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Factors Affecting Indonesian's Iron and Steel Export to Singapore

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ARTICLE INFO	ABSTRACT
	This study aims to determine the effect of Singapore's Gross Domestic Product (GDP), Inflation, and the Rupiah/US$ exchange rate on Indonesia's iron and steel exports to Singapore from 2006-2021. This study uses secondary data which is time series. The method used in this study is Ordinary Least Square (OLS) for the multiple linear regression analysis model using the Eviews 10 statistical program. The results of this study indicate that simultaneously GDP, inflation, and the exchange rate have a significant effect on the value of Indonesia's iron and steel exports to Singapore in 2006-2021. Partially, Singapore's Gross Domestic Product (GDP) and inflation have had a positive effect on Indonesian iron and steel exports to Singapore from 2006-2021, while the Rupiah exchange rate against the US has a negative effect on Indonesian iron and steel exports to Singapore in 2006-2021. Keywords: Export, Gross Domestic Product (GDP), Inflation, Exchange Rate

1. Introduction

International trade is one way to meet the needs of a country because each country has different levels of needs and resources. It can be said that international trade which is described as trade between countries that occurs in the world today is an activity that must be carried out by every country as a strategic and practical policy. International trade is one of the activities that aims to improve the welfare of its population in the era of globalization and digitalization, technological advances and supporting access can move goods or services by every country in the world faster and more efficiently.

The iron and steel industry is one of the strategic industries in the Indonesian economy that contributes directly to the creation of output and added value. Indonesia is the 8th largest iron and steel producer in the world and one of the largest producers in Southeast Asia. The iron and steel industry is very important to the economy as it provides raw materials for various manufacturing, construction, and infrastructure industries.

The Central Statistics Agency (BPS) noted that from 2018-2022 iron and steel exports continued to increase. In the year 2021, iron and steel exports contributed US$ 20,949 million, and became the third largest export contributor as Indonesia's leading export commodity in the non-oil and gas sector.

Singapore's iron and steel industry is one of the most important industrial sectors in the country. Singapore is one of the most developed countries in the world located in the Southeast Asian region. Singapore is an industrial country, even becoming an industrial pioneer in the Southeast Asian region. Singapore is a country in Southeast Asia that does not have mining products. For its needs, Singapore imports mining goods from several countries, one of which is Indonesia which is a country rich in mining products.

According to Mankiw (2015) and Samuelson & Nordhaus (2004) factors that affect exports are foreign income, foreign and domestic prices, exchange rates (exchange rates), consumer tastes, government policies, etc. The value of exports is also affected by the inflation rate of a country. Indonesia is one of the developing countries. A common problem that developing countries often face is the high rate of inflation in this case domestic inflation.

The high rate of inflation causes prices in the market to increase. Inflation is a matter of concern in any country. For example, inflation can result in a decrease in the value of exports and an increase in imports. This makes many business actors experience difficulties and because of fluctuations that are too frequent, this causes uncertainty for business actors. In general, the value of inflation that continues to rise causes productive activity to be very unprofitable, productive investment will decrease and the

level of economic activity will Decrease. Price increases cause the country's goods to be unable to compete in the international market, so exports will decrease (Sukiro, 2006).

The development of Indonesia's exchange rate in 2012-2021 shows that Indonesia's exchange rate against the US Dollar has increased from 2012 and decreased in 2019, meaning that the rupiah exchange rate tends to depreciate. This depreciating exchange rate is expected to increase exports. Indonesia's iron and steel exports to Singapore do not increase but instead tend to decrease, supposedly when the exchange rate depreciates then export goods will be valued cheaper by foreign countries so that demand increases, but it is not, so this is contrary to the *theory of the Mundell-Fleming Model.*

International trade is the trade of a country with other countries based on mutual trust and mutual benefit. International trade is not only carried out by developed countries but also by developing countries. International trade activities are carried out through export and import activities (Ekananda, 2015).

According to (Lestari, 2011) international trade is trade carried out by residents of a country with residents of other countries based on mutual agreement. The population in question can be between individuals (individuals with individuals), between individuals and the government of a country, or the government of a country with the government of another country.

Export is the sale of goods abroad using the system of payment, quality, quantity, and other terms of sale that have been agreed upon by the exporter and importer. Export demand is the number of goods/services demanded to be exported from one country to another (Sukirno, 2010). The export process is generally an action to remove goods or commodities from within the country to enter them into other countries. Export is the activity of removing goods from the Customs Area. While what is meant by exporter is every company or individual that carries out export activities, to export goods that are free of export can be done by companies that already have a Business License from the Technical Department / Non-Departmental Government Institution based on applicable laws and regulations (Hamdani, 2007).

Adam Smith put forward the theory of absolute advantage, every country will benefit from international trade (gain from trade) because if the country has the absolute advantage it will specialize in producing This theory emphasizes that the efficiency of using inputs or factors of production (such as labor) in the production process determines the benefit or competitiveness of the products produced. The weakness of this theory is that if a country has an absolute advantage over both types of products, but other countries do not, there will be no profitable international trade (Hady, 2009).

International trade is very necessary for a country because no country can meet the needs of its people. This trade is by the law introduced by David Ricardo, namely the law of comparative advantage (Law of Comparative Advantage). According to the law of comparative advantage, even if one country is less efficient than (or has an absolute disadvantage to) another in producing both commodities, there is still a basis for specializing trade that benefits both parties (Salvatore, 2012).

Gross Domestic Product (GDP) is an economic indicator to measure the total value of final goods and services expressed as national production in an economy and the national production is also the national income of the country concerned (Mankiw N, 2007). Gross Domestic Product (GDP) is defined as the monetary value of goods and services. In measuring monetary value, market prices for different goods and services are used as benchmarks. However, the prices of goods change over time, as inflation usually pushes the prices of goods and services up from year to year (Samuelson & Nordhaus, 2001).

Inflation is the process of increasing the general prices of goods continuously over a certain period. Inflation is a process of a price increase in general and will move continuously, for example in primary goods for daily needs (Nopirin 2013).

Generally, inflation triggers import growth to develop faster than export growth (Sukirno, 2002). It can be said that inflation has a negative relationship with exports, this tendency is manifested due to the effects of inflation: (1) Inflation causes domestic prices to be more expensive than prices abroad, therefore, inflation tends to increase imports and causes demand for foreign exchange to increase, (2) inflation causes prices of export goods to be more expensive, so inflation tends to reduce exports which causes the supply of foreign exchange to decrease then foreign exchange prices will increase (Sukirno, 2011).

The exchange rate or exchange rate is the price of a country's currency expressed in another currency that can be traded. According to Triyono (2008), an exchange rate is an exchange between two different currencies, which is a comparison of value or price between the two currencies. The exchange rate shows how much rupiah must be paid for foreign currency units and how much rupiah must be paid when someone sells foreign currency. The exchange rate shows the price of a currency when it is exchanged for another currency. The determination of exchange rate of a country's currency with another country's currency is determined, as well as its goods, that is, by the supply and demand of the currency concerned. The exchange rate between two countries is the level of price agreed by residents of the two countries to trade with each other (Mankiw, 2006).

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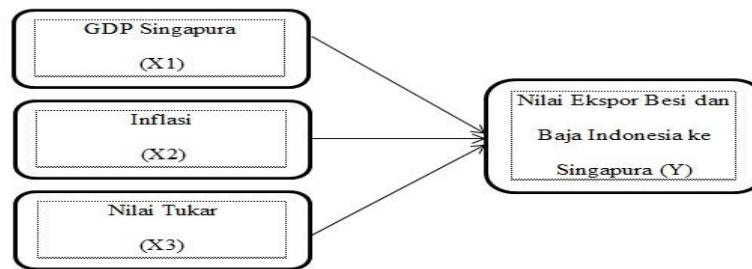
2. Research Method

Figure 1. The Relationship between the influence of GDP, inflation, and exchange rates on Indonesian iron and steel to Singapore

The above framework explains the relationship between the influence of Gross Domestic Product (GDP), inflation, and exchange rates on Indonesian iron and steel to Singapore.
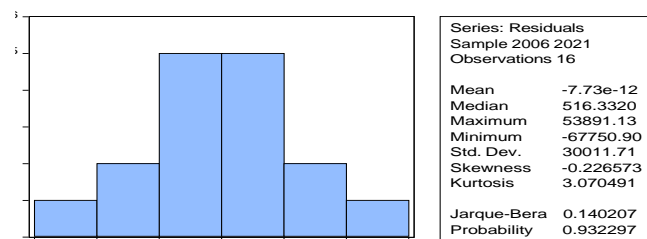
3. Results and Discussion

Figure 2. Normality test

Based on the picture above, it can be concluded that the residual value is expressed as normally distributed. This can be seen in Figure 2, where a normality test is being conducted. In Figure 2, a normality test is being conducted. the probability of the normality test greater than α (0.932297 > 0.05).

Table 1. Multicollinearity test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	6.11E+09	86.76511	NA
GDP	102217.8	122.2883	4.139515
INF	16893132	7.432269	1.697551
ER	*128.4861*	*188.1606*	*2.999887*

Based on the table above, the VIF value for Singapore's GDP (X1) is 4.139515, Inflation (X2) is 1.697551 and the real exchange rate (X3) is 2.999887 is smaller than 10. Therefore, it can be stated that the model has no symptoms of multicollinearity.

Table 2. Heteroscedasticity test

Heteroskedasticity test: glejser			
F-statistic	1.181973	Prob. F(3,12)	0.3576
Obs*R-squared	3.649491	Prob. Chi-Square(3)	0.3019
Scaled explained SS	2.751243	Prob. Chi-Square(3)	0.4316

If the probability value of Obs*R-squared < α = 5%, then the model is exposed to heteroscedasticity. Based on the heteroscedasticity test, an export prob (Obs * R-squared) value of 0.3019 > α = 0.05 means that the model is free from heteroscedasticity problems.

Table 3. Autocorrelation Test

Breusch-Godfrey Serial Correlation Lm Test:	

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| F-statistic | 0.851880 | Prob. F(2,10) | 0.4554 |
| Obs*R-squared | 2.329180 | Prob. Chi-Square(2) | 0.3121 |

The result of the autocorrelation test is the value of Prob Chi Square (2) which is the p value of the Export Breusch-Godfrey Serial Correlation LM test, which is 0.3121 where > 0.05 so that H0 is rejected or which means there is no autocorrelation problem in the research model.

Table 4. Summary of Multiple Linear Regression Analysis Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	310358.1	78137.30	3.971959	0.0019
GDP	76.80241	319.7153	0.240221	0.8142
INF	9085.978	4110.126	2.210633	0.0472
ER	-28.59979	11.33517	-2.523102	0.0268
R-squared	0.719664	Mean dependent var		88667.63
Adjusted R-squared	0.649580	S.D. dependent var		56682.81
S.E. of regression	33554.12	Akaike info criterion		23.89202
Sum squared resid	1.35E+10	Schwarz criterion		24.08517
Log-likelihood	-187.1362	Hannan-Quinn criteria.		23.90192
F-statistic	10.26859	Durbin-Watson stat		1.682079
Prob(F-statistic)	0.001240			

Source: Eviews 10, 2023.

From the multiple linear regression table above, an equation is obtained that shows the relationship between the independent variable and the dependent variable, which is as follows:

EKS = 310358.1 + 76.80241*GDP Singapore + 9085.978*inflation – 28.59979*exchange rate

Based on the results of statistical testing with Eviews 10, the value of the probability of each variable is as follows:

1. Gross Domestic Product (GDP)
   From the test results in the table, it can be seen that the probability value of the Gross Domestic Product (GDP) variable is 0.8142> from α = 5% (0.05) with a positive coefficient. So it can be concluded that Gross Domestic Product (GDP) has a positive and insignificant effect on Indonesia's iron and steel exports to Singapore from 2006 to 2021.
2. Inflation
   From the test results in the table, it can be seen that the probability value of the inflation variable is 0.0472 where the value is < from α = 5% (0.05) with a positive coefficient. So it can be concluded that Indonesian inflation has a positive and significant effect on Indonesia's iron and steel exports to Singapore in 2006-2021.
3. Exchange rate
   From the test results in the table, it can be seen that the probability value of the exchange rate variable is 0.0268 where the value is < from α = 5% (0.05) with a negative coefficient. So it can be concluded that the real exchange rate has a negative and significant effect on Indonesia's iron and steel exports to Singapore from 2006-2021.

4. Conclusions and Suggestions

Based on the discussion of several descriptions of the factors affecting Indonesia's iron and steel exports to Singapore in 2006-2021, several conclusions can be drawn, including the following.
1. Partially, Singapore's Gross Domestic Product (GDP) has a positive and insignificant effect on Indonesia's iron and steel exports to Singapore in 2006-2021, this means that when Singapore's GDP increases, Indonesia's iron and steel exports to Singapore will increase.
2. Inflation partially has a positive and significant effect on Indonesia's iron and steel exports to Singapore in 2006-2021, which means that when there is an increase of 1%, it will increase the amount of Indonesian iron and steel exports to Singapore. Conversely, when there is a decline, it will reduce the value of Indonesian iron and steel exports to Singapore.

3. Partially, the real exchange rate has a negative and significant effect on Indonesia's iron and steel exports to Singapore in 2006-2021, which means that when there is a depreciation, it will increase the value of Indonesia's iron and steel exports to Singapore. Conversely, when there is appreciation, it will reduce Indonesia's iron and steel exports to Singapore.

Therefore, considering the factors affecting Indonesia's iron and steel exports to Singapore in 2006-2021, there are several suggestions given by researchers, including the following:

1. For the government to focus its attention on policies that can increase the quantity and quality of Indonesian iron and steel. The government can increase added value and increase the competitiveness of iron and steel industry products with the development of iron and iron ore concentrate industries so that iron and steel can compete in the international market. As well as controlling Indonesia's inflation to remain stable, considering that inflation will affect international trade.
2. For science that intends to conduct further research, it is recommended to expand the object and model of research on other variables aimed or related to increasing iron and steel exports in Indonesia.

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