Determinant Of Indonesian Commodity Coffee Export In The Era Of Covid-19 Pandemic

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ABSTRACT
This study aims to analyze the factors of gross domestic product, total consumption, exchange rate, and export goods price index on export performance of coffee beans after pandemic Covid-19. This study uses secondary data and (Generalized Method of Moment). The study shows that the variable total consumption and value of exports show a positive and insignificant relationship and the variables of GDP and exchange rates show a negative and significant relationship with coffee commodity exports with exports of coffee commodities.

INTRODUCTION
The agriculture, forestry and fisheries sector plays an important role in Indonesia's economic activities (BPS, 2020). This can be seen from its contribution to the gross domestic product (GDP) which is quite large and is around 13.70 percent in 2020. One of the plantation sub-sectors contributes to GDP of around 3.63 percent of the first order of the agriculture, forestry and fisheries sector. In addition, this sub-sector is a provider of raw materials for the industrial sector, a labor absorber, and a foreign exchange earner.

Coffee is one of the commodities from the plantation sub-sector that has an important role in the Indonesian economy because it is a foreign exchange earner from other countries besides oil and gas. Indonesia is the fourth largest coffee producer in the world after Brazil, Vietnam and Colombia (Indonesian Coffee Exporters Association, 2022). Coffee commodities in Indonesia's plantation subsector are among the top 20 commodities with potential in the world market (International Trade Center, 2020). Through its official website, the International Trade Center noted that the total export of coffee beans through raw (unbaked) coffee bean commodities amounted to 1,068,563 US$ during the period 2009 - 2013 (International Trade
Center, 2020). When viewed from this data, it is known that coffee exports have a very important role in efforts to improve the Indonesian economy. Thus, as an exporter of coffee commodities, Indonesia must be able to compete with other countries to make the commodity the first choice of importing countries.

**Figure 1. Export Value of Indonesian Coffee Bean Commodities to 14 Trading Partner Countries (in thousands USD)**

Based on Figure 1, it can be seen that the highest export values of Indonesian coffee commodities are to the Philippines, the United States, and Japan. The highest export value to the Philippines occurred in 2019 at US$ 458,854,304. The highest export value to the United States in 2012 was 331,559,729 US$ but then decreased in 2013 to a value of 207,519,055 US$. The highest export value to Japan was in 2011 with a value of 174,712,200 US$, but decreased from 2012 to 2014.

However, Figure 1.1 shows that the development of Indonesian coffee commodity exports tends to decline. In general, the decline in the export value of coffee commodities is caused by several factors, namely from the production side, where plantation management, harvesting, and post-harvest handling are still inadequate and not in accordance with the provisions because almost all coffee produced in Indonesia is produced by smallholder plantations, which has an impact on the low quality of production (Manalu et al., 2019). Coffee commodity production in Indonesia still uses traditional methods, where farmers make mistakes in the picking process and post-harvest handling (Muzendi, 2014). Most farmers in coffee production centers harvest before harvest age to produce low quality. In addition, the declining development of coffee exports is a result of the implementation of the quota system and the number of competitors, especially from Latin American and African countries.

In 2020, 9 countries experienced a decrease in export value. The decline occurred, one of which was due to the Covid-19 pandemic. However, the level of decline did not occur significantly. So, this shows that even during the pandemic, coffee production is considered relatively stable, supported by a high level of marketing. The Covid-19 pandemic has an impact on the economic aspect. The implementation of quarantine in various regions on a local and international scale has caused economic growth to stagnate in all sectors (Abidin, 2021). So that there is a decrease in productivity due to low demand and use of transportation as import and export needs. According to the Ministry of Finance (2020), the Covid-19 pandemic has had a
significant impact on the global economy. The decline in global economic demand has also weakened the prices of various commodities.

The successful development of coffee commodities has an impact on creating conditions for a more equitable, just and balanced agricultural community. However, conditions in the field are still faced with an imbalance of market opportunities with the income of coffee farmers. Coupled with the conditions of the co-19 pandemic which can reduce sales and income from coffee commodities.

The novelty of this research is the use of the GMM method which is relatively new in coffee export research. There are several previous studies related to coffee commodity exports using the Revealed Comparative Advantage (RCA) method, such as in the research of Drajat et al. (2007). The next new thing is that this research uses the period of 2011 - 2022, that in 2020 - 2021 during the Covid-19 pandemic can put pressure on sectors that are vulnerable to fluctuations in coffee prices in the international market and decreased productivity (Fromm, 2022).

Based on the explanation above, this study aims to analyze the determinants of coffee commodity export performance in Indonesia with 14 trading partner countries with independent variables, namely total consumption (imports) of destination countries, exchange rates, export values, and GDP (gross domestic product) using the Generalized Method of Moment (GMM) analysis technique. While the dependent variable used is coffee commodity exports to 14 partner countries. The type of data used is secondary data in the form of panel data for the period 2011 - 2022. The data were obtained from the Central Statistics Agency (BPS), the International Monetary Fund (IMF), the International Trade Center (ITC), and UN Comtrade, and World Development Indicators.

**LITERATURE REVIEW**

According to Khan & Husain (2011), a country's consumption has a definite and significant influence on a country's import volume. A definite relationship can be explained if consumption increases, it is automatically followed by an increase in the country's import volume. Christianto (2013) argues that a country's consumption has a positive or definite influence on import volume and has a significant effect. This indicates that in a country that experiences an increase in consumption, the volume of imports will also increase which will have an impact, namely an increase in the exporting country.

GDP per capita in the destination country has a positive influence on the volume of Indonesian exports in the destination country. An increase in the GDP per capita of the destination country indicates a better level of peace and prosperity in a country as the income of the country's population has increased, which of course increases overall consumption. The higher the per capita income of the population of the importing country, the greater the purchasing power that will increase to increase the population's ability to import (Pradipta & Firdaus, 2015).

The exchange rate variable has a significant partial and simultaneous effect on exports. If the US dollar exchange rate increases, the ability of foreign countries to import from Indonesia will also increase. If this situation continues to occur and the value of the rupiah decreases, it can cause inflation where prices in Indonesia increase. Meanwhile, the exchange rate has a negative and significant impact on the level of Indonesian exports in the long run (Putri et al., 2016).

Export prices have a negative influence on the volume of Indonesian exports to destination countries. In addition, if there is an increase in export prices, it will have an impact on reducing demand for these commodities. An increase in commodity prices causes consumers or importing countries to look for similar commodities from other countries at lower prices. Thus, this condition will affect the decline in the volume of Indonesian exports to destination countries (Widyasanti, 2010).
METHODS

Sampling
This study was conducted on 14 trading partners of Indonesia namely Belgium, China, Egypt, Germany, India, Italy, Japan, Malaysia, Philippines, Russia, Singapore, Thailand, UK, and USA.

Data Collection
The type of research used is quantitative research with secondary data obtained through the International Trade Center (ITC) website. This research uses time-series and cross-section data in the form of data on the export value of Indonesian coffee commodities to 14 trading partners during the period 2011 - 2023.

Calculation
This study uses the Generalized Method of Moment dynamic panel (GMM) analysis technique. This study uses the basic model adopted from the research of Esposito (2017) and Yang & Martinez-Zarzoso (2014) modified by the research objectives. The use of GMM dynamic panel analysis technique makes it possible to find trade creation and trade diversion in the short and long term by moment analysis with E-Views regression software.

The research model built in this study is total consumption, GDP per capita, exchange rate, and export value that affect the export performance of Indonesian coffee commodities and analyzed using GMM techniques.

The model specifications in this study are as follows:

\[ \ln EX_{coffeeij} = \beta_0 + \ln EX_{coffeeij-1} + \beta_1 \ln ER_{ij} + \beta_2 \ln GDP_{ij} + \beta_3 FTA_{ij} + e_{ij} \]

Description:
\( \ln EX_{coffeeij} \) = Average value of Indonesian coffee commodity exports to country j in year t (thousand US$), in the form of natural logarithm (ln)
\( \ln EX_{coffeeij-1} \) = Average value of Indonesian coffee commodity exports to country j in year t-1 (thousand US$), in the form of natural logarithm (ln)
\( ER_{ij} \) = nominal exchange rate of country j against country i in year t (IDR), in the form of natural logarithm (ln)
\( GDP_{ij} \) = Gross Domestic Product (GDP) value of country j in year t, in natural logarithm form
\( FTA_{ij} \) = Dummy block of trade to see trade creation and trade diversion. The dummy variable will be 1 if Indonesia’s trading partner country is a non-ASEAN-China country and 0 (zero) otherwise. There is a trade creation effect if the coefficient of this variable is positive and significant, and trade diversion if the coefficient of this variable is negative and significant.

\( T \) = Time
\( I \) = Country Indonesia
\( j \) = 14 partner countries
\( \beta_0 \) = Parameter

RESULTS

The use of generalized methods of moments (GMM) analysis tools can identify in detail and is good at seeing the impact of trade creation and diversion on export products of superior plantation commodities. The steps in conducting GMM analysis are instrument validity test and instrument consistency. Instrument validity test to identify the validity of all instrument variables whose number exceeds the number of estimated parameters (over-identifying restrictions are
valid, instrument variables are not correlated with errors). The expected result is that the null hypothesis is not rejected with a significant level > 5%.

Table 1. Instrument Validity Test

<table>
<thead>
<tr>
<th>Metode</th>
<th>Prob. (J-Statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hipotesis Null (H0): Condition of Moment Valid</td>
<td></td>
</tr>
<tr>
<td>Sargan Specification Test</td>
<td>0.241632</td>
</tr>
<tr>
<td>Sumber: EViews 12, 2023</td>
<td></td>
</tr>
</tbody>
</table>

Based on the instrument validity test, the J-statistic value is 0.241632. This value is above the 5% significance level. So it can be interpreted that in this test conditions of moment have been found (the instrument used is valid).

Table 2: Consistency Test Results

<table>
<thead>
<tr>
<th>Test Order</th>
<th>Statistik</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR(1)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>AR(2)</td>
<td>0.702911</td>
<td>0.4821</td>
</tr>
<tr>
<td>Sumber: EViews 12, 2023</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The consistency test is used to ensure that the error term is not serially correlated in AR(2) so that the estimate obtained is consistent with the null hypothesis that there is no autocorrelation. The expected result is that the null hypothesis is not rejected with a significant level > 5% in the test. The coefficient of determination (R-squared) is between zero and one. Based on the test results above, the consistency requirement is met where the probability value of AR(2) > 5% is 0.4821.

Table 3. Unbiasedness Test

<table>
<thead>
<tr>
<th>Variabel</th>
<th>FD-GMM</th>
<th>FEM</th>
<th>PLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(COFFEEEXPORT(-1))</td>
<td>-0.049622</td>
<td>0.219545</td>
<td>0.870539</td>
</tr>
<tr>
<td>LOG(GDP)</td>
<td>-1.092652</td>
<td>0.386113</td>
<td>-0.031571</td>
</tr>
<tr>
<td>LOG(EXCHANGERATE)</td>
<td>-0.083113</td>
<td>-0.068178</td>
<td>-0.014950</td>
</tr>
<tr>
<td>LOG(CONSUMPTION)</td>
<td>0.007033</td>
<td>-0.008525</td>
<td>0.015673</td>
</tr>
<tr>
<td>LOG(IMPORTVALUE)</td>
<td>0.503264</td>
<td>0.407704</td>
<td>-0.019173</td>
</tr>
<tr>
<td>Sumber: EViews 12, 2023</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Then the unbiased test is carried out which aims to produce an unbiased linear estimator with minimum variance (Best Linear Unbiased Estimator = BLUE) so that no skewed regression occurs. The unbiased test requirement is that the FD-GMM coefficient value is between the FEM and PLS values. The results show that the coefficient value in the FD-GMM test is less than the FEM coefficient value, meaning that the unbiasedness is not met.

Table 4. Results of Coffee Commodity Export Performance Analysis

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Nilai</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(COFFEE XPORT)(-1)</td>
<td>Koef.</td>
</tr>
<tr>
<td></td>
<td>-0.049622</td>
</tr>
<tr>
<td></td>
<td>t-stat.</td>
</tr>
<tr>
<td></td>
<td>Prob.</td>
</tr>
<tr>
<td>LOG(GDP)</td>
<td>Koef.</td>
</tr>
<tr>
<td></td>
<td>-1.092652</td>
</tr>
<tr>
<td></td>
<td>t-stat.</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The table above shows that Gross Domestic Product (GDP) has a negative and significant effect on Indonesian coffee exports at the 5% and 10% levels. The probability value (p-value) on the GDP variable is 0.1841 and the regression coefficient on the GDP variable is negative 1.092652. This means that if GDP increases by 1%, the value of coffee exports decreases by 1.092652%, assuming other independent variables are constant. The negative regression coefficient indicates that GDP has a negative effect on the value of coffee exports, which means that the higher the GDP of a country, the lower the value of the country's coffee exports. This is in line with the results of Setiawan & Sugianti (2016) which state that GDP has not been able to encourage Indonesian coffee exports to the international market.

The exchange rate shows a significant negative relationship on Indonesian coffee export performance at the 1%, 5% and 10% levels. The exchange rate variable has a significant relationship affecting the performance of Indonesian coffee exports to ASEAN member countries and non-ASEAN members with a coefficient value of negative 0.083113. The negative value indicates that if there is a 1% decrease in the exchange rate, it will affect the increase in coffee export trade performance by 0.083113%. When the value of the country's currency depreciates and devaluation can also cause goods from abroad to have a high or expensive price, this causes exports. Research conducted by Kumar (2014) explains in an empirical study that depreciation can encourage an increase in the volume of exports directly. This shows that exchange rate fluctuations have an impact on the development of Indonesian coffee exports, especially on prices. Fluctuations in Indonesia's exchange rate have a significant effect on the development of coffee exports. The negative effect between exchange rates and international trade is exchange rate fluctuations, which can affect export values (Ashari et al., 2020). Because the price of domestic goods is considered much cheaper than foreign goods.

Total consumption in the coefficient value shows a positive but insignificant relationship to coffee exports. When there is an increase in consumption in importing countries by 1%, it will have an effect on increasing export trade performance by 0.007033%. The consumption variable which has a probability value of 0.7936 is greater than the alpha value of 1%, 5% and 10%, indicating that there is an insignificant relationship. It can be concluded that, the high level of consumption in importing countries will have an insignificant effect on the growth of coffee exports in exporting countries. The positive relationship between consumption and export development means that there is a unidirectional relationship. The result of Christiano's (2013) research is that a country's consumption has a positive influence on import volume. A positive relationship means that if a country experiences an increase in consumption, the volume of imports will also increase which will have an increasing effect on the exporting country.
The export value variable has a positive and insignificant influence on the development of coffee commodity exports. The coefficient value of the coffee commodity price index is 0.503264, thus indicating a positive relationship. Based on the coefficient value, there is an increase in the price index of goods which causes an increase in the performance of coffee export trade by 0.503264%. There is an insignificant relationship between the value of exports and coffee exports, it can be seen from the probability value of 0.2245 greater than the alpha value of 1%, 5% and 10%. The coefficient on this relationship is positive, indicating that there is a unidirectional relationship. When the value of exports increases in price, it will have an influence on the increase in coffee export performance. In addition, the increase in coffee export performance can encourage the growth of plantation sector exports as an effort to increase the global competitiveness of Indonesian products and increase the role of exports in spurring economic growth (Nopriyandi & Haryadi, 2017).

CONCLUSION
Based on the results of the analysis that has been carried out, the following conclusions are obtained:

1. In coffee bean commodities, the total consumption variable shows a positive and insignificant relationship. A positive relationship implies that an increase in total consumption can increase the performance of coffee bean exports. The total consumption variable has a (positive) effect on coffee exports, so the government together with exporters need to take the opportunity to fulfill the increased consumption of destination countries in order to improve coffee export performance by means of exporters collaborating with researchers to research, select and determine the quality standards of plantation commodities that the destination country wants, so that the results of the research can be a reference for exporters to be able to improve the quality of export goods.

2. GDP and exchange rate variables show a negative and significant relationship to coffee commodity exports. The GDP variable has a negative effect on the value of coffee exports, which means that the higher the GDP of a country, the lower the value of the country's coffee exports. The exchange rate variable has a negative effect on coffee exports, so the government needs to maintain exchange rate stability so that it makes it easier for exporters to determine selling prices and negotiate price offers with potential buyers.

3. The export value variable shows a positive and insignificant relationship to coffee commodity exports. A positive relationship implies that an increase in export value can improve coffee export performance. Recommendations that can be given are: 1) the government and exporters need to take the opportunity to meet the increasing consumption of destination countries, 2) the government needs to maintain exchange rate stability, 3) exporters are able to determine competitive prices in accordance with international market commodity prices, 4) the government can optimize the improvement, equity and ease of infrastructure services in the port sector, customs management services and customs systems.

SUGGESTION
In this section is a limitation of the scope of this research:
1. The objects used in this study are 14 trading partner countries of Indonesia, namely Egypt, Italy, the Philippines, Thailand, Belgium, Germany, Japan, Russia, the United Kingdom, China, India, Malaysia, Singapore, and America.

2. This research focuses on the export of Indonesian coffee commodities to 14 trading partner countries.

3. The method used in this research is GMM (Generalized Method of Moment).
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