THE EFFECT OF GROSS DOMESTIC PRODUCT, INTERNASIONAL CPO PRICE, CPO CONSUMPTION, AND INFLATION ON INDONESIA'S CRUDE PALM OIL EXPORT VOLUME

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ABSTRACT
Palm oil is one of the non-oil and gas export commodities from plantation products. *Crude palm oil (CPO)* has been recognized as one of the main agricultural commodities for Indonesia's exports. Indonesia is the largest producer of palm oil, which makes exports as one of the sectors that can advance the Indonesian economy. This study aims to analyse Indonesian palm oil exports to 10 main export destination countries, including the Gross Domestic Product of destination countries, international *CPO* prices, *destination country CPO* consumption, and destination country inflation. The data used in this study is secondary data for 2018-2022 and is quantitative data. Panel data regression method was used in this research, with test results showing that the right model used is a *fixed effect model*. The results of this study show that the Gross Domestic Product and inflation of destination countries have a significant negative influence. Meanwhile, *international CPO* prices and *CPO consumption* of destination countries have a significant positive influence on the volume of Indonesian palm oil exports to the 10 main destination countries in 2018-2022. This research can be a reference related to Indonesia's palm oil export policy.
Keywords: Palm oil export volume, GDP, International *CPO* Price, CPO consumption, Inflation.

INTRODUCTION

Export is a trade activity between countries. According to Government Regulation Number 10 of 2021, export is the activity of removing goods from the customs area. The customs area is an area belonging to the Republic of Indonesia that includes all certain areas in the Exclusive Economic Zone (EEZ). Export can occur when a country can produce goods or services in larger quantities and the needs in the country have been met. The transaction results from exports will obtain the value of money in foreign currencies referred to as foreign exchange, which is one of the country's incomes.

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An exporter is known as a person or institution that carries out export activities. Exports have a significant impact on a country's economy as they can expand the domestic market for manufactured goods and increase national income and increase employment. In carrying out exports, it can be done by legal entities or individuals on a large scale or small scale. In Indonesia there are two types of exports, namely oil and gas exports and non-oil and gas exports. Examples of oil and gas exports include oil and gas, while examples of non-oil and gas exports include agricultural products, plantations, forestry, animal husbandry, handicrafts, industrial goods, services, and minerals from mining.

Indonesia has abundant natural resources so that it can be utilized for export activities (Saleh Mejaya, Fanani, and Mawardi 2016). Data from BPS shows that from 2018 to 2023 it is stated that the non-oil and gas sector has a higher export value than the oil and gas sector. It can be concluded that the non-oil and gas sector has become the main sector in Indonesia's export activities in the last 5 years.

One of the non-oil and gas export commodities is its plantation products, namely *Crude Palm Oil* (CPO) which can generate foreign exchange for the country. This is important for a country's economy (Nugraheni, Kumaat, and Mandeij 2021). According to data in 2021, the area of oil palm plantations in Indonesia is 14.66 million hectares. Initially commercial oil palm plantations were located only on the island of Sumatra, but today oil palm plantations can be found on various other islands.

Over the past few years, palm oil has been recognized as one of the main agricultural commodities for Indonesia's exports (Prime 2018). Palm oil export growth is driven by demand and prices that compete with the most consumed vegetable oils. Palm oil which is one type of vegetable oil processed from palm oil which plays an important role as Indonesia's non-oil and gas export commodity. Since 2006, the highest CPO production in the world is Indonesia, followed by Malaysia (Nurcahyani, Masyhuri, and Hartono 2018).

There are several factors that can cause the rapid development of Indonesian palm oil (Prabowo, Hardyastuti, and Darwanto 2021). First, is Indonesia's natural conditions that are adequate for the growth of palm oil commodities. Second, is the high population growth in Indonesia. Third, there is an increasing trend of views among farmers that there is an opportunity for palm oil as a commodity with stable prices and will always be needed in the international market.

A country's Gross Domestic Product (GDP) can be one of the factors increasing global demand for CPO. When a country's GDP increases, the greater the country's opportunity to export and import. According to research (Trisakti et al. 2023), the GDP of Indonesia's CPO export destination countries affects the export of Indonesian palm oil products.

According to data from the *World Bank,* Gross Domestic Product (GDP) in the 10 main countries importing Indonesian palm oil from 2018 to 2022 has increased every

year. The United States has the highest total GDP among the 9 other countries at 25,462.70 billion USD in 2022, while Pakistan has the lowest total GDP of 9 other countries at 376.53 billion USD in 2022.

In international trade, the sale of a product uses payments in the form of foreign exchange or foreign exchange. Foreign exchange is all goods that can be used as a means of international payment and are accepted throughout the world. While foreign exchange is a foreign currency used as a means of payment abroad (Basuki and Prawoto 2014). International prices are used to facilitate price calculations, the currency unit used is USD. International price is the price of a product that prevails in the global market. International prices can affect a country's economy, especially countries that import or export certain commodities, such as palm oil. The international price of palm oil is the benchmark for Indonesia's palm oil exports.

Rising palm oil prices in the international market may increase export volumes. The relationship between international prices and export volume is that when commodity prices in the global market are higher than prices in the domestic market, demand for Indonesian palm oil will increase which results in an increase in palm oil export volume (Advent, Zulgani, and Nurhayani 2021). According to data from the *International Monetary Fund (IMF),* the price of Indonesian palm oil in 2018 reached 559.85 US$/mt. Meanwhile, the domestic price of Indonesian palm oil is lower at only 472.5 US$/mt. It can be concluded that high prices in the international market make it possible to increase the volume of Indonesian palm oil exports.

The amount of Indonesian palm oil production is increasing in line with the increasing needs of the community. The country's need for palm oil from Indonesia is also influenced by the amount of consumption of importing countries. The large amount of palm oil consumption from the country can result in an increase in demand for Indonesian palm oil exports. The amount of palm oil consumption indirectly affects the demand for Indonesian palm oil exports. In the long run, it is seen that global demand tends to increase for palm oil in line with population growth around the world, which in turn will encourage higher consumption of palm oil-based products (Ewaldo 2017).

In addition to the amount of CPO consumption, the inflation rate can also affect exports. Inflation is a condition where there is an increase in the price of goods and services that occurs continuously in a period. An increase in the price of one or two goods alone cannot be interpreted as inflation unless the increase expands or causes an increase in the price of other goods. The inflation rate in importing countries has an influence on the volume of Indonesian palm oil exports, because indirectly the increasing volume of palm oil exports can cause inflation (Pratomo and Saputra 2022).

The four variables above have been used in several previous studies. In the research researched by Anita Tiara, Jakaria, and Syafri (2023) using the variable Gross Domestic Product (GDP). The results of his research show that the GDP of Indonesia's

CPO export destination countries has a positive effect on the export of Indonesian palm oil products. Previous research using international CPO price variables showed that international CPO prices had a significant negative effect on the volume of Indonesian palm oil exports (Nuryanto and Ekasari 2023). The variable of CPO consumption statistically has a significant negative effect, namely changes in the amount of CPO consumption have a negative effect on the volume of Indonesian palm oil exports (Rosita, Haryadi, and Amril 2014). Then the inflation variable has a significant positive effect on Indonesia's palm oil exports (Pratomo and Saputra 2022).

RESEARCH METHOD

Data sources in this study come from various agencies and other related sources, namely: Central Statistical Agency (BPS), *World Bank, United Stated Department of Agriculture (USDA),* and *International Monetary Fund (IMF).*

Table 1

Data Collection Techniques

No	Information	Collection Techniques
1	GDP of 10 main countries to Indonesia's *CPO* export destinations for 2018-2022 in units (billion USD)	*World Bank*
2	international CPO *price* in USD in units (Metric Ton)	*International Monetary Fund (IMF)*
3	CPO *consumption* in 10 major importing countries from 2018 to 2022 in units (1000 Metric Tons)	*United Stated Departement of Agriculture (USDA),*
4	Inflation in the 10 main export destinations *of Indonesian CPO* in 2018-2022 in percent units	*World bank*
5	Export Volume of Indonesian palm oil in 10 major importing countries from 2018 to 2022 in units (thousand tons)	BPS Indonesia from 2018 to 2022

Source: BPS (2023), World Bank (1960-2022), IMF (2023), USDA (2023)

In this study using a panel data regression model, which is to determine a factor that affects the volume of Indonesian palm oil exports in 10 export destination countries within 5 years. In secondary data management, the author uses several statistical tools such as: Microsoft Excel 2019 and EViews 10. If Microsoft Excel 2019 is

used in creating tables and processing data, while if EViews 10 is used in progressing data that has been collected contained in Microsoft Excel 2019.

Panel data is combined data between time *series* and *cross section* data. The panel data consists of different data groupings as well as having time series data elements as well. The panel data regression method is used to determine the factors affecting product exports. The research variables used are the Gross Domestic Product (GDP) of importing countries, International *CPO* Prices, and *CPO consumption*. Fixed effect model, common effect model, and random effect model are the three models used for panel data regression. According to the fixed-effect model, the slope coefficient for each variable is constant, but the intercept coefficient is different for each cross-section unit. This model is also known as the Least Square Dummy model because a dummy modifier can be used to distinguish its intercepts.

The panel data regression model in this study is as follows:

$$Y = \alpha + \beta_1 PDB_{it} + \beta_2 HCPO_{it} + \beta_3 KCPO_{it} + e$$

Information:

Y　　　　　= Dependent variable (volume of Indonesian palm oil exports)
a　　　　　= Konstanta
GDP　　　 = Gross Domestic Product of importing country (US$)
HCPOI　　= International CPO *Price* (US$)
KCPO= CPO consumption (metric ton)
e　　　　　= *Error Term*
t　　　　　= Time
I　　　　　= Company

In the method of estimating regression models using panel data can be done with three approach methods as follows:

1. *Common Effect Model*

   A simple panel data model approach that simply combines *time series* and *cross section data*. According to *the common effect model* on panel data, the intercept and slope values of each variable are the same for all cross-section units and time series.

2. *Fixed Effect Model*

   The fixed effect model assumes that the slope coefficient of each variable is constant, but the intercept is different for each cross-section unit. To distinguish the intercepts, a dummy modifier can be used, so this model is also known as the *Least Square Dummy Variable (LSDV) model.*

3. *Random Effect Model*

   The model shows differences in individual characteristics and the time accommodated to the error model. This is because two elements, individual and

time, contribute to the formation of errors. Therefore, random error in random effect also needs to be broken down into error for the time component and combined error. The advantage of using *the Random Effect Model* can eliminate heterokedassticity.

RESULT AND DISCUSSION

The data quality test used in this study is the classic assumption test of panel data regression. Quality and instrument tests are essential in regression analysis of panel data to ensure reliable and consistent results. The classical assumption tests used in panel data regression methods are heterokedasticity tests and multicollinearity tests (Basuki and Yuliadi 2015).

The dependent variable analyzed in this study is the volume of Indonesian palm oil exports to the 10 largest export destination countries in 2018-2022 against the independent variable, namely the GDP of the 10 largest export destination countries expressed in units (US$). The international price of palm oil expressed in units (US$). The amount of Indonesian palm oil consumption in the 10 largest export destination countries in units (Metric Tons), and inflation in the 10 largest export destination countries expressed in units (annual%).

Data on each of the above variables is obtained from several agencies such as the BPS website (Central Statistics Agency), *World Bank*, *International Monetary Fund (IMF)*, and *United Stated Department of Agriculture (USDA)*. This study uses the classic assumption test of panel data using *Eviews 1.0 Software*. After regression of research data, the discussion was carried out by econometric analysis.

The heteroscedasticity test is a statistical test used to assess whether the variability of errors (residuals) in regression models or variance analysis is not constant across a range of predictor values. In statistics, heteroscedasticity refers to a situation in which the variability of errors is not constant across the levels of values of the predictor variables. If in residual variance on one observation the other remains called homokedasticity and if different it is called heteroscedasticity. A good regression model is homokedasticity or no heteroscedasticity. In this case, in the heteroscedasticity test results the probability value of all independent data is not significant which shows less than 0.05.

Table 2

Heteroscedasticity Test

Variable	Coeficient	Probabilitas
C	203.5886	0.0496
LOG(GDP?)	-6.333981	0.1442

LOG(INTERPRICE?)	1.349109	0.3778
LOG(CONSUMP?)	-3.359314	0.1362
INF?	0.076035	0.5174

Source: processed data

Based on the results in Table 2 above, it can be concluded that the probability value of GDP is 0.1442, International *CPO* Price is 0.3778, *CPO* consumption is 0.1362, inflation is 0.5174, where the probability of each independent variable is > 0.05 percent and free from heteroscedasticity.

The multiconlinearity test is a statistical method used to evaluate whether there is a high degree of correlation between two or more independent variables in a regression model. Multicollinearity occurs when two or more independent variables in a regression model have a strong relationship with each other. If multicollinearity occurs, the regression coefficient of the independent variable is insignificant and has a high standard error. Where the smaller the correlation of independent variables, the better the regression model will be (Basuki and Yuliadi 2015).

Table 3
Multicollinearity Test

	LOG(GDP)	Log(INTERPRICE)	Log(Cons)	Inf
LOG(GDP)	1.00000	0.05211	0.38537	-0.36520
LOG(Interprice)	0.05211	1.00000	-0.05355	0.35927
LOG(Cons)	0.38537	-0.05355	1.00000	-0.01783
INF	-0.36519	0.03592	-0.01783	1.00000

Source: processed data

Based on the results in Table 3 above, it can be concluded that independent variables are avoided or there is no multicollinearity problem. There is a correlation coefficient that < 0.9. If the number is greater than 0.9, it means that the model contains multicollinearity.

In the regression model estimation method using panel data, there are three approaches to choosing the best model, namely *the common effect model, fixed effect model,* and *random effect model.* In this case, panel data testing was carried out on all Indonesian export sample data in 2018-2022 in the 10 largest Indonesian palm oil export destinations such as India, China, Pakistan, the Netherlands, the United States, Spain, Egypt, Bangladesh, Italy, and Singapore.

There are three approach models used to analyze the best regression model to be selected. Test chow to determine the best model between *common effect* and

fixed effect. As for the hausman test, it is to determine the *fixed effect* or *random effect* that is most appropriate to use.

If the results of the chow test state accepting the null hypothesis, then the best method used is the *common effect model*, but if the results state rejecting the null hypothesis, then the best method used is the *fiexed effect model,* and further testing on the hausman test. The chow test is a test to determine the *common effect* or *fixed effect model* that is most appropriate to use in estimating data. A chow test is carried out to determine *the p-value,* if *the p-value* > 0.05 then H0 is accepted. Conversely, if *the p-value* < 0.05 then H0 is rejected.

Table 4

Chow Test

Test Summary	Statistic	d.f	Probabillity
Cross-section F	60.682794	9,36	0

Sumber: data diolah

Based on Table 4 shows the results of the chow test, the probability value of the statistical F test is 60.6082794 and the probability value is 0.0000. This indicates that the *p-value* is less than 0.05. So the chow test hypothesis rejects H0 and accepts H1. Therefore, from the results of the chow test, the best model used is the *fixed effect model.*

If the results of the hausman test state accepting the null hypothesis then the best method used is the *random effect model*. But if the hausman test rejects the null hypothesis, then the best method used is the *fixed effect model.*

Table 5

Hausman Test

Test Summary	Statistic	d.f	Probabillitas
Cross-section random	19.8363	4	0.0005

Source: processed data

In Table 5 can be seen the result of a probability value of 0.0005 which means less than 0.05. So the hausman test hypothesis rejects H0 and accepts H1. Therefore, from the results of the hausman test, the best model used is the *fixed effect model.*

Panel Data Model Estimation Results

Based on the results of the model specification test conducted by chow test analysis and hausman test, the best model used is the *fixed effect model*. The estimated

results showing the number of observations of the 10 main palm oil export destination countries from Indonesia from 2018 to 2022 are listed in the following table.

Tabel 6

Fixed Effect Test

Variabel	Coeficient	Std. Error	t-Statistic	Probability
C	9.173554	6.36683	1.440835	0.1583
LOG(GDP?)	-0.820960	0.28061	-2.925600	0.0059
LOG(INTERPRICE?)	0.277388	0.12452	2.227661	0.0322
LOG(CONSUMP?)	1.639255	0.27637	5.931480	0,0000
INF?	-0.017908	0.00820	-2.193560	0.0348

Source: processed data

Based on the results of statistical testing, it is known that the regression results obtained show good enough results to describe independent variables in research that can affect the dependent variable (export volume). There are four independent variables, namely GDP, and inflation have a negative influence, while the variables of international *CPO* prices, and *CPO consumption* have a positive influence on the dependent variable of Indonesia's palm oil export volume to the 10 largest export destination countries in 2028-2022.

The results of the study on testing GDP variables differed from the hypothetical estimates. The results of t-statistical tests on the GDP variables of export destination countries in log form, have a significant negative influence on the volume of Indonesian palm oil exports to the 10 largest destination countries. The GDP coefficient of export destination countries is -0.820960, which means that if there is an increase in GDP in the 10 largest export destination countries by one percent, the volume of Indonesian palm oil exports will decrease by 0.82 percent. PBD has a probability value of 0.0059 which means that GDP in the 10 largest export destination countries at one percent has a negative and significant influence on the volume of Indonesian palm oil exports.

Based on the regression results that have been explained, it shows that if there is an increase in GDP in export destination countries, it has an impact on decreasing the volume of Indonesian palm oil exports. This is possible because of the taste factor, namely people's tastes that tend to be healthier, so they prefer *healty food,* which is boiled or steamed food compared to food that goes through the frying process.

Increasing GDP in a country can encourage innovation in import substitution. There are alternatives to sustainable production and development. If there is a more environmentally friendly alternative or innovation in palm oil production, it allows a

country to optimize domestic production and reduce dependence on the product on the international market. This negative relationship may contradict the prevailing theory because if palm oil production continues to increase but is not balanced with supportive regulations from importing and exporting countries, it can cause a decrease in the volume of Indonesian palm oil exports.

For example, at the *World Trade Organization (WTO) session* held in October 2022, Indonesia was declared defeated by the European Union lawsuit regarding the ban on nickel ore exports. In the records of the Ministry of Trade of the Republic of Indonesia, downstream industries in Indonesia are considered immature. The downstream nickel industry, namely iron, in Indonesia is considered still undeveloped. *The WTO* considers a country that prohibits the export of a commodity in total, then the industry in that country must really develop first. Indonesia's defeat in the case could have an impact on Indonesia's palm oil exports, as it causes changes in trade policy or regulatory changes that affect the volume of Indonesian palm oil exports.

In addition, there is a possibility that export demand in importing countries will decline due to high consumption of domestic products, causing GDP from Indonesian exports to decline due to low demand for Indonesian palm oil exports. Economic growth also has a relationship with the environment. Oil palm plantations have an impact on the environment, oil palm plantations are perceived as having no sustainability aspects (*unsustainable*), causing deforestation, and lost wildlife habitat (Purba and Sipayung 2017).

Deforestation is normal in the development of several major countries in the world. Deforestation is a form of environmental degradation where one of the causes is oil palm plantations. If there is environmental degradation in a country, it has an impact on increasing operational costs due to natural resources whose productivity is hampered.

It can be seen in Kuznet's environmental curve theory, which links economic growth with environmental degradation. According to kuznet, income inequality increases with economic growth to a turning point and then decreases as better economic development progresses. So that the relationship between income and GDP inequality with environmental degradation has an inverted U-curve shape (Cahyani and Aminata 2020). Kuznet's theory of forming an inverse U-is relevant for various pollutants with higher income levels. The higher the income level of a country, it will focus on the issue of environmental degradation that hits and has an impact on decreasing imports (Yuhendra 2017).

The results of this study are in line with research conducted by Alfis Yuhendra (2017) entitled "Analysis of Determinants and Competitiveness of Indonesian Palm Oil Exports in the World Market". Where the GDP of export destination countries has a negative and significant effect on Indonesian palm oil exports. In contrast to the results of research conducted by Anita Tiara, Jakaria, and Syafri (2023) entitled

"Analysis of Export Determinants and Competitiveness of Indonesian Palm Oil Products in the International Market". Where the variable GDP of export destination countries has a positive and significant effect on Indonesian palm oil exports.

Testing on international *CPO price* variables, this study is in accordance with the hypothesis estimates. The results of t-statistical tests on *international CPO* price variables in log form have a positive and significant effect on the volume of Indonesian palm oil exports to the 10 largest destination countries. International *CPO* prices have a coefficient of 0.277388, which shows that if international *CPO* prices increase by one percent, it will increase the volume of Indonesian palm oil exports by 0.27 percent. With this increase, international *CPO* prices have a probability of 0.0322, which means that international *CPO* prices have a significant influence on the volume of Indonesian palm oil exports to the 10 largest export destination countries in 2018-2022.

Based on the regression results above, which shows that if international *CPO* prices increase, the volume of Indonesian palm oil exports will also increase. This certainly has a major effect on the economy of the exporting country, Indonesia. There are two possibilities that manufacturers do to meet the increasing demand for products. The first possibility is according to research by (Afif 2017), because there is a relationship between price and demand, if there is an increase in demand for products in large quantities and the goods in the hands of producers do not meet the volume of demand, then producers increase selling prices to suppress demand for goods. The seller can also use the opportunity to increase his profits.

The second possibility is that Indonesian palm oil producers tend to encourage increased production to try to meet high demand in the global market. The increase in the export volume of Indonesian palm oil due to the increase in international *CPO* prices will increase the value of exports so that it can also increase foreign exchange receipts for Indonesia. This certainly increases the income of oil palm farmers and workers in the palm oil industry and can encourage local economic growth in areas that depend on the palm oil industry.

According to an integrated market approach, the price *of CPO* in the global market greatly affects the price in the domestic market. *CPO* prices seem to continue to be under pressure. Prices are difficult to rise because a negative view of increasing production is still considered a burden that makes prices difficult to lift. The Indonesian government has intervened to ensure that Indonesian *CPO* products remain competitive in the global market. This was followed by the removal of export barriers, which were regulated by Minister of Finance Regulation No. 72/PMK.011/2008, which lowered export tax to 2.5 percent, and Regulation No. 159/PMK.011/2008, which lowered export tax to 0 percent. However, the decline in international prices still followed *Indonesia's CPO* price. Palm oil farmers are the most affected by the decline in domestic *CPO* prices , which of course harms palm oil producers (Adi and Widanta 2022).

The results of this study are in line with previous research conducted by A. Tiara, Jakaria, and Syafri (2023) entitled "Analysis of Export Determinants and Competitiveness of Indonesian Palm Oil Products in the International Market" and research conducted by I. Adi, A. Widanta (2022) entitled "The Effect of International *Crude Palm Oil* Prices, the Total Indonesian *CPO* Production, and the Rupiah Exchange Rate on *CPO* Exports Year 2004-2018". Where the variable international *CPO* price has a significant positive effect on the export of palm oil products. In contrast to the research conducted by U. Nuryanto, S. Ekasari, M. Asir, M. Tuatfaru, and F. Sairmaly (2023) who examined *The Analysis Effect of International Price, GDP, Land Area and Subtitutional Price on Export Volume of Indonesian Palm Oil.Where the international* CPO *price variable* has a significant negative influence on the volume of palm oil exports to India.

Based on the results of research on *CPO consumption variables* in accordance with the hypothesis estimates. The results of t-statistical tests on *CPO consumption variables* of export destination countries in log form, have a significant positive influence on the volume of Indonesian palm oil exports. CPO consumption *of* export destination countries has a coefficient of 1.639255, which means that if there is an increase in the amount of *CPO* consumption in the 10 largest export destination countries by one percent, the volume of Indonesian palm oil exports will increase by 1.63 percent. The probability value on the *variable CPO* consumption is 0.0000, which means that the amount of *CPO consumption* in the 10 largest export destination countries at one percent has a positive and significant influence on the volume of Indonesian palm oil exports.

The existence of *CPO* consumption variables that show positive results shows the relationship between consumption and export volume, where a product produced has the ability and potential in the country so that it can compete in the global market to meet the demand of Indonesian palm oil importing countries.

The increase in palm oil consumption in export destination countries has led to increased demand which will encourage an increase in the volume of Indonesian palm oil exports. The high amount of Indonesian palm oil consumption is certainly because more and more people are interested in consuming this palm oil. High demand can be caused by lifestyle changes, consumer preferences, or government policies related to palm oil consumption can affect demand. If trade policies in export destination countries implement policies that support the import of sawit palm oil such as reducing import tariffs, this can encourage an increase in the volume of Indonesian palm oil exports.

Palm oil has a more affordable price than other types of vegetable oils. The availability of palm oil is also quite high so that people can easily access the product in various markets. In addition, palm oil does not contain cholesterol, and products that have a composition from palm oil are considered to have a distinctive taste. In addition,

palm oil can be an alternative source of provitamin A to overcome vitamin A deficiency in Indonesia because of antioxidant activity that can improve liver health (Perdani, Zakaria, and Prangdimurti 2016).

The results of this study are in line with previous research conducted by Nur Arifah Ratna Safitri (2021) entitled "Factors Affecting Indonesia's *Crude Palm Oil (CPO)* Export Volume in 1985-2019". Where the variable *of world CPO* consumption has a positive and significant effect on the volume of *Indonesian CPO* exports.

The results of the study on testing inflation variables showed a difference with the hypothetical estimate. The results of the t-statistical test on the inflation variable of the destination country have a significant negative influence on the volume of Indonesian palm oil exports. The inflation coefficient of export destination countries has a value of -0.017981, which means that if inflation in export destination countries increases by one percent, the volume of Indonesian palm oil exports will decrease by 0.02 percent. The inflation variable has a probability value of 0.0348 which means that inflation in the 10 largest export destination countries at one percent has a negative and significant influence on the volume of Indonesian palm oil exports.

According to the results of the analysis conducted, every increase in inflation in export destination countries is followed by a decrease in the volume of Indonesian palm oil exports. The increasing volume of palm oil exports in the international sphere indirectly causes inflation, because inflation can measure competitiveness (Pratomo and Saputra 2022). High inflation causes the amount of foreign exchange reserves to decrease. When foreign exchange decreases, the level of demand also decreases. This is due to rising inflation, so that domestic prices of goods and services increase within a certain period of time. Economic activities are hampered and cause the prices of goods and services in importing countries to become less competitive and exports decline (Paramartha and Setyari 2020).

Fluctuations in inflation can be influenced by several factors, one of which is that if demand is greater than supply, it can result in the supply of production factors decreasing, the money supply increases, and economic and political chaos in the country. Therefore, to maintain exchange rate stability, the money supply must be as needed so that the inflation rate can be suppressed (Sonia and Setiawina 2016).

If the inflation rate in export destination countries is higher than the domestic inflation rate, it causes prices in export destination countries to be higher than domestic prices and also reduces competitiveness. So that it affects Indonesian palm oil importing countries to reduce import demand. This has an impact on decreasing the export volume of Indonesian palm oil.

The results of research on inflation variables are supported by research conducted by R. Ramadhana and S. Hadi (2023) entitled "The Effects of Inflation, Exchange Rates, and Palm Oil Production on Palm Oil Export Volume in Indonesia for the 1990-2020 period". Where inflation variables have a negative and significant effect

on the volume of Indonesian palm oil exports. In contrast to the research conducted by G. Pratomo and O. Saputra (2022) entitled "Analysis of Determinants of Indonesian Palm Oil Exports in Asian Countries-6 in 2011-2020". Where the inflation variable has a positive and significant effect on six Asian countries Indonesia's export trading partners.

CONCLUSION

The Gross Domestic Product (GDP) of destination countries has a negative and significant effect on the volume of Indonesian palm oil exports in the 10 largest destination countries in 2018-2022. This means that if there is an increase in GDP in the export destination country by one percent, there is a decrease in the volume of exports. This is not in accordance with the hypothetical estimate, because if the GDP of export destination countries increases, the country focuses on the issue of environmental degradation that plagues the palm oil industry and reduces demand for Indonesian palm oil imports, thus having an impact on decreasing Indonesian palm oil exports.

International CPO *prices* of destination countries have a positive and significant effect on the volume of Indonesian palm oil exports in the 10 largest destination countries in 2018-2022. This means that if international *CPO* prices increase by one percent, it will increase the volume of Indonesian palm oil exports. This is in line with hypothetical estimates, as Indonesian palm oil producers are likely to push for increased production to meet high demand in the global market. This has an impact on increasing the volume of Indonesian palm oil exports.

Destination *countries' CPO* consumption has a positive and significant effect on Indonesia's palm oil export volume in the 10 largest destination countries in 2018-2022. This means that if *CPO* consumption in export destination countries increases by one percent, the volume of Indonesian palm oil exports will increase. The availability of Indonesian palm oil is high enough so that people can easily access the product and the high public interest in Indonesian palm oil products will increase demand resulting in an increase in the volume of Indonesian palm oil exports.

Destination country inflation has a negative and significant effect on the volume of Indonesian palm oil minnyak exports in the 10 largest destination countries in 2018-2022. This means that if there is an increase in inflation in export destination countries increasing by one percent, the volume of Indonesian palm oil exports will decrease. High inflation in *CPO* export destination countries can cause the amount of foreign exchange reserves needed more if used for transactions between countries, so that goods and services become less competitive and will reduce export volumes.

Based on the conclusions of the analysis results that have been presented, it is necessary to continue sustainable and environmentally friendly agricultural practices because global consumers are increasingly paying attention to environmental issues

and sustainability issues, sustainability certification can increase market attractiveness. And Increase efficiency in the production chain to cope with potential cost increases due to inflation. Controlling production costs can help maintain profits despite inflationary pressures.

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