

# The Effect of Trade Liberalization on Indonesia's Exports

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**Abstract**—One of the open economic characteristics is the contribution of international trade in the economy. To make it bigger, there are many trade agreements are made to reduce international trade barriers. This study aims to determine the impact of trade liberalization on Indonesian exports to the three major trading partners in East Asia: South Korea, Japan, and China. The impact of liberalization on exports is examined using a gravity model and a panel with a period of 21 years (1996-2016). The independent variables used in this study are a tariff, degree of openness, population, exchange rate, GDP, and distance. The results of this study indicate that trade liberalization, viewed from the tariff and degree of openness has a significant effect on exports. Other influencing variables are GDP, population, and exchange rate. Distance variables have no effect on Indonesian exports to the three trading partner countries.

**Keywords**—export, liberalization, degree of openness, tariff, gravity model

## I. INTRODUCTION

Our investigated from empirical literature shown many research explained about effects trade liberalization in some context and case studies. Trade liberalization is the removal or reduction of restrictions or barriers on the free exchange of goods between nations, and it has interesting side because some authors considered that trade liberalization has a negative impact on economics, such as cause slowing down growth [1], less effective in promoting growth [2], causing inequality and poverty in developing countries [3][4]. Some authors also considered the impact of economic openness followed by trade liberalization not supported by sufficient evidence if it is associated with the growth of a country [5][6]. In the other hand, some authors assumed that trade liberalization did not have a significant impact on export growth [7][8].

Meanwhile, another perspective assumed trade liberalization was capable of encouraging more advanced and established economy. Among them are increasing exports and growth [9][10][11], improve manufacturing industry production performance [12], encouraging production specialization at the regional level [13], and at the national level [14], support trade creation and diversion trade [15], encourage diversification of export products with higher prices and quality [16][17]. In addition, trade liberalization also spur increase the added value of the manufacturing industry, especially for established industries [12], as well as various other positive impacts [18] [19].

Both empirical results are interesting and fundamentally to confirm how the impact of export trade liberalization in Indonesia to the main partner countries in East Asia: South Korea, Japan, and China. The reasons for choosing these countries, first because these three countries are the top three export destinations with the highest values. The market share of exported goods to the countries is quite large, at 27.5 percent, exceeding the combined market share of Singapore, Malaysia, and the Philippines which amounted to 20 percent.

Second, many tariff reduction agreements and even import exemptions have been made, thus representing trade liberalization. Third, trying to prove the impact of trade liberalization on developing countries that have export trading partners with developed countries. The dependent variable used in this study is export which was also used by previous researchers[20] [21] . While the determination of the independent variables is adjusted according to various considerations. Exchange rates as a form that describes purchasing power parity are selected to be independent variable based one previous kind of literature [22] [23] [24][25]. Meanwhile, to describe the purchasing power of the people in aggregate, the indicator is using GDP [26] and the population [27].The proxy for trade liberalization variables will be seen from the value of tariffs [28] [29] [30],and how to open the relations between Indonesia and the three main trading partner countries in East Asia used the degree of openness variable [31].Because this study adopted a gravity model, the distance variable also considered to be included in the independent variable [32] [33]

This study used panel data and the period is taken from 1996 to 2016 because the time period was calculated from before and after the implementation of the trade agreement to reduce tariffs. In 1996 it was chosen because in 1996-1997 import tariffs to China experienced a fairly high decline from 22.02% to 16.66%. The purpose of this study was to analyze the impact of trade liberalization, especially seen from the reduction of tariffs and the ratio of degrees of openness, as well as the influence of other variables such as exchange rates, population, real GDP, and the distance between Indonesia and South Korea, Japan and China, on Indonesian exports.

## II. LITERATURE REVIEW

The empirical literature on trade and economic growth became very important for developing countries during the

early 1980s. At that moment, economics was collapse and some debt crisis in developing countries significantly weakened to the influence of protectionist. Some empirical literature shows a strong causality between trade and growth, and for that reason, many countries made a conceptual policy to do the liberalization era.

There is investigated the impact of trade liberalization on economic growth from 74 selected developing countries in the world[1]. The dummy variable is used to investigate the impact of trade liberalization, and he finds mixed responses. The conclusion shows that on average, trade liberalization seems to have been linked to a set back in economic growth. However, other finding show that trade liberalization (tariff reduction) has a strong positive impact on import growth[34]. Then, another researcher investigated the impact of trade liberalization on market competition, productivity and increasing the scale of South Korea's manufacturing industry. He used panel data from 36 industries, for the period 1966 to 1988. The results showed that trade liberalization had significantly increased competition and productivity and increased scale efficiency[35].

Moreover, whether trade liberalization and the financial sector merged or deviated per capita income in developing countries in Africa, Asia, and Latin America. Trade liberalization accelerates the convergence of the level of real per capita income in Asia and Latin American countries and illustrates the differences in real per capita income in the case of African countries have become their findings. This finding only shows that trade liberalization affects economic prosperity positively in Asia and Latin America and is negative in Africa[36]. Otherwise, another finding analyze the impact of trade liberalization on the unemployment rate (state and industry) in India. This finding shows a significant positive relationship between industrial trade and unemployment, but shows the opposite impact on state case. The empirical literature shows the mixed effects of trade liberalization on developing countries' economic growth[19].

In developed countries, liberalization is often believed to be the main cause of the increasing inequality between skilled and unskilled labor and the loss of jobs among the latter. While part of this trend can be attributed to the reallocation of production and rise of vertical intra-industrial trade between developed and less developed economies [37], but in other parts seem to be related to technological progress [38]. The benefits of trade liberalization for less developed economies seem to depend on the speed of trade reform [39], and require a broader set of macroeconomic, structural and social policies [40]. The elimination of trade barriers brings the advantage of substantial efficiency but at the expense of the initial decline in market share and profits [41]. The company's response to the threat of entry imposed by liberalization depends on their location and characteristics[42]. Technology-driven companies and those exposed to agglomeration externalities are more likely to respond by investing in new technologies and production processes. Otherwise, service-product integration offers opportunities for producers from developed countries to differentiate from products originating in a low-cost economy[43]. Successful adjustments are closely related to higher levels of company research and development shares that reflect potential innovation and dynamics[44].

Historical evidence about the application of the Trade Liberalization Hypothesis (TLH) is still diverse. While some

authors find evidence that supports TLH [18][19][1], other authors find little or no evidence that greater trade openness has an impact on growth [45]. Overall, these findings indicate that increased production and exports only occur after initial adjustments are made. For those, we will prove how liberalization effect to Indonesia's export in three countries who are the top three export destinations with the highest values.

### III. RESEARCH METHOD

The gravity model is a very popular econometric model in international trade Origins with Tinbergen. Many published articles and working papers since then. Later, gravity models found its use in works [46][47]. In the 1990s the issue of applying gravity models to international trade was taken up repeatedly [48][49] [50][51]. Then, the issue of international trade in the context of gravity models appears in the works [52][53]. The gravity models have remained an important field of studies in recent years works [54][55].

A simple version of the gravity equation can be specified as:

$$T_{ij} = A \frac{Y_i Y_j}{D_{ij}} \dots \dots \dots (1.1)$$

where  $T_{ij}$  is the value of exports from country  $i$  to country  $j$ ,  $Y_i$  and  $Y_j$  are national incomes of  $i$  and  $j$  countries,  $D_{ij}$  is the physical distance between the two countries and  $A$  is a constant of proportionality. This multiplicative functional form implies that as size of the two countries increases (decrease) and distance between them decreases (increases), trade between two countries must increase (decrease). To derive a testable equation, logarithms of both sides of the equation can be taken. With a random disturbance term Gravity equation which tested in this study as follows:

$$\ln(X_{ijt}) = \alpha_{ijt} + \beta \ln RER_{ijt} + \beta \ln GDP_{ijt} + \beta \ln Trf_{ijt} + \beta \ln DOP_{ijt} + \beta \ln Pop_{ijt} + \beta \ln Dist_{ijt} + \epsilon_{ijt} \dots \dots \dots (1.2)$$

This study uses a quantitative approach to descriptive econometrics, a combination of mathematical analysis, statistics, and economic theory. Regression method uses a panel which is a combination of time series and cross section. Panel data regression method includes more than one time period and more than one sample. Using panel data regression, the best models will be chosen between PLS (OLS Panel), REM (Random Effect Model), and FEM (Fixed Effect Model) based on the Breusch-Pagan Lagrange Multiplier test, Chow-test and Hausman test. The dependent variable ( $X$ ) in this study is Indonesian exports to South Korea, Japan, and China. The independent variable are the exchange rate (RER), partner GDP (GDP), tariff (Trf), degree of openness (DOP), partner population (Pop), and distance (Dis), meanwhile  $\alpha$  and  $\beta$  are coefficients in this model.

### IV. RESULT AND DISCUSSION

PLS regression shows insignificant distance to exports with a probability of 0.520 and a significance level of ( $\alpha$ ) of ten percent. Other variables show significant results, namely real GDP has a probability of 0,000; population has a probability of 0.002; the degree of trade openness has a probability of 0,000; average tariff with a probability of

0.071; and the probability of a real exchange rate of 0,000. Variables that have a positive effect on exports of real GDP, population, and degree of openness of trade with coefficients are 0.7725005; 0,4687215; and 22,57949. Distance variables, average rates, and exchange rates have a negative effect on exports with successive coefficients - 0.9236354; -0,0097266; and -0.5707668., Based on Chow-test, FEM was chosen because the probability of F was 0.0227. Estimation continued with REM regression.

Table 1.1 REM Regression Results

Independent Variable	Coefficient	Error Standard	P-value
Exchange Rate	-0,5707668	2,172169	0.000** *
GDP	0,7725005	0.095063	0.000** *
Tariff	-0,0097266	0,0052915	0.066*
Degree of Openness	22,57949	2,172169	0.000** *
Population	0,4687215	0,1407457	0.001** *
Distance	-0,9236354	1,424938	0.517
Number of Observation	63		
R2	0,9753		
Prob. Chi-square	0,0000		

Source: own calculations used Eviews. 9.0

The degree of significance ( $\alpha$ ) used in REM is 10 percent. REM regression is shown in table 1.1. Exchange rate variables are negatively related to exports and are significant. GDP is positively related to exports and is significant. Tariff variables are negatively related to exports and are significant. Variable degrees of openness are positively related to exports and are significant. Population variables are positively related to exports and are significant. Variable distance is negatively related to exports and not significant. Based on the Hausman test, the probability of chi-square (Prob> Chi2) is greater than the significance level ( $\alpha$ ) of 10 percent. Chi-square probability is 0.1766. The best model that REM gets. R2 in REM shows a value of 0.9753. The independent variables in the model can explain the dependent variable of 97.53 percent and the rest are explained by other variables outside the model. The t-statistical test shows the effect of independent variables on individual dependent variables. The results of the t test in the REM model regression show that the real GDP of the partner has a probability of 0,000. This value is smaller than the significance level ( $\alpha$ ) of 10 percent, GDP has a significant effect on exports. Exchange rates have a probability of 0,000. The exchange rate has a significant effect on exports. The average import tariff has a probability of 0.066. Tariffs have a significant effect on exports. Indonesia's degree of openness towards the three trading partners has a probability of 0,000. The degree of openness has a significant effect on exports. The partner country population has a probability of 0.001. The population has a significant effect on Indonesia's exports to these three countries. The distance between Indonesia and the three trading partner countries has a probability of 0.517. The probability of distance is greater than the level of significance ( $\alpha$ ) of 10 percent. Distance does not significantly affect Indonesia's exports to all three countries. Test F Statistics shows the effect of all independent variables on the dependent variable based on the probability

of chi-square (Prob> Chi2). 0,000 chi-square probability. Together, the independent variables of the model affect the dependent variable.

The estimation model is written as follows:

$$\ln X_{it} = 1,946138 - 0,5707668 \ln RER_{it} + 0,7725005 \ln GDP_{it} - 0,0097266 Tr_{it} + 22,57949 DOP_{it} + 0,4687215 \ln Pop_{it} - 0,9236354 \ln Dist_{it} + \epsilon_{it} \dots \dots \dots (1.3)$$

REM estimation shows that the exchange rate is negatively and significantly related to exports. One percent increase in the Indonesian currency exchange rate against the currencies of trading partner countries reduced Indonesia's exports by 0.57 percent. GDP is positively and significantly related to exports. A one percent increase in trade partner GDP increases Indonesia's exports by 0.77 percent. Tariffs are negatively and significantly related to exports. A one percent increase in tariffs reduced Indonesia's exports by 0.01 percent. The degree of openness is positively and significantly related to exports. An increase of one percent degree of openness increases Indonesia's exports by 22.58 percent. The population is positively and significantly related to exports. One percent increase in population increases Indonesia's exports by 0.47 percent. The distance is negatively and insignificantly related.

Indonesia's main exports to South Korea, Japan and China based on the SITC Revision 2 with the largest to smallest amount are fuel and lubricants, raw materials (not edible), factory production (metal and iron), plant oils and animals, as well as transportation and machinery equipment. This condition shows that Indonesia has advantages in these products. The exchange rate in this study is the rupiah exchange rate compared to the exchange rates of the three trading partner countries. The exchange rate is negatively and significantly related to Indonesia's exports to South Korea, Japan and China. When depreciation occurs, exports will decrease. Japan experienced the same thing because of the large amount of fuel imports, so that the positive impact of depreciation was defeated by the cost of importing fuel. [56][57]. The linkage with negative value can be caused also because of the intermediate-input of exported goods. This condition affects the competitiveness of the price of exported goods [58].

Real GDP of the three trading partner countries, namely South Korea, Japan and China. GDP is statistically positive and significant impact on Indonesian exports. GDP shows the size of a country's economy. The greater the economy of a country, the greater the level of international trade. The high GDP of the export destination country shows the high demand or level of consumption in the country. This case has occurred in Bangladesh. The increase in GDP encourages the consumption of imported goods in Bangladesh is also increasing [59].

The tariff variable studied is the average tariff variable for imported goods in South Korea, Japan and China. This variable is statistically and negatively related to Indonesian exports. Tariff reduction causes the exporter burden to decrease. Consumer demand can increase because the price of goods is more affordable. Reducing import tariffs in the three main export destination countries of Indonesia is able to encourage exports [60].

The degree of openness has a positive and significant impact on Indonesian exports. An increasingly open

economy is shown by the increasing contribution of international trade both exports and imports to GDP. Increasing the flow of international trade benefits countries that enter into trade agreements. With an increase in Indonesia's degree of openness, it is expected to increase exports due to reduced production or consumption distortions [61].

The population of the three trading partner countries shows significant and positive statistics on Indonesian exports. Population can be used as a reference for a country's market share. Increasing population in the three trading partner countries can increase Indonesia's exports. An increase in the population of export destination countries allows exporters to sell more [62].

Distance is one of the important variables in the gravity model. A country will tend to trade with countries whose size or distance is close together [63]. Distance is used as an approach to transportation costs [61]. The estimation of this study shows that the distance between Indonesia and South Korea, Japan and China is not significant to exports. Other factors such as communication costs, control management, infrastructure, modern transportation technology, need to be considered in estimating transportation costs [64][65][66]. Trade barriers are factors that take into account trade costs. A country tends to choose trading partners that apply little trade barriers compared to trading partners with close locations but trade barriers are high (Ghazalian, 2015).

## V. CONCLUSION

Exchange rates, negatively affect exports. When depreciation occurs, Indonesia's exports to South Korea, Japan and China should increase. This reverse condition can be caused by imported products being used as raw material for export products (the price of raw materials is expensive and affects the price of the final product). South Korea, Japan and China real GDP have a positive effect on Indonesia's exports. The improving economy of the three countries shows export opportunities because the purchasing power of destination countries is improving. Import tariffs and the degree of openness of Indonesia to South Korea, Japan and China have a significant effect on Indonesia's exports. Tariff reduction is expected to increase Indonesia's exports. The population has a significant effect on Indonesia's exports to these three countries. The size of the population indicates a large export market. Distance is not significant for the approach to transportation costs. Other factors need to be considered, such as infrastructure, technology, trade barriers, and demand.

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