Analysis of The Influence Between Mining, Agriculture and Processed Product Exports on Indonesia's Sales Development in International Trade in the Time Frame 2019-2022

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Abstract. Exports are one of the international trade activities that provide benefits to Indonesia, including capital transactions, employment, and foreign exchange reserves. There are 2 types of exports, namely oil and gas and non-oil and gas exports. The value of non-oil and gas exports tends to be higher than oil and gas exports. So this research focuses on three non-oil and gas sectors, which consist of mining, agriculture, and processing industry (processed products). The purpose of this study is to determine the effect of mining, agriculture, and processed product exports on Indonesia's sales in international trade in the 2019-2022 timeframe. This research uses a quantitative approach, and a multiple linear regression analysis model with the IBM SPSS 22 application. The research data comes from the Central Bureau of Statistics, the Ministry of Trade, and related agencies. The variables used include 3 independent variables and 1 dependent variable. The independent variables are mining exports (X1) with the commodities used are coal, copper, lignite, iron and steel, agricultural exports (X2), and exports of processed products (X3), and Indonesia's sales as the dependent variable (Y). Based on the results of the study, partially shows that mining exports, and processed products have a significant positive effect on Indonesian sales. While agricultural exports (X2) have no effect on Indonesian sales (Y).

Keywords: exports, mining, agriculture, processed products, sales

INTRODUCTION

Exports are international trade activities in the form of sending Indonesian products abroad under a sales and purchase agreement which is influenced by the domestic price of the export destination country, the import price of the destination country, per capita income of the population of the export destination country, the tastes of the people of the destination country and the exchange rate. (Rangkuty & Efendi, 2022). Apart from this, exports are also influenced by differences in climate, natural resources, geography, economic structure and social structure which can cause differences in commodities from one country to another. This allows each country to have its own strengths and weaknesses. So to overcome this, international trade can be carried out. For countries that need and lack resources, they can carry out international trade.
in the form of imports. Meanwhile, countries that have abundant resources can carry out export activities.

International trade can have a significant influence on a country's economy. When exports exceed imports in a country, the country will experience an increase in national income. Fitriani (2019) wrote that other benefits that a country can obtain from carrying out export activities include capital transactions, employment opportunities and foreign exchange reserves. Hodijah and Angelina (2021) write that one of the main and important sources of foreign exchange for a country is exports (Arifina & Adinugraha, 2022).

The increasing number of export activities can cause demand for domestic currency and the exchange rate to strengthen, in addition to reducing the unemployment rate due to full employment. Meanwhile, international trade in the form of imports carried out on a large scale can cause the domestic currency to weaken because demand for foreign currency is increasing, this can have an impact on decreasing domestic income and production, as well as increasing unemployment which will lead to weakening people's purchasing power (Sedyaningrum et al., 2016 in Ngatikoh & Faqih, 2020).

Export activities carried out by Indonesia are related to sales which lead to the Indonesian economy and GDP. The higher Indonesia's sales in international trade, the better. Based on data from the Central Statistics Agency as of August 2023, Indonesia's largest export output was non-oil and gas exports amounting to US$ 161,128,300,000. These non-oil and gas exports consist of mining, agriculture (including plantations, forestry, livestock and fisheries), and processing industry (processed products). So further analysis is needed to obtain information regarding the influence of exports of non-oil and gas mining commodities (coal, copper, lignite, iron and steel), agriculture, and processed products on Indonesia's sales in international trade in a certain time period. Therefore, this research was conducted to determine the influence of mining, agricultural and processed product exports on Indonesia's sales in international trade from 2019 to 2022.

LITERATURE REVIEW
Export Role

Exports are part of international trade, as are imports. Export is the activity of sending goods from within the country to abroad based on a sales and purchase agreement. The sale and purchase agreement is generally not much different from the sale and purchase agreement in a country. According to Law Number 2 of 2009 on the Indonesian Export Financing Agency, it is explained that exports are the activity of removing goods or services from the Indonesian
customs area within the territory of the Republic of Indonesia. Meanwhile, the Ministry of Trade defines export as removing goods from the Customs area. The customs area is the territory of Indonesia which includes land, water, air and certain areas in the Indonesian Exclusive Zone and the continental shelf. (Sutedi, 2014).

In simple terms, exports are a form of sales with a wider scope, namely international trade. Selling Indonesian products in international trade is able to increase the price of these products because of differences in prices and resources in each country, which benefits Indonesia as a seller. Exports make it possible to increase people's per capita income which can encourage economic growth in Indonesia, which is a developing country (Novulan Sari & Nur Syechalad, 2013 in Salsabila, 2021).

Exports can influence a country's economy in certain aspects related to the economy, including the exchange rate and national income. Based on the "Balance of Payment" theory, the difference between the value of exports and imports can be a driver of currency exchange rate fluctuations. The Rupiah exchange rate will increase if more countries import products from Indonesia. Apart from that, the Rupiah exchange rate can also increase if incoming capital is greater than outgoing capital. One source of incoming capital is exports (Fahmi, 2019)

**Development of Indonesian Sales in International Trade**

International trade is a trade transaction of a product from one country to another, where the product can be in the form of goods or services. International trade consists of exports and imports, countries that carry out international trade can be said to have an open economy. The benchmark for international trade is the ratio between exports and imports to national income, and the greater the ratio of exports-imports to national income, the more open the economy is said to be. (Kardhoyo and Nurkhin, 2016 in Kusuma et al., 2021)

Based on the graph above, sales of non-oil and gas commodities made by Indonesia from 2019 to 2022 experienced declines and increases. In 2019 Indonesia's sales amounted to
US$ 155,893.7 million. In 2020 it decreased to US$ 154,940.8 million. And from 2020 to 2022 sales will increase significantly (Indonesian Ministry of Trade, 2023).

Sales made in international trade can be known as exports. The increasing value of sales or exports made by Indonesia in international trade will have an impact on the Indonesian economy. This can be seen in the graph of Indonesia's income related to exports below.

![Graph of Indonesian Income Related to Exports](image)

Source: Central Statistics Agency, data processed

**Figure 2. Graph of Indonesian Income Related to Exports**

Indonesia's income related to exports from 2019 to 2022 has increased significantly. In 2019 to 2020, Indonesia's income related to exports increased by US$ 751.01 billion or 26%, this is inversely proportional to Indonesia's sales (exports) from 2019 to 2020 which decreased by 0.61%. Meanwhile, from 2020 to 2022, Indonesia's income and sales (exports) will increase significantly.

**Mining Sector**

Mining is the activity of extracting deposits of a material or materials that are below the earth's surface at a certain depth, either below the surface of the land or water, which can be done mechanically or manually. There are various kinds of materials that can be produced, including gold, silver, iron ore and iron sand, coal, nickel ore, and others.(Central Statistics Agency, 2023b)

Materials and materials that are successfully mined will be processed and used to make objects, such as gold ore and sand used for jewelry. The processing of mining products can be carried out by Indonesia or other countries. Other countries that need mining products produced by Indonesian mining and do not have sufficient quantities in their country can import them. Meanwhile, Indonesia exports mining products that the country needs. The Indonesian mining sector is considered to make a major contribution to state income and support foreign exchange for exports(Irwandy Arif, 2021)
In the mining sector, the commodities used in this research include coal, copper, lignite, iron and steel. With the development of mining output from 2019 to 2022, it tends to decrease and increase. From 2019 to 2020 there was a decline of 2.2%. From 2020 to 2021 there was an increase of 48.6%. And from 2021 to 2022 there has been an increase of 36.9%.

Agricultural Sector

The agricultural sector is an economic sector that focuses on the agricultural category which carries out activities utilizing and processing natural resources in the form of plants and plants to produce food and industrial raw materials. The agricultural sector is divided into several subsectors, including food crops, plantations, animal husbandry, forestry and fisheries. Apart from mining products, Indonesia also exports agricultural products. Exports of agricultural products are categorized into seasonal, annual, ornamental and breeding plant commodities; capture fisheries, aquaculture and livestock commodities; as well as forestry commodities (Central Statistics Agency, 2023a)
Export development in the agricultural sector tends to increase from 2019 to 2022. From 2019 to 2020 there was an increase of 14.64%. From 2020 to 2021 it increased by 2.99%, and from 2021 to 2022 it increased by 15.40%. 

**Processing Industry Sector**

The processing industry is an economic activity that changes materials, raw materials or goods mechanically, chemically or manually into semi-finished goods or finished goods which can increase the initial value of the material, raw materials or goods. The results of the processing industry can be referred to as processed products. Processed products can be in the form of goods and services. Processed products in the form of goods can include furniture, machines, medicines, clothing and accessories, handicrafts, food, drinks and others. Meanwhile, processed products are in the form of services such as repair services and installation of machines or equipment (Central Statistics Agency, 2023c)

Processed products produced in the processing industry sector are one of the main sectors in supporting the country’s economy, because among non-oil and gas exports, processed product commodities are ranked first in exports. From 2018 to 2022, exports of processed products have increased significantly. From 2019 to 2020 it increased by 2.91%, from 2020 to 2021 it increased by 35.18%, and from 2021 to 2022 it increased by 16.28%.

Source: Central Statistics Agency, data processed

**Figure 5.** Processing Industry Export Development Chart

Based on data from the Central Statistics Agency (2023), the value of export commodities in the processing industry sector from 2019 to 2022 has increased. From 2019 to 2020 it increased by 2.91%. From 2020 to 2021, it increased by 35.18%. And from 2021 to 2022 it will increase by 16.28% even though the weight of commodities has decreased.
RESEARCH METHODS

This research uses a quantitative approach with multiple linear analysis. Quantitative research is research that uses measurements, calculations, formulas and certainty of numerical data in planning and processes to draw conclusions (Musianto, 2002 in Waruwu, 2023). Multiple linear regression analysis is an analysis with an equation model that explains the relationship between the dependent variable (Y) and two or more independent variables (X). (Yuliara, 2016)

The data used in this research comes from the Central Statistics Agency, Ministry of Trade, and related agencies, in the form of time series data from 2019 to 2022 using monthly data for each year with a total data sample used of 48. This research tests the independent variable (X) namely mining exports (X1), agricultural exports (X2), and processed product exports (X3) on the dependent variable, namely Indonesian sales (Y). Multiple linear regression analysis was carried out using the IBM SPSS 22 application.

Before testing is carried out, researchers formulate a hypothesis as follows:

H1 : Mining exports have a significant influence on Indonesia's sales in international trade in the 2019-2022 period

H2 : Agricultural exports have a significant influence on Indonesia's sales in international trade in the 2019-2022 period

H3 : Exports of processed products have a significant influence on Indonesia's sales in international trade in the 2019-2022 period

H4 : Exports of mining, agriculture and processed products have a significant influence on Indonesia's sales in international trade in the 2019-2022 period.

The following is the multiple linear regression analysis used:

1. Classic assumption test
   a. Normality Test is a test on residuals or confounding variables. This test is carried out to find out whether the residual values are normally distributed or not.
   b. Multicollinearity test is a test to find out whether the independent variables have a relationship with each other or not. Which in regression, there should be no relationship between variables.
   c. The Heteroscedasticity Test is a test to determine whether there is a correlation between the independent variable and the residual/confounding variable. In regression, heteroscedasticity cannot occur.
d. Autocorrelation Test is a test to find out whether there is a correlation between the time series in the data or not. This means that autocorrelation cannot occur in regression.

2. Hypothesis test
   a. Model Reliability Test (F Test) is the initial stage in identifying whether the estimated regression model is feasible or not to explain the influence of the independent variable on the dependent variable.
   b. The Regression Coefficient Test (T Test) is used to test the regression coefficients and constants that are estimated to estimate whether the multiple linear regression model is an appropriate parameter or not to explain the behavior of the independent variable in influencing the dependent variable.
   c. The Determination Coefficient is used to explain variations in the influence of the independent variable on the dependent variable.

RESEARCH RESULT
1. Classic assumption test
   a. Normality test

![Figure 6. Histogram Chart](chart.png)
Based on the results of multiple linear regression analysis, there are 3 outputs related to the normality test, namely the histogram diagram, Normal PP Plot, and Kolmogorov Smirnov test results. In the histogram diagram, it forms a normal curve like a bell. In a Normal PP Plot, the distribution of points or plots follows a straight line. And in the results of the Kormogorov Smirnov test, the significance value (sig) is 0.082 ≥ 0.05. Which can be concluded, that the residual value is normally distributed.

b. Multicollinearity Test

## Table 2. Table of Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>X1</td>
<td>0.789</td>
</tr>
<tr>
<td>X2</td>
<td>0.436</td>
</tr>
<tr>
<td>X3</td>
<td>0.411</td>
</tr>
</tbody>
</table>
The linear regression model is free from multicollinearity if the tolerance value is more than 0.10 and the VIF value is not more than 10.00. So, based on the results of the tests that have been carried out, it is stated that there is no multicollinearity.

c. Heteroscedasticity Test

A linear regression model is said to be free from heteroscedasticity if the scatter plot displays a random distribution of points or plots and does not form a particular pattern or plot. Based on the resulting scatter plot, it shows that the points or plot are distributed randomly, so it is concluded that heteroscedasticity does not occur.

d. Autocorrelation Test

<table>
<thead>
<tr>
<th>Table 3. Test Run Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unstandardized Residual</strong></td>
</tr>
<tr>
<td><strong>Test Value</strong></td>
</tr>
<tr>
<td><strong>Cases &lt; Test Value</strong></td>
</tr>
<tr>
<td><strong>Cases &gt;= Test Value</strong></td>
</tr>
<tr>
<td><strong>Total Cases</strong></td>
</tr>
<tr>
<td><strong>Number of Runs</strong></td>
</tr>
<tr>
<td><strong>Z</strong></td>
</tr>
<tr>
<td><strong>Asymp. Sig. (2-tailed)</strong></td>
</tr>
</tbody>
</table>

There is no autocorrelation in the research if the sig value in the Run Test is greater than 0.05. So based on the results of the Run Test carried out it was 0.884 > 0.05. So it can be concluded that there is no autocorrelation.

2. Multiple Linear Regression Estimation

| Table 4. Table of Coefficients |
a. Research Model

\[ T = -92573849.919 + 0.226 X_1 - 4.220 X_2 + 1.371 X_3 \]

Based on the results of the regression equation:

1) The constant value is -92573849.919, meaning that if the variables mining exports (X1), agricultural exports (X2), and exports of processed products (X3) do not change or = 0, then Indonesian sales (Y) is -92573849.919.

2) The mining export variable (X1) has a positive coefficient of 0.226, meaning that when mining exports increase by 1%, Indonesian sales will increase by 0.226, if other variables do not change or = 0.

3) The agricultural export variable (X2) has a negative coefficient of -4.220, meaning that when agricultural exports increase by 1%, Indonesian sales will decrease by -4.220, if other variables do not change or = 0.

4) The processed product export variable (X3) has a positive coefficient of 1.371, meaning that when processed product exports increase by 1%, Indonesian sales will increase by 1.371, if other variables do not change or = 0.

b. Model Reliability Test (F Test)

**Table 5. F Test Output Anova Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>8.894E+20</td>
<td>3</td>
<td>2.965E+20</td>
<td>101.843</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>1.281E+20</td>
<td>44</td>
<td>2.911E+18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1.017E+21</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Penjualan Indonesia

b. Predictors: (Constant), Produk Olahan, Pertambangan, Pertanian

Based on the anova table, the prob. The calculated F (sig) is 0.000 and is smaller than the significance level, namely 0.05. So it is concluded that the estimated linear regression model is suitable to be used to explain the influence of the independent variables, namely exports of mining, agriculture and processed products, on the dependent variable, namely Indonesian sales.
c. Regression Coefficient Test (T Test)

**Table 6. Table of Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-925736410</td>
<td>1307742311</td>
<td>-.708</td>
<td>.483</td>
</tr>
<tr>
<td>Pertambangan</td>
<td>.226</td>
<td>.103</td>
<td>.133</td>
<td>2.202</td>
</tr>
<tr>
<td>Pertanian</td>
<td>-4.220</td>
<td>5.277</td>
<td>-.065</td>
<td>-.800</td>
</tr>
<tr>
<td>Produk Olahan</td>
<td>1.371</td>
<td>.123</td>
<td>.933</td>
<td>11.183</td>
</tr>
</tbody>
</table>

The T test can be seen from the coefficient table, prob value. T count (sig). The independent variable has a significant effect if the sig value <0.05 and the t > t table value is 2.015. If the coefficient of the independent variable is positive, then the variable has a significant positive effect. Based on the test results, it was concluded that X1 and X3 had a significant positive effect on Y, while X2 had no effect on Y.

d. Coefficient of Determination

**Table 7. Model Summary Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.935&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.874</td>
<td>.866</td>
<td>1706158444</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Produk Olahan, Pertambangan, Pertanian

b. Dependent Variable: Penjualan Indonesia

Based on the model summary table, the adjusted R square value of 0.866 indicates that the proportion of influence of the independent variables, namely exports of mining, agriculture and processed products, on the dependent variable, namely Indonesian sales, is 86.6%, while the remaining 13.4% is influenced by other variables, not present in the linear regression model.

**DISCUSSION**

**Influence of Mining Exports (X1) on Indonesian Sales (Y)**

Based on research results, mining exports (X1) has a significance value of 0.033 ≤ 0.05 and a calculated t value of 2.202 ≥ 2.015. This means that mining exports (X1) have a significant effect on Indonesian sales (Y). So based on the hypothesis that has been formulated,
H1 is accepted. With a regression coefficient value of 0.226. This means that when mining exports increase, Indonesian sales will also increase.

This is in line with research (Julfendi, 2022) which states that mining exports have a significant positive influence on the Indonesian economy, which includes sales. This can be because Indonesia is one of the countries that has very high potential mineral reserves, one of which is ranked third globally for nickel produced and copper is ranked second. (Budiarso & Zuhri, 2019)

**Influence of Agricultural Exports (X2) on Indonesian Sales (Y)**

From the results of the tests carried out, it was obtained that the significance value is 0.428 > 0.05 and the calculated t value is \(-0.800 < 1.679\). So, it is concluded that agricultural exports (X2) have no influence on Indonesian sales (Y).

This is also supported by the results of previous research conducted by (Julfendi, 2022) states that exports of agricultural products do not have a significant effect on the Indonesian economy. Apart from the fact that agricultural exports have little value, this is also influenced by agricultural land which is increasingly narrowing due to residential and infrastructure development. Some Indonesian agricultural products also cannot meet domestic needs, causing Indonesia to import.

**Influence of Processed Product Exports (X3) on Indonesian Sales (Y)**

In the test results, the significance value is 0.000 ≤ 0.05 and the calculated t value is 11.183 ≥ 2.015. So it can be said that exports of processed products (X3) have a significant effect on Indonesian sales (Y). So from the hypothesis formulated, H3 is accepted. With a positive regression coefficient value of 1.371, this means that when exports of processed products increase, Indonesia's sales will also increase, likewise if there is a decrease.

The more products exported by Indonesia increase, the more production, sales and income derived from these exports will also increase. So that foreign exchange receipts from abroad will be higher (Ramadhan et al., 2023)

Based on data from the Ministry of Trade, from 2019 to 2022, export results of processed products tend to increase. One of the factors influencing this is the cessation of exports of raw materials through consistent industrial downstreaming and exporting semi-finished goods or finished goods that have been processed domestically, as well as the takeover of shares in foreign companies that manage Indonesia's natural resources. This allows Indonesia to increase the selling value of a product and earn more income from sales in international trade than selling it in the form of raw materials (Ministry of State Secretariat, 2022)
CONCLUSION
Based on the results and discussion that have been presented, it can be concluded that:

1. Mining Exports (X1) has a significant positive effect on Indonesian Sales (Y).
2. Agricultural Exports (X2) no influence on Indonesian Sales (Y).
3. Export of Processed Products (X3) has a significant positive effect on Indonesian Sales (Y).
4. Simultaneously, exports of mining and processed products have a significant influence on Indonesian sales. Meanwhile, agricultural exports do not have a significant effect.

SUGGESTION
In connection with the research results, the following are several suggestions that can be given:

1. The government can regulate export restrictions on mining products, and focus more on processing them domestically before exporting.
2. The government can increase investment in the processing industry sector (processed products) because it has the potential to increase the selling value of a product and can open up more job opportunities. So that Indonesia's potential wealth can be processed domestically and sales in international trade are more profitable.
3. In future research, other variables can be added that have the potential to influence Indonesian sales, such as oil and gas exports, to deepen understanding of the factors that influence sales.

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