THE EFFECT OF EXPORTS AND IMPORTS OF THE INDUSTRIAL SECTOR ON FOREIGN EXCHANGE RESERVES IN INDONESIA DURING THE COVID-19 PANDEMIC

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ABSTRACT

This study examined the effect of industrial sector exports and industrial sector imports on foreign exchange reserves in Indonesia during the pandemic. This study used secondary data from January 2020 to January 2022 that was obtained from Bank Indonesia. The method of data analysis used was the Multiple Linear Regression (Ordinary Least Square) model. The results showed that the export of the industrial sector positively and significantly affected foreign exchange reserves in Indonesia, while the import of the industrial sector negatively and insignificant effect on Indonesia's foreign exchange reserves

Keywords: *Export, Import, Industry, Foreign Exchange Reserves, Covid-19 Pandemic.*

1. INTRODUCTION

Indonesia is a developing country, where Indonesia is doing a lot of development in all fields to create a just and prosperous society. To carry out this development requires a large amount of funding. The funding can be obtained from the country's foreign exchange reserves. Foreign exchange reserves have a function that is generally the same as the function of money, except that they are used in the scope of international or interstate transactions as payments between countries. International smoothness is also influenced by the amount of foreign exchange reserves owned by a country. If the foreign exchange reserves increase, the national income will also increase (Agustina & Reny, 2014).

The size of a country's foreign exchange reserve position depends on various factors that influence it, such as exports and imports (international trade). For developing countries like Indonesia today, exports and imports play an important role in national development. As mentioned Mahmudah (2020)

International trade is a good measure of the demand for foreign exchange reserves. The variability of international trade is highly dependent on a country's exports and imports. If the level of exports decreases, the foreign exchange reserves owned will also decrease and vice versa if the level of exports increases, the foreign exchange reserves owned will also increase (Fortuna et al., 2021). More details can be seen in table 1.1 below.

Table 1.1

Data on the development of Industrial Sector Exports, Industrial Sector Imports and Foreign Exchange Reserves in Indonesia for the Period January 2020 – January 2022

Period	Export (Thousand USD)	Import (Ribu USD)	Foreign Exchange Reserves (Million USD)
January 2020	11.659.901	10.666.955	131.704
February 2020	11.527.957	11.212.378	130.444
March 2020	11.189.440	10.892.331	120.969
April 2020	11.554.715	9.165.142	127.880
May 2020	12.515.384	6.474.847	130.544
June 2020	11.840.261	7.523.270	131.718
July 2020	12.894.113	7.747.486	135.077
August 2020	13.358.500	10.038.130	137.041
September 2020	12.620.775	9.647.148	135.153
October 2020	17.125.401	13.074.685	133.663
November 2020	16.087.160	9.973.268	133.556
December 2020	14.375.936	16.392.048	135.897
January 2021	13.384.914	16.380.305	138.005
February 2021	18.011.767	9.193.442	138.787
March 2021	16.292.164	15.884.573	137.095

April 2021	16.416.803	12.503.086	138.799
May 2021	14.021.632	15.631.612	136.398
Juny 2021	17.546.582	17.733.450	137.093
July 2021	19.724.489	13.911.751	137.343
August 2021	15.811.463	15.447.672	144.784
September 2021	17.961.344	13.800.988	146.870
October 2021	19.657.908	17.862.255	145.461
November 2021	21.945.857	17.702.190	145.858
December 2021	19.875.02	18.829.414	144.905
January 2022	16.219.156	18.128.922	141.344

Source: Bank Indonesia Statistics (2022)

The entry of the covid-19 pandemic in Indonesia has made the government take preventive measures to reduce the spread of this virus, one of the government's efforts is to limit community activities and limit economic activities such as the processing industry, with the enactment of this system, current economic activities do not run smoothly. As good as before, many industries have suffered losses due to this pandemic, causing business actors to be forced to reduce their production costs. On the other hand, due to the entry of the covid-19 virus, the economy does not run well, generally people's productivity decreases (Agustina & Reny, 2014).

Based on table 1.1, it can be seen that the export value of the Indonesian industrial sector during January 2020 - January 2022 fluctuated. This is inseparable from the effects of the influx of the Covid-19 pandemic, which makes the productivity of the industrial sector experience significant fluctuations. What can be seen in September 2020 to October 2021, the export performance of the Industrial sector has increased from 12,159 million USD in September to 17,125 million USD in October, increasing export performance in this sector will certainly make Indonesia's foreign exchange reserves will also increase. but the increase in the export performance of this industrial sector is not followed by an increase in the amount of foreign exchange reserves owned, this is contrary to the theory which states that the increase in exports will be the amount of foreign exchange reserves owned (Hariadi & Irawati, 2020).

On the other hand, the availability of foreign exchange reserves is also influenced by the country's import activity, based on table 1.1, it can be seen that Indonesia's import activity fluctuated during January 2021 to January 2022, where the highest level of imports

occurred in December 2021 amounting to 18,829 million USD, while the highest level of imports occurred in December 2021 at 18,829 million USD. the lowest occurred in May 2020 which was worth 6,474 million USD.

The decline in the value of a country's imports will keep the country's foreign exchange reserves maintained, but in August 2020 when the value of Indonesia's imports of 10,038 million USD decreased to 9,647 million USD in September, this is contrary to the theory which states that an increase in imports will reduce reserves. foreign exchange reserves, but this does not increase foreign exchange reserves, on the contrary, if there are fewer countries to import, the less countries will use their foreign exchange so that the amount of foreign exchange reserves used is also not too much (Chowdhury et al., 2014).

Based on some background descriptions and the above problem phenomena, the authors are interested in researching more deeply about "**The Effect Of Exports And Imports Of The Industrial Sector On Foreign Exchange Reserves In Indonesia During The Covid-19 Pandemic**".

2. THEORETICAL STUDY

2.1 Foreign Exchange Reserves

Foreign exchange reserves are definedas the total foreign exchange held by the government and private sector of a country. The more foreign exchange owned by the government and residents of a country, the greater the country's ability to conduct international economic and financial transactions and the stronger the country's currency (Pinem, 2009)

Foreign exchange reserves are also defined as a number of foreign currencies reserved by the central bank which are used for financing economic development and foreign obligations such as export and import financing and other financing to foreign parties (Vishnu & Aminda, 2019).

2.2 Export

According to Law No. 2 of 2009 concerning the Indonesian Export Financing Agency, it explains that export is an activity of removing goods and services from the Indonesian customs area or from the territory of the Republic of Indonesia. The Ministry of Trade also explains that export is an activity of removing goods from the customs area (Fortuna et al., 2021). Export is the activity of sending goods abroad with the agreement of each country party, both from the company and the government. Export also has the meaning of releasing goods from the public who then send goods to other countries expecting payment in foreign currency. Export is the simplest form in the foreign trade system and is a strategy in marketing products abroad (Adhitya, 2021).
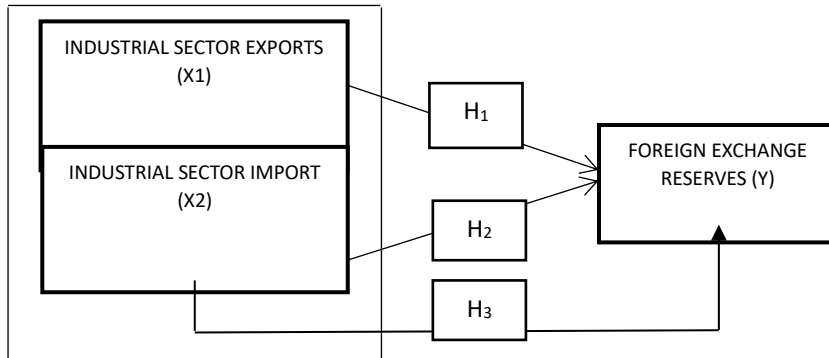
2.3 Import

Import is defined as the purchase of goods and services from abroad into the country with a cooperation agreement between two or more countries. The import process is usually the act of bringing goods from other countries into the country. In general, the

import of goods requires the intervention of customs in the sending or receiving countryBenny (2013).

Import is the activity of entering goods into the customs area. Import transactions are trades by importing goods from abroad into the Indonesian customs area by complying with the provisions of the applicable laws and regulations.(Masitha & Pangidoan, 2020).

Conceptual Framework

Source: Data Processed (2022)

Figure Conceptual Framework

3. Hypothesis

H_1 : It is suspected that exports in the industrial sector have a positive effect on Indonesia's foreign exchange reserves.

H_2 : It is suspected that imports in the industrial sector have a negative effect on Indonesia's foreign exchange reserves.

H_3 : It is suspected that exports and imports in the industrial sector affect Indonesia's foreign exchange reserves.

4. RESEARCH METHOD
4.1 Research Objects and Locations

In this study, the variables studied were Exports and Imports in the Industrial Sector as independent variables and Foreign Exchange Reserves as the dependent variable. The location of this research was conducted in Indonesia.

4.2 Data collection technique

The data used or collected in this study is secondary quantitative data in the form of monthly data from January 2020 – January 2022 in Indonesia obtained from Bank Indonesia Statistics. The data collection method used in this research is the documentation method. According toMildyanti & Triani (2019), documentation method is a method of collecting data by recording existing data obtained from Bank Indonesia Statistics. Other supporting data are obtained from books, articles, journals and others available from papers on the internet related to research.

4.3 Data analysis method

To analyze the effectfrom exports in the industrial sector, imports in the industrial sector to foreign exchange reserves in Indonesia, this study uses a method whose data is analyzed using multiple linear regression models, with annual secondary data in the period January 2020 - January 2022, including Foreign Exchange Reserves (Y), Exports Industry sector (X1) and Import Industry sector (X2).

5. RESEARCH RESULTS AND DISCUSSION
5.1 Descriptive Statistics
The results of descriptive statistics are as follows:

Table 4.1
Statistical Descriptive Test Results

	FER	EXP	IMP
Mean	136.655,6	15.344.746	13.032.694
Median	137.041,3	15.811.463	13.074.685
Maximum	146.870,0	21.945.857	18.829.414
Minimum	120.968,9	11.1894.40	6.474.847
Std. Reserves.	6.145,830	3.105.150	3.796.530
Observations	25	25	25

Source:Data Processed (2022)

The mean (average) value of the foreign exchange reserve variable is 136.655,6, and the standard deviation of foreign exchange reserves is 6,145,830. From these results it can be seen that the standard deviation value is smaller than the average value (mean), and this indicates that the distribution of data in the foreign exchange reserve variable is good. The minimum value of foreign exchange reserves is 120.968,9, the maximum value of foreign exchange reserves is 146.870,0, and the median value is 137.041.3, it can be seen that the range of values between the maximum and the minimum is not large. And the median value is more likely to approach the minimum value.

The mean (average) value of the industrial sector export variable is 15.344.746, and the value of the export standard deviation of the industrial sector is 3.105.150. From these results it can be seen that the standard deviation value is smaller than the average value (mean), and this indicates that the distribution of data in the export variable of the industrial sector is good. The minimum export value of the industrial sector is 11.1894,40, the maximum export value of the industrial sector is 21.945.857, and the median value is 15.811.463, it can be seen that the range of values between the maximum and the minimum is not large. And the median value is more likely to approach the minimum value.

The mean (average) value of the industrial sector import variable is 13.032.694, and the value of the standard deviation of industrial sector imports is 3.796.530. From these results, it can be seen that the standard deviation value is smaller than the average value (mean), and this indicates that the distribution of data in the import variable in the industrial sector is good. The minimum import value for the industrial sector is 6.474.847, the maximum value of industrial sector imports is 18.829.414, and the median value is 13.074.685, it can be seen that the range of values between the maximum and the minimum is not large. And the median value is more likely to approach the minimum value.

5.2 Classic Assumption Test Results
Normality test

Widarjono (2018), stated that: "The normality test aims to determine whether each variable is normally distributed or not. The result is as follows.
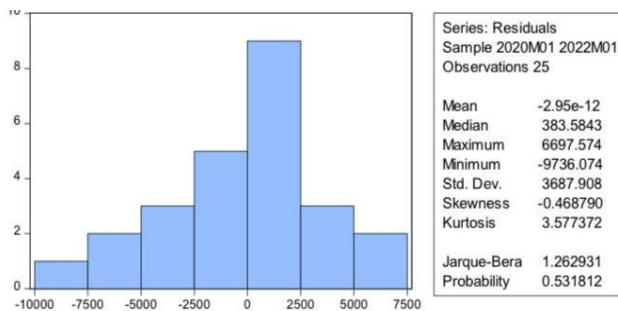
Source: Data Processed (2022)

Figure 4.1 Normality Test Results

Based on the results of the normality test in Figure 4.4 above, it can be seen that the Jarque-Bera value is 1.26, and the chi square table value is df(3) : 7.814. The Jarque-Bera value is smaller than the chi square value, namely 1.26 < 7.814, it can be concluded that the residual data in this study is normally distributed. It can also be seen from the probability of 0.53 > 0.05.

5.3 Autocorrelation Test Results

Autocorrelation test is used to see whether in the regression model there is a correlation between the nuisance errors found in period t of course with the nuisance errors contained in the previous period (Amrin, 2016).

Table 4.2
Autocorrelation Test Results

F-statistic	1.785353	Prob. F(5,17)	0.1696
Obs*R-squared	8.607675	Prob. Chi-Square(5)	0.1258
Durbin-Watson stat	2.242074		

Source: Data Based on the results of the *Processed (2022)* table 4.2 the LM (Lagrange

Multiplier) autocorrelation test above, it can be seen that the chi-square probability value is 0.1258 and above 0.05, which means that there is no indication of autocorrelation in this data. This can also be seen from the Durbin-Watson (DW) value of 2.2420, dL = 1.122 dU = 1.654, then 4 – dU = 2.346 , 4 – dL = 2.878. Because DW is above dU and is smaller than 4-dU, it means that there is no autocorrelation in this model, because the DW value is 1.7748 and close to 2.

5.4 Multicollinearity Test Results

Multicollinearity test was conducted to see whether there was a relationship or correlation between independent variables. If there is a high correlation, then the regression model occurs multicollinearity.The results of the multicollinearity test are seen from the following matrix.

Table 4.3
Multicollinearity Test Results

Correlation t-statistic	FER	EXP	IMP
FER	1.000000	0.777454	0.642925
EXP	0.777454	1.000000	0.640986
IMP	0.642925	0.640986	1.000000

Source: Data Processed (2022)

The variables in the study are said to contain multicollinearity if the correlation value between the independent variables is above 0.80. Based on the results of the multicollinearity test in Table 4.3 above, it can be seen that the correlation value between the two independent variables is 0.64 < 0.80. So it can be concluded that the variables in this study have no symptoms of multicollinearity.

5.5 Heteroscedasticity Test Results

Aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another observation. Heteroscedasticity occurs when the disturbance variable does not have the same variance for all observations. The way to detect the presence or absence of heteroscedasticity can be done by using White Heteroskedasticity Test (Gujarati, 2004).

Table 4.4
Heteroscedasticity Test Results

F-statistic	0.916957	Prob. F(5,19)	0.4912

		Prob. Chi-		
Obs*R-squared	4.859895	Square(5)		0.4332
Scaled explained SS	4.849974	Prob. Chi-Square(5)		0.4345

The model in this study indicated heteroscedasticity if Obs*R-squared was greater than Chi Square. Based on Table 4.4 above, it can be seen that the value of Obs*R-squared is smaller than Chi Square, namely $4.85 < 5.99$. So in this study it was free from heteroscedasticity. This can also be seen from the probability value of chi square which is greater than the value of the acceptable error rate, namely $0.43 > 0.05$.

5.6 Research Models and Results

Based on the results of data processing using eviews, the results are as shown in the following table:

Table 4.5
Multiple Linear Regression Estimation Results

Variable	Coefficient	Standard Error	t-statistic	Probability
C	112643.5	3970.432	28.37060	0.0000
EXP	0.001227	0.000330	3.720576	0.0012
IMP	0.000397	0.000270	1.472433	0.1551

The basic model in this study is the basic model of multiple linear regression as follows:

$$Yt = \beta_0 + \beta_1 X_1 t + \beta_2 X_2 t + et$$

Then, after processing statistical data with the research variables used, the following model was obtained:

$$l_nCDVt = \beta_0 + \beta_1 l_n EXPt + \beta_2 l_n IMPt + et$$

The result is

$$l_nCDVt = 112643.5 + 0,001 l_n EXPt + 0,0003 l_n IMPt + et$$

Based on the research model above, the variable of foreign exchange reserves is influenced by the export of the industrial sector and the import of the industrial sector.

1. The constant 112643.5 means that the value if the export of the industrial sector and the import of the industrial sector are constant (fixed), then the value of foreign exchange reserves will also be constant at 112643.5 million dollars.

2. The regression coefficient of the industrial sector export variable of 0.001 means that if the industrial sector's exports increase by 1 thousand dollars, the foreign exchange reserves will increase by 0.001 million dollars with the assumption that the industrial sector imports are constant.
3. The industrial sector import regression coefficient of 0.0003 means that if the industrial sector imports increase by 1 million dollars, the foreign exchange reserves will increase by 0.0003 thousand dollars with the assumption that the industrial sector exports have a constant value.

6. Hypothesis Proving
6.1 Partial Test Results (t Test)
According to Gujarati (2015) The t statistic test basically shows how far the influence of one independent or independent variable individually in influencing the dependent variable. One way to do the t-test is by =5% comparing the value of the t statistic with the value of ttable at the accepted error rate with the following conditions:

1. If tcount > ttable, it means that the independent variable partially affects the dependent variable significantly.
2. If tcount < ttable, it means that the independent variable partially does not affect the dependent variable significantly.

Value t_{table} (n-k), that is (25-3 = 22): At α:5%, $t\frac{5\%}{2}$= 2.5% or 0.025 (22) = 2.0738 ~ 2.07. And α: 1%, $t\frac{x}{2}$ = 0.5% or 0.005 (22) = 2.818 ~ 2.81. The smaller value indicates more accurate research results. Partial test results are as follow.

Table 4.6
Results of Partial Hypothesis Testing (t-test)

Independent Variable	Estimation Coefficient	t-count	t-table	P-value	Description
EXP	0.001227	3.720576	2,0738	0.0012	Significant
IMP	0.000397	1.472433	2,0738	0.1551	Not Significant

Source:Data Processed (2022)

Based on the results of the hi . testpartial hypothesis Table 4.6 above can be seen that the EXP variable has a tcount value of 3.72. This means that $t_{count} > t_{table}$, or 3.72 > 2.07. Then accept H1 and reject H0 which means that the export of the industrial sector has a positive and significant effect on foreign exchange reserves. It can also be seen from the p-value of 0.0012 < 0.05

Variable The IMP has a t_{count} of 1.4724. This means that $t_{count} < t_{table}$ or 1.4724 < 2.07. So accept H0 and reject H2, which means that the import of the industrial sector has no significant effect on foreign exchange reserves. It can also be seen from the p-value of 0.1551 > 0.05.

6.2 Simultaneous Test Results (F Test)
The F test aims to see the overall significance between the independent variables and the dependent variable. In this study the tolerable error rate was 1%. F test is done by comparing between F_{count} with F_{table}, if $F_{count} > F_{table}$, then Ha is accepted, meaning that

the independent variables jointly affect the dependent variable. The value of F_{table} (k-1)(nk) : (3-1)(25-3) = (2)(22) at : 5% is 3.44.

Table 4.7
Simultaneous Hypothesis Test Results

F-Statistik	F-Tabel	P-Value	Description
19,5487	3,44	0.000013	Significant

Source:Data Processed (2022)

From the test results as shown in Table 4.7, the value of $F_{count} > F_{table}$, or 19.54 > 3.44 means that simultaneously (together) the variables of industrial sector exports and industrial sector imports have a positive and significant effect on foreign exchange reserves in Indonesia. It can also be seen from the probability value of 0.000 < 0.05.

6.3 Coefficient of Determination (R^2) and Correlation (R)

Coefficient of Determination (R^2)

Table 4.8
Coefficient of Determination and Correlation

Description	Coefficient
R-squared	0.639920
Adjusted R-squared	0.607185

Based on the table 4.8 above, it can be seen that the Adjusted R-Square value in this study is 0.607185. This means that the magnitude of the influence of industrial sector exports and industrial sector imports on foreign exchange reserves is 0.6071 (60.71%). Meanwhile, which is influenced by other variables outside this model is 0.3929 (39.29%).

Correlation Coefficient (R)

According to Gujarati (2003) and Waldinge (2008) Correlation analysis is a way to find out whether or not there is a strong relationship between the independent variable (X) and the dependent variable (Y), when expressed by a linear function and measured by a value called the correlation coefficient.

From the results of data processing in Table 4.8, the correlation value (R) $=\sqrt{R^2}=$ = 0.7999. So the relationship between industrial sector exports and sector imports is very strongly positively related, because the correlation value of 0.7999 (79.99%) is close to positive one (+1). $\sqrt{0,6399}$

7. CLOSING

Conclusion

Based on the results of the tests and analyzes that have been carried out, the following conclusions can be drawn:

1. Exports of the Indonesian industrial sector have a positive and significant effect on foreign exchange reserves in Indonesia as seen from tcount > t table, or 3.72 > 2.07. With an increase in exports of the industrial sector by 1 thousand dollars, foreign exchange reserves will increase by 0.001 million dollars assuming imports of the industrial sector are constant.
2. Imports of the Indonesian industrial sector have a positive and insignificant effect on foreign exchange reserves in Indonesia, as seen from tcount < t table or 1.4724 < 2.07 With industrial sector imports increasing by 1 thousand dollars, foreign exchange reserves will increase by 0.0003 thousand dollars assuming the export sector constant value industry
3. Simultaneously, the export of the industrial sector and the import of the industrial sector have a positive and significant effect on foreign exchange reserves in Indonesia, it can be seen from the value of Fcount which is greater than Ftable, namely 19.54 > 3.44

8. SUGGESTION

As for based on the results of research that has been done the authors provide suggestions as follows

1. The government is expected to increase the significance of exports, by improving the quality of technology in order to be able to compete in the international market both in terms of quality and price so that it dominates the domestic and foreign market share.
2. The Indonesian government is also expected to increase the number of exports in order to be able to influence the increase in Indonesia's foreign exchange reserves. The Indonesian government is also expected to maintain a good composition of imports, namely imports of industrial raw materials.
3. For business actors in the industrial sector, it is expected to always improve the quality of their products in order to compete in the international market so as to increase exports in the industrial sector.
4. Future researchers are expected to conduct further research on industrial sector exports and industrial sector imports on foreign exchange reserves in Indonesia by adding other variables, adding years of analysis and using different research methods to enrich knowledge.

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