

ANALYSIS OF THE INFLUENCE OF LOGISTICS, ENTRY PRICES OF GOODS, INDUSTRY VALUE ON THE EXPORT VALUE OF GOODS IN EAST ASIA PACIFIC COUNTRIES

Muhammad Glenn Yunifer¹, Marselina²

^{1,2}University of Lampung

¹muhammadglenn1811.1051@gmail.com, ²marselina@feb.unila.ac.id

Keywords:
Logistics Performance,
Goods Entry Tariffs,
Industrial Value Added,
Goods Export Value

Abstract
The purpose of this study was to analyze the effect of logistics performance, import tariffs and industrial value added on the value of exports of goods in East Asia Pacific countries for the 2010-2020 period, either partially or simultaneously. The analytical techniques used are model suitability testing, classical assumption testing, multiple linear regression analysis, hypothesis testing with t test and F test and testing the coefficient of determination. The results showed that logistics performance had a positive and significant effect on the value of exports of goods, import tariffs on goods had a negative and significant effect on the value of exports of goods, industrial value added had a positive and significant effect on the value of exports of goods. Logistics performance, goods entry rates,

I. INTRODUCTION

Economic growth is a key factor in improving the welfare of the people of a country. Welfare can be reflected by the level of income of the country, meaning that the increase in welfare can be done by encouraging quality economic growth which is marked by an increase in income. The importance of economic growth for improving people's welfare encourages the government of each country to seek to increase its economic growth. Economic growth in a country is also a measure of the success of the government in improving the standard of living of its people.

Table 1. Gross Domestic Product Performance in 2010-2020 by Region

No.	Region	GDP (Billion US Dollar)	World Proportion (%)	Average GDP Growth (%)
1.	Europe & Central Asia	22,262	28.53	0.86
2.	East Asia & Pacific	22,225	28,48	4.03
3.	North America	19,944	25.56	1.40
4.	Latin America & the Caribbean	5.804	7.44	2.07
5.	Middle East & North Africa	3.286	4.21	1.47
6.	South Asia	2.816	3.61	5.48
7.	Sub-Saharan Africa	1,690	2.17	3.67
8.	World	78.027	100.00	2.49

Source: World Bank (processed)

The East Asia and Pacific region has a GDP value of USD 22,225 billion or 28.48% of GDP worldwide during 2010 to 2020 with an average growth of 4.03% per year. This is because most of the countries in the East Asia and Pacific region are developing countries that have a high GDP growth rate. strong on the world economy.

Several previous studies have said that globalization has a positive influence on economic growth in developing countries, international trade will also have a positive impact on economic growth in developing and developed countries, and foreign investment in several developing countries in East Asia & Pacific is considered a pioneer of economic growth. (Fuddin, 2020). The strong economic growth in East Asia and Pacific was supported by domestic consumption, while the slowdown in economic growth in East Asia & Pacific was caused by the declining exports of several countries in East Asia & Pacific.

Economic openness can provide opportunities to export goods whose factors of production use abundant resources and import goods whose factors of production are scarce or expensive if produced domestically. Economic openness is believed to be able to encourage the economic growth of a country.

Table 2. International Trade Performance of 15 Countries in East Asia & Pacific 2010-2020

No.	Country	Average Trade Openness (%)	Average Export Proportion (%)	Average Import Proportion (%)
1.	Hong Kong	395.11	50.22	49.78
2.	Singapore	342.13	53.94	46.06
3.	Vietnamese	181.66	50.43	49.57
4.	Thailand	123.89	52.87	47.13
5.	Malaysia	136.64	53.33	46.67
6.	Mongolia	110.89	46.26	53.74

7.	Cambodia	123.57	48.62	51.38
8.	South Korea	85.89	52.49	47.51
9.	New Zealand	54.60	50.61	49.39
10.	Philippines	62.39	44.77	55.23
11.	Australia	42.45	50.22	49.78
12.	Myanmar	41.44	47,80	52.20
13.	Indonesia	43.24	50.38	49.62
14.	China	42.12	52.57	47.43
15.	Japan	33.11	49.30	50.70
	Average	121.28	50.25	49.75

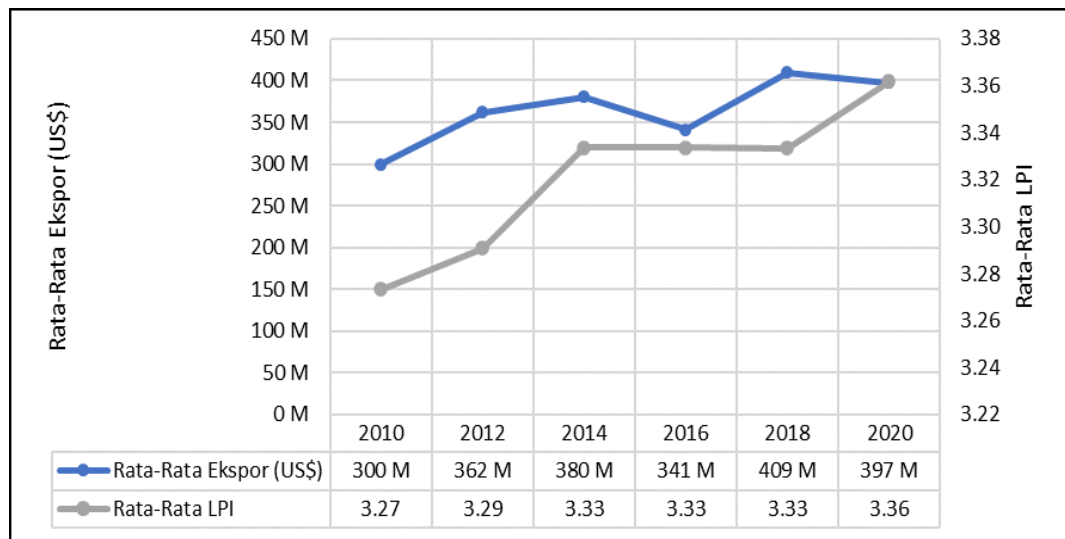
Source: World Bank (processed)

The high value of GDP and trade openness of countries in the East Asia and Pacific region with an average value of 15 countries during 2010-2020 reaching 121.27% of GDP, followed by the high value of the country's exports, most of which have higher export values. greater than imports. East Asia and Pacific controlled 31.57% of goods exports worldwide with an average growth of 5.93% per year, faster than Europe and Central Asia which controlled 40.48% of world goods exports.

The performance of a country's logistics and transportation system is central to international trade and the smooth functioning of global supply chains (Martí, Puertas, and García, 2014). Countries with high logistics costs lack international competitiveness. Better logistics systems can lower variable costs and fixed trading costs. Variable costs vary according to the quantity of goods exported, while fixed costs such as loading and unloading at the port. Theoretically, Melitz predicts that lower trading costs have a different effect on export margins. In particular, the model shows that a decrease in the variable cost of trade increases the volume of exports. (Töngür, et al., 2020).

Improvements in transportation infrastructure are considered to be able to reduce the cost of importing raw materials and semi-finished goods used in the production and export of final goods and services. Thus, reducing the cost of imported inputs related to the reduction of transportation costs is very important if a country wants to increase its export competitiveness in world markets and increase its integration in global production networks.

Image 1. Relationship between LPI Value and Goods Export Value
Source: World Bank (processed)



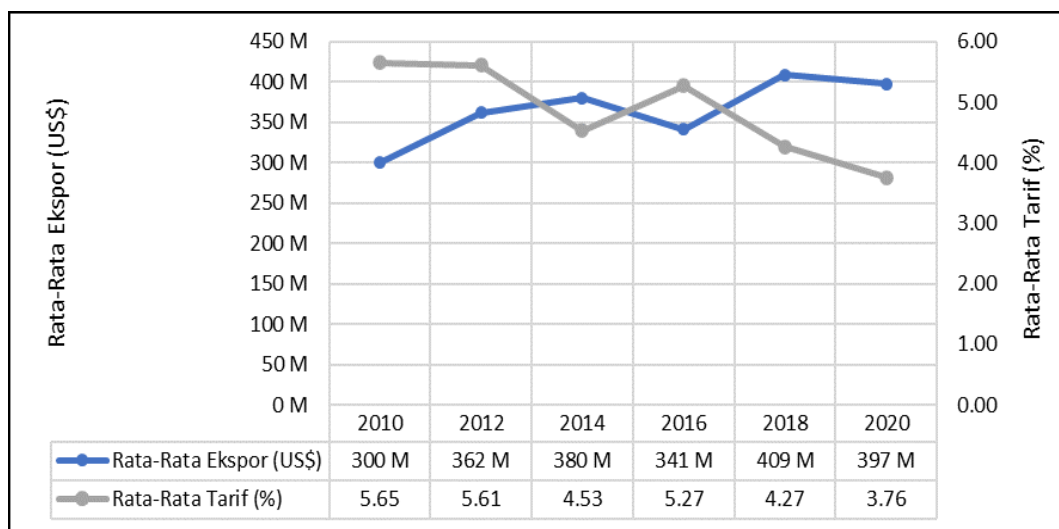
Logistics performance index(LPI) issued by the World Bank tries to explain how logistically accessible a country is or how well a country is connected with other countries through a global logistics network. Logistics performance as indicated by the Logistic Performance Index (LPI) of countries in the East Asia Pacific region showed an increase during 2010-2020. This trend of increasing LPI value was also followed by an increase and decrease in the average value of goods exports in the same year. So it can be concluded that there is a unidirectional relationship between the value of goods exports and the LPI value.

The government of a country generally establishes a policy of international trade barriers, both tariff and non-tariff as an effort to protect domestic producers from foreign exporters to be able to compete in gaining greater access to the domestic market. This is done because there are differences in the ability and strength in the economic structure of each country so that it affects the production results of these countries. Greater market access for domestic producers has a direct impact on the country's economy by increasing national income and public welfare through the absorption of labor.

Existing studies identify several channels through which domestic import tariffs affect domestic exports. Preliminary studies show a negative effect of import liberalization on exports. Import restrictions can increase exports when protected industries show increasing returns to scale. More recent studies identify the positive

effect of easing import restrictions on exports. Global supply chains and related vertical trade can explain the positive effect where countries lowering their import tariffs on intermediate inputs can lead to lower production costs, thereby increasing exports of finished goods (Kazunobu Hayakawa, et al., 2020).

Figure 2. The Relationship between Tariffs of Goods and the Value of Exports of Goods



Source: World Bank (processed)

Goods tariffs in the East Asia Pacific region showed a decline during 2010-2020, although they increased in 2016. The downward trend in goods tariffs was also followed by an increase in the value of goods exports in the same time period. So it can be concluded that there is an opposite relationship between the tariff of goods and the value of the export of goods in that country.

Development in the manufacturing sector has a very important role in the economic development of a region. Its role can be seen from the close linkage between the development of the manufacturing industry sector with the development of the agricultural sector, services, income generation, and expansion of employment opportunities. In many countries in the world, the manufacturing industry is an important sector to support national economic development, and its important role is to create value-added products by utilizing natural resources to be processed into high-value goods.

Both developed and developing countries seek to gain the greatest benefit by increasing their competitiveness in global trade. The key to global competitive advantage is to encourage the production and export of high value added goods. The

Economic Complexity Index is used to analyze the structure of a country's production and exports. Complexity represents a country's level of knowledge and technology from manufacturing to exporting. Countries that have high technology and diversified production can be found to rank high in relation to the index. These countries also have advantages in export competitiveness. In addition, countries that rely on agricultural exports and labor-intensive production rank low on the index score. (Erkan, et al., 2015).

Table 4. Manufacturing Sector Indicators for 15 Countries in East Asia Pacific 2010-2018 by Income Level

Indicator	Income Level		
	Tall	Upper Intermediate	Middle down
Average Manufacturing Value Added Growth (%)	2.54	3.98	7.21
Average Value Added Manufacturing (% GDP)	14.1	26.8	15.7
Average Export of Manufactured Goods (% Export of Goods)	53.28	77.3	61.82
Average High Technology Exports (% of Manufacturing Exports)	26.07	34.61	11
Average Export Value (Billion US Dollar)	404.82	858,86	68.37
Export Value Proportion (%)	30.39	64.48	5.13

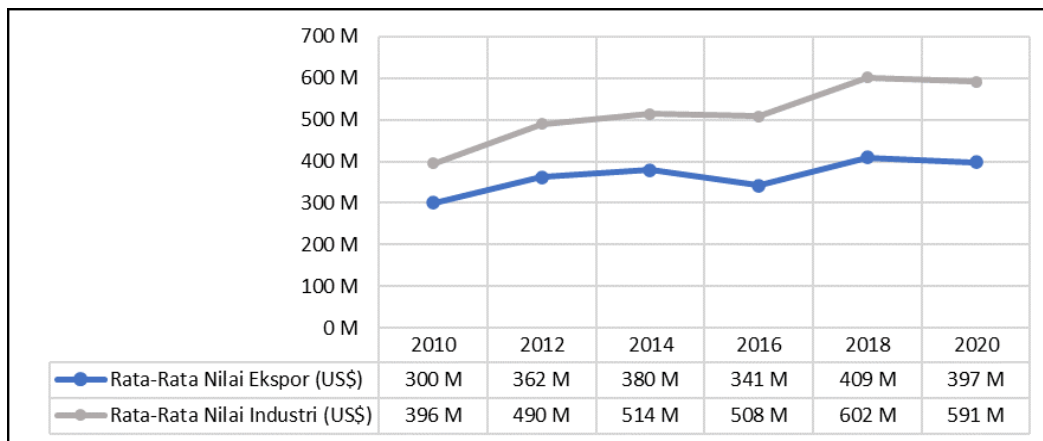
Source: World Bank (Processed)

Exports of manufactured goods in high-income and lower-middle-income countries also have a large proportion of the total value of exports of goods from these countries, namely 53.28% and 61.82%, respectively. However, the difference in exports of manufactured goods from these countries lies in exports of high-tech goods which have a higher value than the value of exports of technological goods below them. In contrast to exports of high-tech goods from high-income and middle-income countries, namely 26.07% and 34.61%, the proportion of exports of high-tech goods to low-income countries is very small, only 11% of the total export value of manufactured goods.

Higher growth rates in the manufacturing sector result in higher gross domestic product growth rates as well. Kaldor explains why the manufacturing industry is an engine of growth and how it creates positive externalities in the economy. Kaldor states that increasing returns to scale in the industrial sector increases investment returns. Due to this, the industrial sector provides positive externalities in the economy in general and accelerates economic growth through these externalities. The growth of the industrial sector increases productivity not only in the sector itself, but also in other sectors with various facilities for the division of labor. That's why Kaldor considers the industrial

sector an “engine of growth”. Kaldor believes that the growth of the manufacturing industry can be done through external demand with a high growth rate, namely through exports. The higher the growth rate in the export-determined manufacturing industry, the faster the transfer of labor from sectors where economic productivity is low to the industrial sector, leading to a faster increase in productivity. (Kivaluz and Topcu, 2012).

Figure 3. Relationship between Industrial Value Added and Export Value of Goods



Source: World Bank (processed)

The industrial value added of countries in East Asia Pacific in 2010 - 2020 had an increasing trend, although it decreased in 2016. The trend of increasing and decreasing the average value added of this industry was also followed by an increase and decrease in the average value of goods exports in 2016. the same year. So it can be concluded that there is a unidirectional relationship between the export value of industrial value added goods.

II. RESEARCH METHODS

This study uses data from 15 countries in East Asia and the Pacific according to data published by the World Bank, namely China, Japan, South Korea, Hong Kong, Singapore, Australia, Thailand, Malaysia, Indonesia, Vietnam, Philippines, New Zealand, Myanmar, Cambodia, and Mongolia. This study examines how the influence of logistics performance, goods tariffs and industrial sector developments on export performance in countries in the East Asia Pacific region in 2010, 2012, 2014, 2016, 2018, and 2020. The regression equation used in this study is as follows:

$$LNEKS = \beta_0 + \beta_1 LN LPI - \beta_2 Rates + \beta_3 INDGDP + \mu_{it}$$

Where:

β_0 : Constant

EX : Value of Export of Goods (Natural Logarithm)

LPI : Logistics Performance Index (Natural Logarithm)

<i>Rates</i>	: Average value of goods tariff (%)
<i>ENG</i>	: Proportion of Industry Value to GDP
<i>(%)_{1,2,3}</i>	: Regression Coefficient
<i>I</i>	: Description of the individual / <i>Cross Section</i>
<i>t</i>	: Time Description / <i>Time Series</i>
<i>μ_{it}</i>	: <i>Error Term</i>

In the process of forming the linear regression equation model in this study, the model suitability test was carried out, namely the Chow test, Hausman test, and LM test. The classical assumption test as one of the prerequisites for analysis in the regression model to assess the existing regression results is the best estimation result and deserves to be analyzed which consists of Normality, Heteroscedasticity, Autocorrelation, and Multicollinearity Tests. Hypothesis testing in this study used the *t* test (partial), the *F* test (simultaneous), and the coefficient of determination test.

III. RESULTS AND DISCUSSION

Table 5. Chow Test Results

Effects Test	Statistics	df	Prob.	Decision
Cross-section F	248.665227	(14.72)	0.0000	FEM

Source: Output Eviews

Based on the results of the Chow test output, it shows the probability value of Cross-Section F is 0.000 smaller than alpha (0.05) So H_0 rejected then Fixed Effect model is more precise than Common Effect model.

Table 6. Lagrange Multiplier Test Results

Null (no rand. effect) Alternative	Cross-section one-sided	Period one-sided	Both	Decision
Breusch-Pagan	134.2955 (0.0000)	2.435102 (0.1186)	136.7306 (0.0000)	BRAKE

Source: Output Eviews

Based on the results of the LM test output, it shows that the statistical LM probability value is 0.000 less than alpha (0.05) so that H_0 rejected then The Random Effect model is more precise than the Common Effect model.

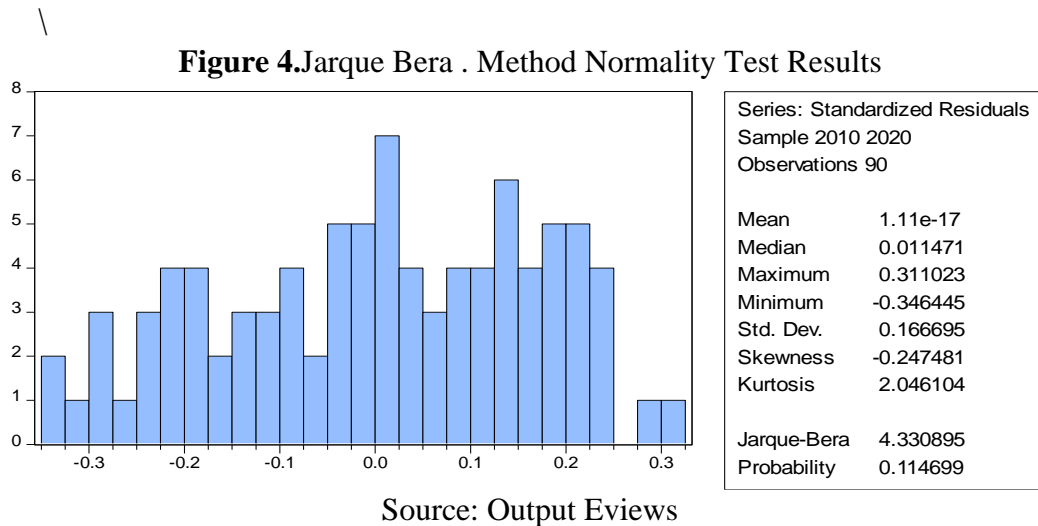
Table 7. Hausman test results

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.	Decision
Cross-section random	32.845190	3	0.0000	FEM

Source: Output Eviews

Based on the results of the Hausman test, it shows that the random cross-section probability value is 0.000 less than 0.05. So the Fixed Effect model is more appropriate than the Random Effect model. So, it can be concluded that the Fixed Effect model is better than other models.



Based on the results of the Normality Test Output, the Jarque-Berra probability value is 0.114 greater than alpha 0.05 so that the null hypothesis is accepted or the residual is normally distributed.

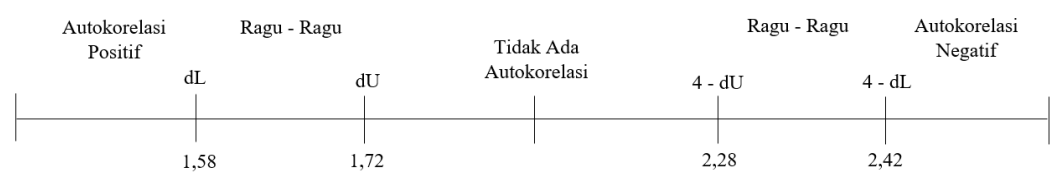
Table 8. Heteroscedasticity Test Results of the Glejser Method

Dependent Variable: ABS(RES)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.271102	0.112143	2.417464	0.0177
LOG(LPI)	-0.142521	0.074802	-1.905298	0.0601
Rates	0.002251	0.004805	0.468399	0.6407
INDGDP	0.000345	0.001681	0.204998	0.8381
F-statistics	2.093272			
Prob(F-statistic)	0.107033			

Source: Output Eviews

Based on the results of the Glejser Heteroscedasticity Test Output, the t-statistical probability values of the three independent variables are 0.060, 0.640, and 0.838 and the F-statistical probability value is 0.107 greater than alpha (0.05) or not statistically significant so it can be concluded that there is no heteroscedasticity problem in the model.

Figure 5. Durbin Watson Autocorrelation Test Results



Source: Output Eviews

From the fixed effect model used in this study, it shows that the Durbin Watson stat value is 1.78. With the number of observations of 90 and the number of independent variables is 3, it can be seen that the value of du is 1.72 while the value of dL is 1.58. So it can be concluded that the model does not contain positive and negative anthocorlations ($dU < d < 4-dU$).

Table 9. Correlation Coefficient Between Independent Variables

	LOG(LPI)	Rates	INDGDP
LOG(LPI)	1.0000	-0.38220	-0.35383
Rates	-0.38220	1.0000	0.56633
INDGDP	-0.35383	0.56633	1.0000

Source: Output Eviews

Based on the results of the Multicollinearity Test Output, there is no correlation coefficient between the independent variables which is more than 0.85 then the model does not contain multicollinearity.

Table 10. Result of Fixed Effect Panel Data Estimation

<i>Dependent Variable: LOG(EX)</i>					
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>	<i>Information</i>
C	23.22212	0.477220	48.66123	0.0000	Significant (5%)
LOG(LPI)	1.157442	0.316092	3.661727	0.0005	Significant (5%)
Rates	-0.034716	0.008461	-4.102937	0.0001	Significant (5%)
INDGDP	0.038682	0.006877	5.624915	0.0000	Significant (5%)
<i>R-squared</i>	0.992950				
<i>Adjusted R-squared</i>	0.991285				
<i>F-statistics</i>	596.5164				
<i>Prob(F-statistic)</i>	0.000000				
<i>Durbin-Watson stat</i>	1.785226				

Source: Output Eviews

Based on the probability value of t statistic, logistic performance variable and industrial value added has a positive and significant effect on the value of exports of goods, while tariffs on goods have a negative and significant effect on the value of exports of goods. Based on the probability value of F statistic, it can be concluded that the variables of logistics performance, tariffs for goods, and the value of exports of goods together have an effect on the value of exports of goods. The value of the coefficient of determination or R² value is 0.992950 while the adjusted R² value is 0.991285. This means that logistics performance, goods tariffs, and industrial value added can explain 99.12% of the value of goods exports in East Asia and the Pacific.

1. The Effect of Logistics Performance on the Value of Exports of Goods

Based on the regression results, the logistic performance coefficient (LPI) is positive on the value of exports of goods. This means that if there is an increase in logistics performance by 1% index units, it will cause an increase in the value of goods exports by 1.15% US Dollar units with the assumption of *ceteris paribus*. Improvements and improvements in the quality of logistics performance such as trade infrastructure development, increased efficiency in managing customs and border permits, making it easier to manage competitive international shipping prices, increasing competence and quality of logistics services, increasing the ability to track and trace shipments.

2. The Effect of Goods Tariffs on the Value of Exports of Goods

Based on the regression results, the goods tariff coefficient (TARIF) is negative to

the value of the export of goods. This means that if there is an increase in tariffs of goods by 1%, it will cause a decrease in the value of exports of goods by 0.03% of US Dollar units with the assumption of *ceteris paribus*. A decrease in the import tariff for raw goods or intermediate inputs used for domestic production of goods will result in a decrease in production costs. The decrease in production costs provides an opportunity for producers to be able to reduce the price of finished goods in the market so that the demand for these goods can increase and ultimately increase product competitiveness in the international market and exports of goods will increase.

3. The Effect of Industrial Value Added on the Export Value of Goods

Based on the regression results, the industrial value added coefficient (INDGDP) is positive on the value of the export of goods. This means that if there is an increase in industrial value added by 1%, it will cause an increase in the value of exports of goods by 0.03% with the assumption of *ceteris paribus*. Increasing the added value of raw goods will increase the use value of goods and the final value of goods so as to increase the competitiveness of goods in the market. Increasing the competitiveness of goods will increase the demand for goods and ultimately exports of goods will increase.

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusion

From the results of the analysis and discussion described in the previous chapter, the following conclusions can be drawn:

1. The value of logistics performance partially has a positive and significant effect on the value of exports of goods, meaning that an increase in logistics performance will increase the value of exports of goods to countries in the East Asia Pacific.
2. Import tariffs on goods partially have a negative and significant effect on the value of goods exports, meaning that a decrease in tariffs on goods will increase the value of goods exports for countries in the East Asia Pacific.
3. The added value of the industry partially has a positive and significant effect on the value of the export of goods, meaning that the increase in the value added of the industry will increase the value of the export of goods for countries in the East Asia Pacific.
4. The value of logistics performance, import tariffs, and industrial value added together affect changes in the value of exports of goods to countries in the East Asia Pacific.

Suggestion

The government is advised to improve the quality and availability of

infrastructure, especially related to logistics, in order to increase the value of exports of goods through reducing transportation costs and increasing the efficiency of the customs process. The policy of reducing tariffs for the entry of goods into a country needs to be focused on raw materials or intermediate inputs with the aim of reducing the production costs of domestic industries that use inputs from abroad so that the value of domestic production can increase. Increasing industrial value added by creating high-value goods will enlarge the role of industry in the economy, so that in the end it will strengthen the country's competitiveness in the international market and double the export value compared to only exporting low-value raw materials.

REFERENCES

- Agus Widarjono. 2018. *Introductory Econometrics and Its Applications With Guide Eviews*. Keli edition. Yogyakarta: UPP STIM YKPN Yogyakarta.
- Asirvatham, J., Rasiah, R., Thangiah, G., & Naghavi, N. (2017). Impact of foreign direct investment, imports and tariff deregulation on exports among pioneering asean members: Panel data analysis. *International Journal of Business and Society*, 18(1), 1–12. <https://doi.org/10.33736/ijbs.486.2017>
- Barakat, M., Haikal, G., Ali, A., & Eid, A. (2018). Enhancing Exports through Managing Logistics Performance: Evidence from Middle East and African Countries. *Journal of Research in Business, Economics and Management*, 11(2), 2131–2140. www.scitecresearch.com/journals/index.php/jrbem
- Basarac Sertić, M., Vučković, V., & krabić Perić, B. (2015). Determinants of manufacturing industry exports in European Union member states: a panel data analysis. *Economic research-Ekonomska istraživanja*, 28(1), 384-397
- Erkan, B., & Yildirimci, E. (2015). Economic Complexity and Export Competitiveness: The Case of Turkey. *Procedia - Social and Behavioral Sciences*, 195, 524–533. <https://doi.org/10.1016/j.sbspro.2015.06.262>
- Fuddin, MK (2020). Determination Of State Economic Activities - Developing Countries In East Asia & Pacific Using Classical Approaches. <https://doi.org/10.21203/rs.3.rs-24900/v1>
- Gani, A. (2017). The Logistics Performance Effect in International Trade. *Asian Journal of Shipping and Logistics*, 33(4), 279–288. <https://doi.org/10.1016/j.ajsl.2017.12.012>
- Hady, Hamdy. 2010. *International Economics Theory and Policy of International Trade Volume 2*. Jakarta: Ghalia Indonesia
- Hayakawa, K., Ishikawa, J., & Tarui, N. (2020). What goes around comes around: Export-enhancing effects of import-tariff reductions. *Journal of International Economics*, 126(26220503), 103362. <https://doi.org/10.1016/j.jinteco.2020.103362>
- Kilavuz, E., & Altay Topcu, B. (2012). Export and economic growth in the case of the



manufacturing industry: Panel data analysis of developing countries. *International Journal of Economics and Financial Issues*, 2(2), 201–215.

Porter, M. (1990). *The Competitive Advantage of Nations*. New York: Free Press.

Reppas, PA, & Christopoulos, DK (2005). The export-Output growth nexus: Evidence from African and Asian countries. *Journal of Policy Modeling*, 27(8), 929–940. <https://doi.org/10.1016/j.jpolmod.2005.06.007>

Salvatore, Dominick. 2014. *International Economics Edition 9*. Jakarta: Salemba Empat
Sugiyono. 2018. *Quantitative, Qualitative, and R&D Research Methods*. Bandung: CV Alfabeta

Töngür, ., Türkcan, K., & Ekmen-Özçelik, S. (2020). Logistics performance and export variety: Evidence from Turkey. *Central Bank Review*, 20(3), 143–154. <https://doi.org/10.1016/j.cbrev.2020.04.002>

World Bank Open Data. (2022). <https://data.worldbank.org/>

Yeo, AD, & Deng, A. (2020). Logistics performance as a mediator of the relationship between trade facilitation and international trade: A mediation analysis. *South African Journal of Economic and Management Sciences*, 23(1), 1–11. <https://doi.org/10.4102/sajems.v23i1.3453>