3.2 TYPES AND METHODS OF DATA COLLECTION

The research data used in this research are secondary data from the statistical yearbook of Indonesia's government that was taken from statistical-BPS Indonesia website, namely statistical yearbook of Indonesia 2013-2022. Statistical data and newest information about CPO are taken from BPS province that has the largest output of CPO, namely Riau province, central Kalimantan province, north Sumatra province, west Kalimantan province, and east Kalimantan province. The quantitative data is in the form of time series data that is a series of data which are collected over consistent intervals of time, which we collected in a time series of statistical data variables from 2012-2021. The statistical variables under investigations are Gross domestic product and total value of export on CPO to China. Research data is converted into natural logarithmic form, so that parameters can be interpreted as elasticity. In this research model, the logarithm used is the natural logarithm (Ln). According to Sugiyono (2012) the use of natural logarithms (Ln) in research is intended to reduce excessive data fluctuations. The researchers also included other scholar studies, research papers, journals, and recent news that related with the analysis. To highlight the disparities in the viewpoints of the scholars, these documents were compiled and contrasted. Also, the article included interviews with economic specialists and news sources. We organized the research data according to year and by contents upon collecting it. Furthermore, in order to develop a better and more thorough understanding of the issue, we examined the changes throughout different time periods between China and Indonesia. Lastly, we displayed the findings by tables and figures.

3.3 POPULATION AND SAMPLE

Population is the group on whom you want to draw conclusions. The research population are data of Gross domestic product and total value of export on CPO to China, inflation, middle rates, and production volume.

The research samples are the figure of Gross domestic product and total value of export on CPO to China, inflation, middle rates, and production volume from 2012-2021. The sampling techniques that used in the research is a purposive sampling method that refers to selecting samples based on the judgement of the researcher. Utilizing research instruments for data collection which in the form of quantitative and statistical to aim the test hypotheses. The sample will be taken from the 2022 statistical yearbook of Indonesia's government that was taken from statistical-BPS Indonesia official website.

3.4 RESEARCH VARIABLE

3.4.1 DEPENDENT VARIABLE (Y)

In our research our dependent variable is Indonesia's economic development. Economic development is programs, policies, or initiatives aimed at enhancing a community's economic health and quality of life (British Columbia, 2023). In our research we choose economic growth as one of the tools to measure economic development. Economic growth is defined as the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. We used the data of Indonesia Gross domestic product (GDP) at current prices from the statistical yearbook of Indonesia's government statistical-BPS website in Indonesia rupiah (Rp). This is how to calculate economy growth:

$$Economy\ growth = \frac{GDP_t - GDP_0}{GDP_0} \times 100\%$$

GDP_t = GDP value activity in the later period

GDP_0 = GDP value activity in the earlier period

3.4.2 INDEPENDENT VARIABLE (X)

a) CPO Export value to China (X1)

CPO export value to China describes on the total value of each year based on the data that are mainly complied based on the export documents or export declaration to China that is filled by exporters. The values that will be used is the values of exports free on board (FOB). Export activities will have an impact on a country's economy where more foreign exchange is earned, along with the form of the export equation for economic growth (Yulinda, 2022). Export value data are taken from the UN Comrade website in US$ from 2012-2021.

b) CPO production Volume (X2)

Production is the quantity form of vegetable, fruit, medicinal, and ornamental plant based on the harvested area that is reported monthly, quarterly, and annually (BPS-statistics Indonesia, 2023). We use data from production of large estate crops by type of crops in our research, which is Crude palm oil. Estates are plantations that are organized and managed for profit by businesses with legal recognition. Estates are composed of both public and private plantations (BPS-statistics Indonesia, 2023). Production volume data are taken from the statistical yearbook of Indonesia's government statistical-BPS website in thousand tons from 2012-2021.

c) MIDDLE RATES OF US$ (X3)

Middle rates are the exchange rates that banks trade currencies between each other. Global banks determine and agree upon the mid-market exchange rate by calculating the midpoint between the purchasing and selling prices of the two currencies (Global Impact Finance Ltd, 2023). Middle rates of US$ data are taken from the statistical yearbook of Indonesia's government statistical-BPS website in Indonesia rupiah (Rp) from 2012-2021.

d) INFLATION (X4)

Price increases, or inflation, can be thought of as the gradual loss of purchasing power. The average price increase of a selection of products and services over time can serve as a proxy for the rate at which buying power declines (Fernando, 2023). Inflation metric can be calculated through the consumer price index, which is the average price of items that consumers purchase (Indeed Editorial Team, 2023). Inflation data are taken from the statistical yearbook of Indonesia's government statistical-BPS website in % from 2021-2021. Inflation equation could be written as follow:

$$inflation\ rate = \frac{CPI_b - CPI_a}{CPI_a} \times 100$$

CPI_b = consumer price index current year

CPI_a = consumer price index starting point

3.5 DATA ANALYSIS TECHNIQUE

Combining multiple linear regression analysis with the help of Microsoft Excel and IBM SPSS version 23 software. In our research we use a quantitative multiple linear regression analysis which is a statistical tool that demonstrates the link between a dependent variable and several independent variables with a purpose of defining the effect of CPO export to China on Indonesia's economic development. Our research panel data uses both time series data and cross-sectional data. Panel data was chosen to provide complete information and a higher degree of variability. The secondary data obtained from the statistical yearbook of Indonesia's government 2013-2022 that was taken from statistical-BPS Indonesia website and UN Comrade website.

3.5.1 CLASSICAL ASSUMPTION TEST

A classical assumption test is a statistical test that is used to demonstrate the relationship between two variables. It includes the tests for multicollinearity, heteroscedasticity, autocorrelation, and normality tests.

a) NORMALITY TEST

Normality test is used to demonstrate whether the distribution of the dependent and independent variables is normal. The regression model is close to normal, or the test results have normally distributed data (Alita, Putra, & Darwis, 2021). The normality test can be done using Kolmogorov Smirnov test. The Kolmogorov-Smirnov test is used to determine if a collection of data actually originates from a normal distribution, corresponding to the null hypothesis. In order to check for normality, testing statistics from the Kolmogorov-Smirnov test are utilised, together with a degrees-of-freedom parameter (University of Bristol, 2021). Kolmogorov-Smirnov test could be stated as a normal distribution if the significance level is more than 0.05, if it is less than 0.05 then the data distribution is not normal (Raharjo, 2021).

b) MULTICOLLINEARITY TEST

Multicollinearity test is used to find whether the variables in a multiple regression model have a high degree of correlation. The relationship between the independent factors and the dependent variable will be put off if there is a significant correlation between them. As a result, a decent regression model shouldn't have a connection between the independent variables or even be strongly linked but not mutually collinear (Ainiyah, Deliar, & Virtriana, 2016). With VIF 10 and Tolerance 0.10, multicollinearity is not present. On the other hand, multicollinearity exists if the VIF value is greater than 10 and the Tolerance value is less than 0.10. Moreover, a reference states that caution is required if VIF is greater than 5. VIF is a function of R2 between independent variables, VIF equation can be written as follows (Ainiyah, Deliar, & Virtriana, 2016):

$$VIF = \frac{1}{(1 - R_n^2)}$$

R_n^2 = Coefficient of determination variables at n-*th*

n = Number of independent variables (1, 2, ..., n)

c) HETEROSCEDASTICITY TEST

The heteroscedasticity test is used to determine whether the residual variance of the regression model differs from one observation to the next. With the assumption that confounding variables (error) have a constant residual variance, the regression formula is derived (range of errors approximately equal). If there is no heteroscedasticity, the regression model is good (Ghozali, 2007). The Glejser Test method can be used to test heteroscedasticity. Regression analysis is used to perform the Glejser test, using the absolute residual as the dependent variable. The significance value reveals the test's outcome value. Heteroscedasticity is not present when the significance level is greater than 0.05. Contrarily, heteroscedasticity emerges if the significance level is less than 0.05 (Griffiths, Lim, & Hill, 2011). Glejser test equation can be written as follows (Gujarati, 1988):

$$|Un| = a + b_n X_n + V_n$$

$|Un|$ = Absolute value of residuals

X_n = Variable of independent

V_n = Variable of residual (errors)

d) AUTOCORRELATION TEST

Autocorrelation test is used to determine whether the errors on a set of time series data have a linear correlation (Gujarati, 1988). Autocorrelation test can be done with the Durbin Watson test (DW), Value of the DW calculated in the final column of the SPSS output for the Table Model Summary. The indicator test determines whether a model is autocorrelation-based if the estimated DW value is outside of the lower limit (dL) and upper limit (dV) (Ainiyah, Deliar, & Virtriana, 2016). The DW equation can be written as follows (Ghozali, 2007):

$$d_{calc} = \frac{\sum_{i=1}^{n}(e_i - e_{i-1})^2}{\sum_{i-1}^{n} e_i^2}$$

e_i = Error at i-*th* (i=1,2,.., n)

N = Number of independent variables (1, 2, ..., n)

3.5.2 MULTIPLE REGRESSION ANALYSIS

In order to determine how much effect one variable has over other variables, multiple regression analysis was performed to determine the impact of a variable (Y) on a specific variable value (X). Multiple regression equation can be written as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \cdots + \beta_i X_i + \in$$

Y = dependent variables (Indonesia economy development)
β_0 = intercept
β_i = slope for Xi
X1 = CPO export value to China
X2 = middle rates of US$
X3 = CPO production volume
X4 = inflation
$\in$ = residuals of model's error term

In order to minimized biases, natural logarithm is used to minimize the variance of the research model. The function of natural logarithm is also used for testing. When X increases by a certain percentage, the interpretation is provided as an anticipated percentage change in Y. In econometrics, such relationships—where Y and X are both log-transformed—are frequently referred to as elastic, and the log X coefficient is referred to as an elasticity (Benoit, 2011). When both dependent and independent variables are log-transformed variables, multiple regression equation can be written as follows:

$$LnY = \beta_0 + \beta_1 LnX_1 + \beta_2 LnX_2 + \beta_3 LnX_3 + \beta_4 LnX_4 + \cdots + \beta_i LnX_i + \in$$

in general, these are the criteria to test the hypothesis in multiple regression analysis:

H_0 : There is no effect between the independent variable (X) and the dependent variable (Y). If the t test result for the regression is not significant or the Sig value t (p-value) is more than 0.05, the null hypothesis (H_0) is statistically acceptable.

H_a : There is an effect between the independent variable (X) and the dependent variable (Y). If the t test result for the regression is significant or the Sig value t (p-value) is less than 0.05, the alternative hypothesis (H_a) is statistically acceptable.

a) INDIVIDUAL PARAMETER SIGNIFICANCE TEST (T TEST)

T-test is used to evaluate whether there is a significant distinction in the averages of two groups and their relationships. The average values of two data sets are compared using a t-test to ascertain whether they represent the same population. The degrees of freedom and the t-value are the results of the t-test. The t-value, also known as the t-score, is a ratio of the variance present within the sample sets to the difference between their respective means. Higher t-score numbers denote a significant difference between the two sample sets. There is greater resemblance between the two sample sets when the t-value is lower (Hayes, 2022). The tests criteria used in this test are as follows:

For the first hypothesis:

1. H_{01} : β ≤ 0, CPO export value to China will not have a positive significant influence on Indonesia's economic development.
2. H_{a1} : β > 0, CPO export value to China will have a positive significant influence on Indonesia's economic development.

If the value of . $t_{1\ statistics} > t_{table}$ or the Sig t significant (p-value) is less than 0.05, it means the hypothesis that CPO export value to china will have a positive significant influence on Indonesia economy development is accepted.

For the second hypothesis:

1. H_{02} : β ≤ 0, CPO production volume will not have a positive significant influence on Indonesia's economic development.
2. H_{a2} : β > 0, CPO production volume will have a positive significant influence on Indonesia's economic development.

If the value of . $t_{2\ statistics} > t_{table}$ or the Sig t significant (p-value) is less than 0.05, it means the hypothesis that CPO production volume will have a positive significant influence on Indonesia economic development is accepted.

For the third hypothesis:

1. H_{03} : β ≤ 0, middle rates will not have a positive significant influence on Indonesia's economic development.
2. H_{a3} : β > 0, middle rates will have a positive significant influence on

Indonesia's economic development.

If the value of . $t_{3\ statistics} > t_{table}$ or the Sig t significant (p-value) is less than 0.05, it means the hypothesis that middle rates will have a positive significant influence on Indonesia economic development is accepted.

For the fourth hypothesis:

1. H_{04} : β ≤ 0, inflation will not have a positive significant influence on Indonesia's economic development.
2. H_{a4} : β > 0, middle rates will have a positive significant influence on Indonesia's economic development.

If the value of . $t_{4\ statistics} > t_{table}$ or the Sig t significant (p-value) is less than 0.05, it means the hypothesis that inflation will have a positive significant influence on Indonesia economic development is accepted.

b) SIMULTANEOUS TEST (F TEST)

F test is to determine the effect of the independent variable (X) simultaneously combined with the dependent variable (Y). To decide whether to accept or reject the null hypothesis it will need to use the F statistic. Both a F value and a F critical value must be included in the test findings. The F critical value is used to compare the F value to a specific value. The F statistic, or F value is the value obtained from the data. In general, if the computed F value for a test is larger than the F critical value, the null hypothesis can be rejected (Vaidya, 2023). The tests criteria used in this test are as follows:

For the fifth hypothesis:

1. H_{05} : β ≤ 0, CPO export to China, CPO production volume, middle rates and inflation will not have a positive significant influence on Indonesia economy development.
2. H_{a5} : β > 0, CPO export to China, CPO production volume, middle rates and inflation will simultaneously have a positive significant influence on Indonesia economy development.

If the value of . $f_{5\ statistics} > f_{table}$ for the Sig f significantly less than 0.05, it means the hypothesis that inflation will simultaneously have a positive significant influence on Indonesia economy development is accepted.

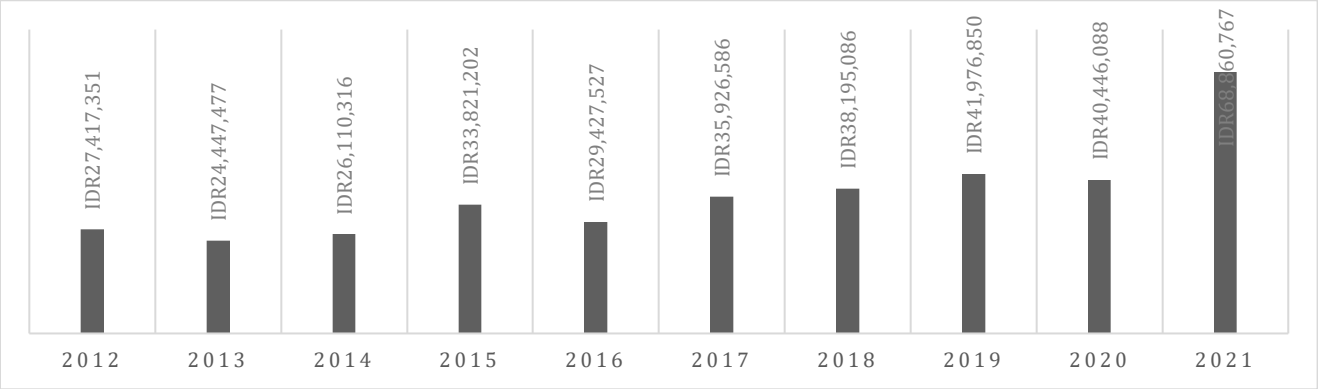
CHAPTER IV

DATA ANALYSIS RESULTS

4.1 RESEARCH ANALYSIS

4.1.1 CPO EXPORT VALUE AND PRODUCTION VOLUME

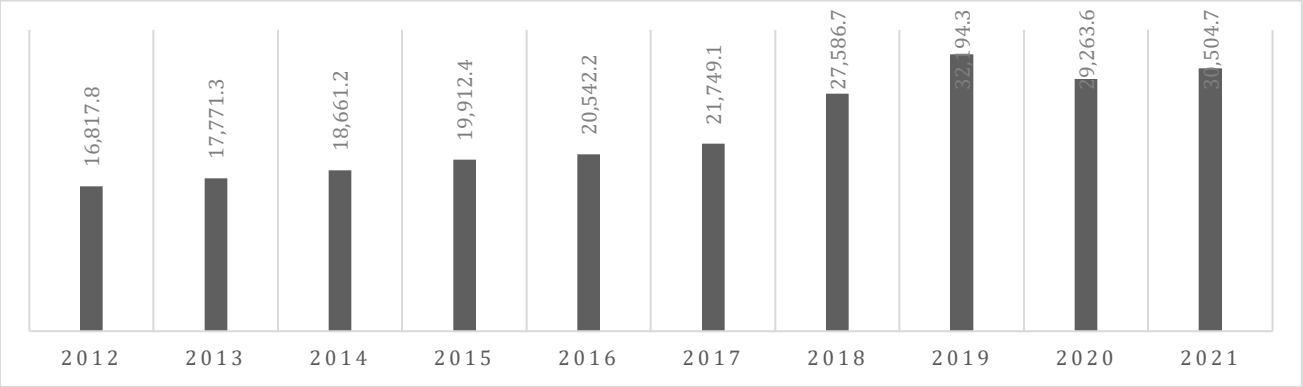
Figure 4.1



Indonesia CPO export value in million RP from 2012-2021

Source: Indonesia statistical yearbook 2013-2022

Figure 4.2



CPO production volume in thousand tons from 2012-2021

Source: Indonesia statistical yearbook 2013-2022

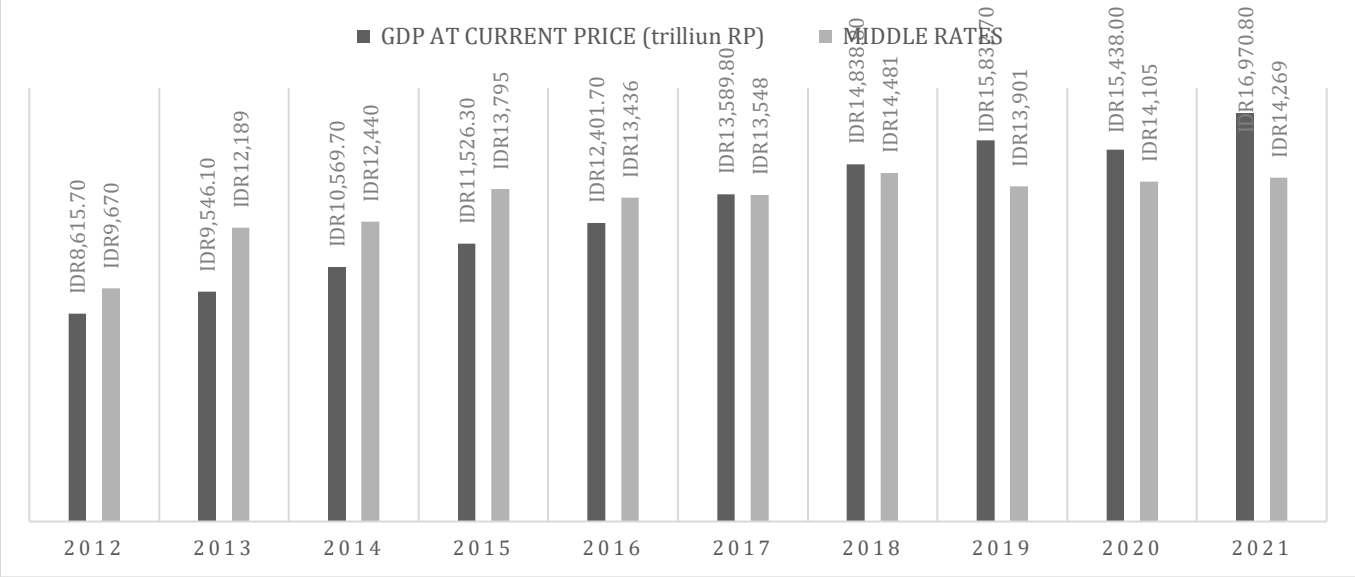
Crude palm oil export to China has been a favourite export commodities for Indonesia to China. Until now, the role of the palm oil industry in the national economy has not been replaced. This can be seen

from various aspects, including the palm oil industry which has absorbed at least 16 million workers. In addition, the palm oil industry also creates energy independence to replace fossil fuels through biodiesel (ditjenbun, 2022). Based on figure 4.1 it can be seen that the growth of palm oil export has gradually increased over several years. Even Though there are some decrease on 2012 from Rp27417351 millions to Rp24447477 millions in 2013, on 2015 from Rp33821202 millions to Rp29427527 millions in 2016, and in 2019 from Rp41976850 millions to Rp40446088 millions in 2020 as well the production of large estate crops on figure 3 from 32194.3 thousand tons in 2019 to 29263.6 thousand tons in 2020, other years were gradually increased. The biggest impact can be seen on 2021 Rp68860767 millions from 2020 Rp40446088 millions when the crude palm oil export value increase rapidly after covid-19 pandemic has been ease, this also can be seen on the production of large estate crops on figure 3 which there is an increase on 2021 30504.7 thousand tons from 29263.6 thousand tons in 2020. The reason why the decrease on 2020 palm oil export and production is because China's demand is starting to decline due to covid-19, the fall in oil prices to US$ 27/barrel (US$ 147/ton). In May 2020, China has recovered from the pandemic and has begun to import oilseed and vegetable oil in large quantities to restore depleted stocks which has pushed vegetable oil prices to increase (Sardjono, 2021). Even Though in 2020 the palm oil export decreases, the total export value in 2020 from other countries will increase and be higher than in 2019. The biggest decline in palm oil exports in 2020 came from China itself.

2021 is the year of recovery for covid 19 so demand for imported vegetable oil tends to increase, but other factors are weather, limited fertilizers, and labour shortages which affect the total decline in CPO exports. The low increase in CPO exports was due to limited supply, rising CPO prices, and the small price difference between palm oil and other vegetable oils, especially soybean oil. The influence of covid-19 has greatly impacted the demand for palm oil from importing countries due to changes in consumption levels and changes in import tightening regulations in various countries. (Sardjono, kinerja industri sawit 2021 & prospek 2022, 2022) On other hand Crude palm oil export to China will increase in October 2021 from 73.7 thousand tons or 11.79% to 698.8 thousand tons or 26.6% higher than 2020. Until October 2021, palm oil export value has been the highest so far (redaksi, 2021). This is what makes palm oil a commodity that plays an important role in the positive trend of the agricultural sector and at the same time has made it a leading export commodity for Indonesia. Of the total palm oil exports, more than 70 percent are refined CPO products (ditjenbun, 2022).

4.1.2 MIDDLE RATES, INFLATION AND INDONESIA ECONOMY DEVELOPMENT

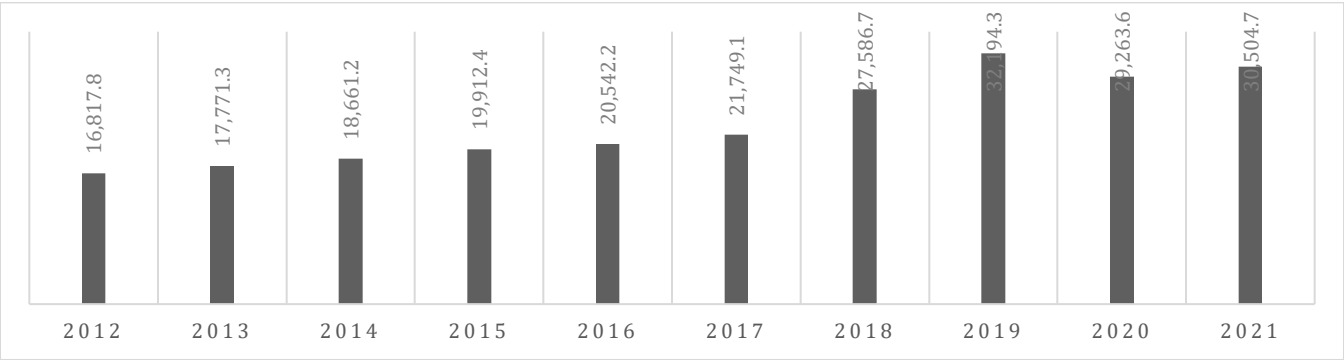
Figure 4.3



Indonesia GDP and Middle rates from 2012-2021

Source: Indonesia statistical yearbook 2013-2022

Figure 4.4



Inflation in % from 2012-2021

Source: Indonesia statistical yearbook 2013-2022

Based on figure 4.3 of GDP and middle rates it can be seen that there are several decreases in Indonesia GDP in 2020 from Rp15832.7 trillions in 2019 to Rp15438.0 trillions in 2020, this has caused

the Indonesian economy to experience deflation in 2020 or a drastic decline because economic development in Indonesia has an unstable movement. The inflation percentage in figure 4.4 can also be seen that in 2020 the percentage is decreasing from 2.714% in 2019 to 1.715% in 2020. The changes that occurred were influenced by the Covid-19 pandemic (Pratiwi, 2022). The Indonesian government has implemented a number of policies to break the chain of transmission of the Covid-19 pandemic, but despite the fact that these policies have significantly affected the decline in GDP, they have also reduced household consumption (RT) and non-profit institution consumption (LNPRT). Due to the situation, Indonesian spending was out of control and caused the economy's consumption of non-profit organisations serving households (LNPRT) to decline from 10.62 percent to -4.29 percent and household consumption (RT) to decrease from 5.04 percent to -2.63 percent. Consumption by the government fell from 3.25 percent to 1.94 percent. This is due to the Government's decision to focus on pandemic control in Indonesia and its decision to lower the allocation in the infrastructure sector in 2020 while increasing the budget for health. Investment also fell from 3.25 percent to 1.94 percent, along with consumption. The Indonesian economy suffered from this collapse. Due to the impact of decreased employment, the reduction in investment was larger. Exports and imports with foreign parties declined as well, from -0.87 to -7.70 percent for exports and from -7.69 to -17.71 percent for imports. Even though exports and imports fell sharply, it had an impact on the value of net exports during a downturn in the economy (Pratiwi, 2022).

In 2021 based on figure 4.3 GDP and middle rates, the GDP in 2021 is having an increase to Rp16970.8 trillions. These are the results of efforts to control the Covid-19 pandemic carried out by the Government together with all stakeholders, including all Indonesian people, have succeeded in boosting national economic growth by 3.69% (yoy) in 2021 (Limanseto, 2022). Additionally, this accomplishment will reclassify Indonesia as an upper middle-income nation. This position is a great starting point for encouraging structural changes and economic recovery in order to break out of the middle-income trap. The improvement in consumer confidence has encouraged a recovery in domestic demand, which has in turn prompted businesses to expand production. PMTB (investment), which increased by 3.80% (yoy) in 2021, became the main driver of spending growth. The processing sector, which accounts for the largest increase in production, succeeded in increasing its output by 3.39% (yoy) (Limanseto, 2022). Focusing on high added value export products, like nickel derivatives, is still a top priority. Construction of battery manufacturing facilities and smelting factories, which promote SOE cooperation with local and/or foreign investors, also boost this downstream process (Limanseto, 2022).

4.2 DATA ANALYSIS RESULTS

4.2.1 CLASSICAL ASSUMPTION TEST

Classical assumption tests are done to interpret the data in a way that makes it more relevant for analysis, and to verify whether the model's assumptions are being fulfilled. Classical assumption tests consist of normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. In order to conduct the multiple regression analysis, the data that is used in this paper must pass all of the classical assumption tests.

a) NORMALITY TEST

Kolmogorov-Smirnov test is one of the classical assumption tests that is used to test the normality of the data. Normality tests must pass and can be called as normally distributed to be able to proceed to other classical assumption tests. Distribution of data is normal if the significance level is greater than 0.05, otherwise if the value of significance level is fewer than 0.05 then the data distribution is not normal.

Table 4.1

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		10
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.01800438
Most Extreme Differences	Absolute	.238
	Positive	.238
	Negative	-.168
Test Statistic		.238
Asymp. Sig. (2-tailed)		**.116**[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Kolmogorov-Smirnov result

Source: IBM SPSS ver.23

Based on the SPSS output table 4.1, stated the significance level of Asymp. Sig (2-tailed) is 0.116 greater than 0.05. According to decision making in the Kolmogorov-Smirnov test, it can be concluded that the data is normally distributed. Thus, the normality assumptions or requirements in the regression model have been met.

b) MULTICOLLINEARITY TEST

Multicollinearity test is the next test that has to pass the requirement of classical assumption test. The purpose of conducting the multicollinearity is to test whether there is a strong correlation or relationship between the dependent variable and the independent variable. A good regression model should not have a correlation between the independent variables or no symptoms of multicollinearity. The basis for decision making in this test is if the value of the tolerance is bigger than 0.100 then there is no symptoms of multicollinearity in this regression model, otherwise if the value of tolerance is less than 0.100 then there is a symptoms of collinearity in the regression model. Another basis for decision is if the value of VIF is less than 10.00 then there is no multicollinearity in the regression model, otherwise if it is bigger than 10.00 then there is multicollinearity in the regression model.

Table 4.2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.510	.859		-.594	.578		
	LnX1	-.018	.004	-.176	-4.443	.007	**.782**	**1.278**
	LnX2	.526	.066	.554	7.942	.001	**.252**	**3.966**
	LnX3	.530	.103	.278	5.166	.004	**.423**	**2.363**
	LnX4	-.071	.024	-.164	-2.924	.033	**.391**	**2.557**

a. Dependent Variable: LnY

Multicollinearity result
Source: IBM SPSS ver.23

Based on the SPSS output table 4.2, stated that in table output “coefficients” in “collinearity statistics” the tolerance values for CPO export (X1) is 0.782 which is > 0.100, CPO production value (X2) is 0.252 which is > 0.100, Middle rates (X3) is 0.423 which is > 0.100, and Inflation is 0.391which is > 0.100. VIF value of CPO export (X1) is 1.278 which is < 10.00, CPO production value (X2) is 3.966 which is < 10.00, Middle rates (X3) is 2.363 which is < 10.00, and Inflation is 2.557 which is < 10.00. According to decision making in the multicollinearity test, it can be concluded that there are no multicollinearity symptoms in the data . Thus, the multicollinearity assumptions or requirements in the regression model have been met.

c) *HETEROSCEDASTICITY TEST*

The next test is heteroscedasticity with the purpose of to test whether in the regression model there is an inequality of variance from the residual value of one observation to other residual value. A good regression model should have no symptoms of heteroscedasticity. One of the ways to detect if there is a heteroscedasticity in the model is with a glejser test. If the significance value is more than 0.05 then there are no heteroscedasticity symptoms in the regression model, otherwise if the significance value is less than 0.05 then there are heteroscedasticity symptoms in the regression model.

Table 4.3

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.276	.341		-.810	.455
	LnX1	.002	.002	.447	1.547	**.182**
	LnX2	-.061	.026	-1.189	-2.339	**.066**
	LnX3	.095	.041	.909	2.318	**.068**
	LnX4	-.021	.010	-.888	-2.175	**.082**

a. Dependent Variable: Abs_RES

Heteroscedasticity result

Source: IBM SPSS ver.23

Based on the SPSS output table 4.3 in table output “coefficients” with the variable Abs_RES with the role as the dependent variable stated the significance sig. values for CPO export (X1) is 0.182, CPO production value (X2) is 0.066, Middle rates (X3) is 0.068, and Inflation is 0.082. Because all of the significance value of independent variable are more than 0.05. According to decision making in heteroscedasticity in the glejser test, it can be concluded that there are heteroscedasticity symptoms in the data . Thus, the heteroscedasticity assumptions or requirements in the regression model have been met.

d) *AUTOCORRELATION TEST*

The last test in classical assumption is the autocorrelation test. The purpose of this test is to know if in the regression model there is a correlation between confounding error in period t with confounding error in period t-1 (previously). If there is a correlation then it can be said to be an autocorrelation problem. A good regression model is a regression free of autocorrelation symptoms. In the Durbin Watson test if the value of d Durbin Watson < dL or d >(4-dL) then there is autocorrelation. If the dU<d<(4-dU) then there is no autocorrelation, and if dL<d<dU or (4-dU)<d<(4-dL) then does not draw any definite conclusions.

Table 4.4

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.997[a]	.994	.989	.02416	**2.506**

a. Predictors: (Constant), LnX4, LnX1, LnX3, LnX2

b. Dependent Variable: LnY

Durbin Watson model summary

Source: IBM SPSS ver.23

Table 4.5

Descriptive Statistics

	Mean	Std. Deviation	N
LnY	9.4445	.22975	**10**
LnX1	14.5850	2.27232	**10**
LnX2	10.0381	.24234	**10**
LnX3	9.4806	.12056	**10**
LnX4	1.2661	.53286	**10**

N value

Source: IBM SPSS ver.23

Table 4.6

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.472	4	.118	202.296	.000[b]
	Residual	.003	5	.001		
	Total	.475	9			

a. Dependent Variable: LnY

b. Predictors: (Constant), LnX4, LnX1, LnX3, LnX2

Df value

Source: IBM SPSS ver.23

With the Durbin Watson test in SPSS output table 4.4 stated that the value of the test is 2.506. in SPSS output table 4.5 stated that the value of N is 10 and the value of df is 4 in SPSS output table 4.6. Therefore

the value of dU with the N value 10 and df value of 4 is 2.4137 in the Durbin-Watson distribution table. There is no autocorrelation in the Durbin Watson test if dU<d<(4-dU), in this case the value is (4-dU)<d<(4-dL) or 0.3760<2.422<2.4137 so does not draw any definite conclusions. With that it can be continued with other tests, namely the run test.

Table 4.1

Runs Test

	Unstandardized Residual
Test Value[a]	-.00198
Cases < Test Value	5
Cases >= Test Value	5
Total Cases	10
Number of Runs	4
Z	-1.006
Asymp. Sig. (2-tailed)	**.314**

a. Median

Runs test.

Source: IBM SPSS ver.23

In the run test, there is autocorrelation if the Asymp. Sig (2-tailed) less than 0.05, otherwise if the Asymp. Sig (2-tailed) value is more than 0.05 then there are no autocorrelation symptoms. In the SPSS output table 4.7, the Asymp. Sig (2-tailed) is 1.000 which is 0.314>0.05. with that it can be conclude that there is no autocorrelation. Thus, the autocorrelation assumptions or requirements in the regression model have been met.

4.2.2 MULTIPLE REGRESSION ANALYSIS

a) INDIVIDUAL PARAMETER SIGNIFICANCE TEST (T TEST)

Individual parameter test or T test is one of the hypothesis tests in multiple linear regression analysis. The purpose of the T test is to know whether the independent variables (X) are partially affected by the dependent variable (Y). Based on the significant value, if the significance value less than 0.05 then there is an effect on the independent variables (X) towards the dependent variable (Y) or it could be stated that the hypothesis accepted. Otherwise if the significance value is more than 0.05 then there is no effect on the independent variables (X) towards the dependent variable (Y) or it could be stated that the hypothesis not accepted.

Table 4.8

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.510	.859		-.594	.578		
	LnX1	-.018	.004	-.176	-4.443	**.007**	.782	1.278
	LnX2	.526	.066	.554	7.942	**.001**	.252	3.966
	LnX3	.530	.103	.278	5.166	**.004**	.423	2.363
	LnX4	-.071	.024	-.164	-2.924	**.033**	.391	2.557

a. Dependent Variable: LnY

T test result

Source: IBM SPSS ver.23

Based on its significant value on SPSS output table 4.8. all of the variables were found to be significant, such as CPO export value to China (X1) (B= -.018< 0; Sig. = .007< 0.05), CPO production volume (X2) (B= .526 > 0; Sig. = .001< 0.05), middle rates (X3) (B= .530 > 0; Sig. = .004 < 0.05), and inflation (X4) (B= -.071 < 0; Sig. = .033< 0.05).

b) SIMULTANEOUS TEST (F TEST)

Simultaneous test or F test is one of the hypothesis tests in multiple linear regression analysis. The purpose of the f test is to know whether the independent variables (X) simultaneously take effect on the dependent variable (Y). Based on the significant value, if the significance value less than 0.05 then there is an simultaneous effect on the independent variables (X) towards the dependent variable (Y) or it could be stated that the hypothesis accepted. Otherwise if the significance value is more than 0.05 then there is no simultaneous effect on the independent variables (X) towards the dependent variable (Y) or it could be stated that the hypothesis not accepted. (X) towards dependent variable (Y) or it could be stated that the hypothesis not accepted

Table 4.9

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.472	4	.118	202.296	**.000[b]**
	Residual	.003	5	.001		
	Total	.475	9			

a. Dependent Variable: LnY

b. Predictors: (Constant), LnX4, LnX1, LnX3, LnX2

F test result

Source: IBM SPSS ver.23

Based on its significant value on SPSS output table 4.9. It is stated that the significance value sig. is 0.000. which mean Sig. = .000 < 0.05, the independent variable of CPO export value to China (X1), CPO production volume (X2), middle rates (X3), inflation(X4) simultaneously takes effect on the dependent variable Indonesia economy development (Y).

c. COEFFICIENT OF DETERMINATION (R^2)

The coefficient of determination is used to determine how much the variation of the independent variables together can explain the dependent variable. The higher the R^2 value indicates that the regression results are good. Based on the output test results of the coefficient of determination, it is known that the value of R^2 result is 0.994 or 99.4%. This explains that 99.4% of the variation of the independent variables is able to explain the dependent variable, while the remaining 0.6% is explained by other variables outside of the model used in this research.

Based on the T-test and F-test, it can be conclude in the table 4.9 below:

Table 4.9

Variable	B	t-statistics	sig.
(Constant)	-.678	-.762	.579
CPO Export Value (X1)	-.018**	-4.443	.007
CPO Production (X2)	.526**	7.942	.001
Middle Rates (X3)	.530**	5.166	.004
Inflation (X4)	-.072**	-2.924	.033
R-squared	.994		
F-statistic	202.296		
Sig. (F-statistic)	.000		

(**) significant at the level of errors (α) 0.05

Concluded result.

Source: IBM SPSS ver.23

4.2.3 HYPOTHESIS TESTING RESULTS

1. The significance value on CPO export value to China (X1) is 0.007>0.05 which indicates that CPO export value to China have a negative significant influence on Indonesia economy development. As it can be seen from its coefficient of X1 is -.018. This value shows a negative effect (opposite direction) between the CPO export to China variable and Indonesia economic development. This means that if the CPO export value to China variable increases by 1%, then on the contrary the Indonesia economy development variable will decrease by -.018. Assuming that the other variables remain constant.
2. The significance value on CPO production volume (X2) is 0.001<0.05 which indicates that hypothesis 2 which states that CPO production volume will have a positive significant influence on Indonesia economy development is proven and H_{a2} is accepted. The coefficient of X2 is .526. This shows that if CPO production increases by 1%, then Indonesia economy development will increase by .526 assuming the other independent variables are held constant. The positive sign means it shows influence.
3. The significance value on middle rates (X3) 0.004<0.05 which indicates that hypothesis 3 which states that middle rates will have a positive significant influence on Indonesia economy development is proven and H_{a3} is accepted. The coefficient of X3 is .530. This shows that if middle rates increase by 1%, then Indonesia economy development will increase by .530 assuming the other independent variables are held constant. The positive sign means it shows influence.
4. The significance value on inflation (X4) 0.003>0.05 which indicates that inflation have a negative significant influence on Indonesia economy development. As it can be seen from its coefficient of X4 is -.071. This value shows a negative effect (opposite direction) between the inflation variable and Indonesia economic development. This means that if the inflation variable increases by 1%, then on the contrary the Indonesia economy development variable will decrease by -.071. Assuming that the other variables remain constant.
5. Based on the F-test, The significance value is 0.000<0.05 which indicates that hypothesis will have a positive significant influence on Indonesia economy development is proven. This means that the independent variable of CPO export value to China (X1), CPO production volume (X2), middle rates (X3), inflation(X4) simultaneously takes effect on the dependent variable Indonesia economy development (Y) and 5 H_{a5} is accepted.

CHAPTER V

CONCLUSIONS AND DISCUSSIONS

In this research, we studied the effect of CPO export to China on Indonesia's economic development. The data that we use is from 2012-2021 with CPO export value to China (X1), CPO production volume (X2), middle rates (X3), and inflation (X4) as the variables. Among the hypotheses that we made, there are several results that are different from what the researchers expected. As we found that the effects of CPO export value to China (X1) on Indonesia economy development (Y) have a negative significant effect. This is in line with the findings of Dwi Kartikasari (2017) on occasion, a country may overemphasise one alluring non-value-added export such as crude palm oil at the expense of other sectors of its economy. Based on other findings by Muhammad Zahir (2012) found that, the reason of negative significant effect may be the cause of the export that primarily consist of raw materials rather than finished commodities. Exports contribution to the entire balance of payments is quite little and has little bearing on economic growth. As the result that has been conducted, the effect of inflation (X4) on Indonesia economy development (Y) have a negative significant relation. This is in line with the findings of Nguyen Hoang Tien (2021) that stated the opinion of many stakeholders, who believe that modest inflation has a beneficial impact on GDP growth whereas high inflation slows it down. GDP growth was significantly impacted negatively by hyperinflation. The population increase, excessive demand, and monetary policy were the causes. After the Vietnam War, there was a sudden rise in population, which increased demand for food and other goods.

As we expected that the effect of CPO production volume (X2) on Indonesia economy development (Y) have a positive significant effect. This is in line with the findings of Suwardi Hardiyanto (2021) that CPO production volume is significant to Indonesia economy development and growth. Based on research by Desi (2008), High palm oil production increases people's income that also impacting an increased on economy growth. The ability to create a given amount of capital, labour, raw materials, and technology determines how much can be produced. Bigger profits are made when the value of the produced products and services rises. It frequently causes stock values to rise and employment to increase (Ross, 2023). The effect of middle rates (X3) on Indonesia economy development (Y) have a positive significant effect. Based on a research by Sokolov (2011), If the exchange rate and gross domestic product have a positive relationship, it is obvious that export items will increase. Governments' primary goal is economic growth. There are strong relationships between exports, and exchange rates and macroeconomic factors that have an impact on economic growth, both directly and indirectly. Additionally, exported products can be pushed

by the finest regulations, the implementation of new technology, and a moderate exchange rate, which can all have a favourable impact on economic growth (Ali, et al., 2020).

CHAPTER VI

IMPLICATIONS AND LIMITATIONS

6.1 IMPLICATIONS

Throughout this research, we focus on finding the effect of CPO export to China on Indonesia's economic development from 2012-2021. Specifically, we proposed various data from Indonesia's statistics book and processed it with multiple regression analysis. There are two implications that may be drawn from our findings.

First, our findings suggest that CPO export volume to China still needs to be improved and stimulated towards GDP in Indonesia. This can be seen from the negative significant effect of CPO export volume to China on Indonesia economic development (GDP). The findings support a research found by (Prabowo, Hardyastuti, & Darwanto, 2020) that stated that Indonesia needs to conduct a policy related study related with the development of CPO export growth and performance.

Second, the researchers found that CPO production has a positive significant impact on Indonesia GDP. We suggest that the government should encourage exporters and other related parties to export and produce more processed palm oil that has a higher profit rather than exporting unrefined palm oil. This is in line with the findings from (Wahyuningsih, Budiarto, & Juarini, 2019), to increase CPO exports competitiveness is by increasing CPO national production.

6.2 LIMITATIONS

The researchers use 10 years data from 2012-2021, it has been conducted to find the effect of CPO export to China on Indonesia's economic development. First, the limitation we found is we may missed other variables to cover CPO categories to China, such as CPO production to China. The lack of specific data collection to China makes some studies and results undiscussed. Second, we found that the BPS website has a poor maintenance that made some data hard to find. Some of the data have many versions that slightly differ from each other. This made some numbers and data hard to process. Third, the researchers can not cover 2022 as the latest year because this research was made in 2022. Finally, the researchers did not put covid-19 as one of the variable because the researchers only focus on the effect of

CPO export to China on Indonesia's economic development in general. Covid-19 may have impacts toward CPO export to China towards Indonesia economic development.

6.3 FUTURE RESEARCH

Suggestions for future research are to cover more CPO categories that have not been covered in this research. Covering more CPO categories would make the data collection and sample easier to process. Future research should go with a longer time period to capture more or different outcomes with different involvement through the research process. Discussing further sections of CPO from different angles also could be done for future research, strengthening and improving some new CPO findings by testing it with much more theory and methods. Finally, future researchers could consider Covid-19 as one of the variable to conduct further research on the effect of CPO export to China on Indonesia's economic development.

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