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PROJECTION OF INDONESIA'S EXPORT AND IMPORT VALUES DUE TO THE IMPACT OF THE COVID-19 PANDEMIC

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ABSTRACT
The Covid-19 pandemic has impacted various sectors of the economy, including Indonesia's export and import activities. This study aims to project the value of Indonesia's export and import due to the impact of the Covid-19 pandemic for the first quarter of 2021. It is conducted using a regression method. The results show that in the first quarter of 2021, the export value is estimated to increase by 14.6%, compared to the previous quarter, to US$ 52,602 million. With this figure, the export value will increase by 25.96% compared to the same period in 2020. In addition, import value in the first quarter of 2021 is estimated to increase by 12.6%, compared to the previous quarter, to US$ 39,429 million. With this figure, the value of imports increases by only 0.66% compared to the same period in 2020. The development of export and import gives a positive signal for the economy in Indonesia, including the logistics sector.

INTRODUCTION
The pandemic is affecting the economy in various countries, including Indonesia. One of the activities affected is export and import activity. The development of Indonesia's export-import has decreased amid the Covid-19 pandemic. Its performance was at its lowest point since 2016 for exports and since 2009 for imports [1].

The Statistics Indonesia (in Indonesia Badan Pusat Statistik or BPS) recorded the value of Indonesia's exports in the January to October 2020 period amounted to US$ 131.509 million or decreased by 5.60% compared to the same period in 2019. In the 2020 period, the largest decline in exports happened in May 2020 amounted to US$ 4,297 million or 29.13%, while the largest increase was in February 2020 amounted to US$ 1,272 million or

9.95% [2].

The ongoing Covid-19 pandemic will affect Indonesia's export-import volume in 2021. The development of export and import performance can be an indication of Indonesia's economic development. In addition, this is also an indication for Indonesia's logistics sector since the export and import process involves various logistics services such as transportation and warehousing, including infrastructure services/facilities such as ports.

Based on this background, the research is conducted to create a projection of Indonesia's export and import value due to the impact of Covid-19 in the first quarter of 2021.

RESEARCH METHOD
The method used in this study is a simple linear regression method with the value of Indonesia's exports and imports as the independent variable. Moreover, the dependent variable is the change in the value of Indonesia's exports and imports.

The data used are monthly data for 2019 and 2020. The projection results using a simple linear regression method are also in the form of monthly data. However, the data will then be aggregated into quarterly data.

Given the very dynamic conditions during the COVID-19 pandemic, the projection is only carried out for the first quarter of 2021.

RESULTS

The data

The following is data on the development of Indonesia's export and import values in 2019-2020 in US $ which is illustrated in Table 1 and Table 2 [2].

Table 1 The Development of Indonesia's Export Value in 2019-2020 (US $)

No.	Month	2019	2020
1	January	14.028.086.397	13.632.036.109
2	February	12.788.557.132	14.060.899.749
3	March	14.447.789.013	14.067.939.680
4	April	13.068.068.333	12.163.136.633
5	May	14.751.890.718	10.454.279.383
6	June	11.763.353.137	12.009.343.419
7	July	15.238.418.109	13.702.671.501
8	August	14.261.962.734	13.095.781.016
9	September	14.080.108.446	13.960.528.087
10	October	14.881.456.854	14.362.242.633
11	November	13.944.486.957	n.a.
12	December	14.428.818.305	n.a.

Source: Statistics Indonesia (2020)

Table 2 The Development of Indonesia's Import Value in 2019-2020 (US $)

No.	Month	2019	2020
1	January	15.005.191.440	14.268.720.284
2	February	12.465.073.944	11.548.100.132
3	March	13.746.621.857	13.352.176.374
4	April	15.399.185.930	12.535.233.221
5	May	14.606.659.275	8.438.627.383
6	June	11.495.388.062	10.760.317.981
7	July	15.518.475.622	10.464.299.676
8	August	14.169.350.761	10.742.407.847
9	September	14.263.448.876	11.570.104.770
10	October	14.759.081.430	10.786.016.684
11	November	15.340.475.284	11.904.737.228
12	December	14.506.784.516	n.a.

Source: Statistics Indonesia (2020)

The development of Indonesia's export and import values in 2019-2020 can be seen in Table 3.

Table 3 Percentage of Indonesia's Export and Import Values Development in 2019-2020 (%)

No.	Month	Development Percentage (%)	
		Export	Import
1	January	-2,82%	-4,91%
2	February	9,95%	-7,36%
3	March	-2,63%	-2,87%
4	April	-6,92%	-18,60%
5	May	-29,13%	-42,23%
6	June	2,09%	-6,39%
7	July	-10,08%	-32,57%
8	August	-8,18%	-24,19%
9	September	-0,85%	-18,88%
10	October	-3,49%	-26,92%
11	November	n.a.	-22,40%
12	December	n.a.	n.a.

Based on the results of data analysis in Table 3, the largest decline in import value occurred in May with a value of USD 4,297 million (-29.13%). The increase in export value only occurred in February and June with a value of USD 1,272 million (9.95%) and USD 245 thousand (2.09%). In addition, the

largest decline in import value occurred in May with a value of USD 6,168 million (42.23%) and there was no increase in export value in 2020.

Mathematical model formulation

The mathematical model is developed using a simple linear regression method. Simple linear regression considers the independent variable as x and the dependent variable as Y. In this method, the relationship between x and Y is assumed to be in a linear line. Y is obtained by the following equation [3]:

$$Y = \beta_0 + \beta_1 x + \epsilon$$

Where
β_0 = interceptor constant
β_1 = regression coefficient for x
ϵ = random error

In this study, regression is carried out on the value of export and import as well as the changes in 2019-2020. The regression results obtained for the export value are as follows:

Table 4 Regression Results of Indonesia's Export Value Development in 2019-2020
Regression Statistics
Multiple R
R Square
Adjusted R Square
Standard Error
Observations
ANOVA

	SS	MS	F	Sign. F
Regression	8,77671E+18	8,77671E+18	18,11590998	0,013092361
Residual	1,9379E+18	4,84475E+17		
Total	1,07146E+19			
	Standard Error	t Stat	P-value	
Intercept	647980298	16,13036651	8,64028E-05	
X Variable 1	166385980,5	4,256278889	0,013092361	
	Lower 95%	Upper 95,0%		
Intercept	8653077970	12251241423		
X Variable 1	246223595,1	1170146677		

Based on the regression results above, the mathematical model for export value is as follows:

$$Yi = 647.980.298 + 166.386.980,5 \, x_i$$

Where
Y_i = change in export value in the month of-i
x_i = export value in the month of-i

The mathematical model is then used to project the export value for November and December 2020, as well as January, February, and March 2021. The export value is approximately USD 15,410 million and USD 16,118 million, respectively.
The regression results for the import values are shown in Table 5.

Table 5 Regression Results of the Development of Indonesia's Import Value in 2019-2020.

Regression Statistics
Multiple R
R Square
Adjusted R Square
Standard Error
Observations
ANOVA

	SS	MS	F	Sign. F
Regression	2,98059E+18	2,98059E+18	4,561060972	0,099571767
Residual	2,61394E+18	6,53486E+17		
Total	5,59453E+18			
	Standard Error	t Stat	P-value	
Intercept	752.565.052	12	0	
X Variable 1	193.240.866	2	0	
	Lower 95%	Upper 95,0%		
Intercept	6926398664	11105309775		
X Variable 1	- 123825084,5	949220229,8		

Based on the regression results above, the mathematical model for import value is as follows:

$$Yi = 752.565.052 - 193.240.866\ x_i$$

Where
Y_i = change in import value in the month of-i
x_i = export value in the month of-i

Similar to the export value, a mathematical model is used to project the import value in December 2020 and January, February, and March 2021. The export value obtained for December 2020, for example, is USD 12,317 million.

Based on the regression results of the monthly export and import values, the development and projections of Indonesia's export and import for the first quarter can be predicted.

The export value for the first quarter is projected at USD 52,602 million. There is a development of 14.6% from the previous. The development and projections of Indonesia's export in the first quarter of 2019 to the first quarter of 2021 can be seen in Figure1.
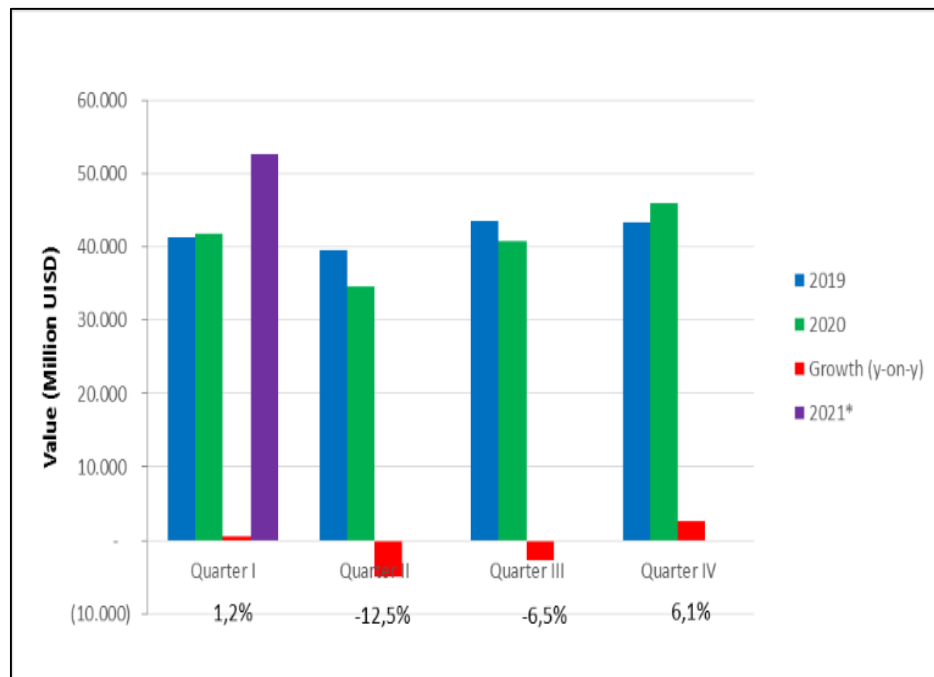

Figure 1. Indonesia's Export Development and Projection Quarter I 2019-Quarter I 2021

The import value for Quarter I is projected at USD 39,248 million. There is a growth of 0.66% from Quarter I in 2020. The development and projection of Indonesia's export in Quarter I 2019 to Quarter I 2021 can be seen in Figure2.
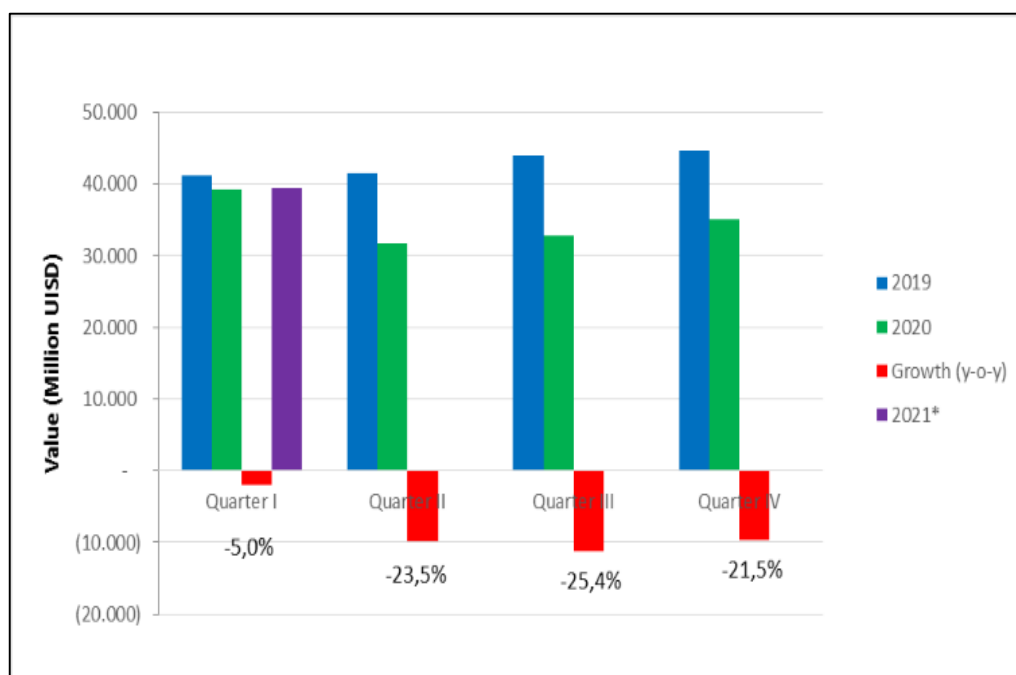
Figure 2. Indonesia's Import Development and Projection Quarter I 2019-Quarter I 2021

In the first quarter of 2021, the export value is estimated to increase by 14.6%, from the previous quarter to US$ 52,602 million. With this figure, the export value will increase by 25.96% compared to the same period in 2020.

On the other hand, in the first quarter of 2021, import value is estimated to increase by 12.6%, from the previous quarter to US$ 39,429 million. With this figure, the import value increased by only 0.66% compared to the same period in 2020.

Indonesia's export growth was influenced by development in the global economy that continued after the third quarter of 2020. Economic growth began to improve and increased trade volume due to increased mobility and policy stimulus in several countries.

These developments in export and import performance have provided positive signals for Indonesia's economy. This development also provides a positive signal for Indonesia's logistics sector since the export process involves various logistics services such as transportation and warehousing, including infrastructure services/facilities such as ports.

CONCLUSION
Based on the regression results, the projection of Indonesia's export and import value in the first quarter of 2021 is obtained. In the first quarter of 2021, the export value is estimated to increase by 14.6%, compared to the previous quarter, to US$ 52,602 million. With this figure, the export value will increase by 25.96% compared to the same period in 2020.Import value in the

first quarter of 2021 is estimated to increase by 12.6%, compared to the previous quarter, to US$ 39,429 million. With this figure, the import value increased by only 0.66% compared to the same period in 2020.Theseexport and import developments provide a positive signal for Indonesia's economy, including Indonesia's logistics sector.

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