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Free Trade Agreement and Non-Tariff Measure on Indonesia's Export Performance: Major Export Destination Countries

Untung Perdamayan

Directorate General of Customs and Excise, Ministry of Finance, Jakarta, Indonesia

E-mail: untung.perdamayan@kemenkeu.go.id

Abstract

The study in this paper aims to estimate the effect of Free Trade Agreement (FTA) and Non-Tariff Measures (NTMs) on trade volume in Indonesia. The methodology used to determine the effect of the FTA and NTM is Fixed Effect Model (FEM) and Random Effect Model (REM) on a panel dataset from 2000 to 2020 in 10 main exports destination countries for Indonesia, and set four models to explain these effects. Models 2 to 4 which use the fulfillment of SPS, TBT and a combination of SPS and TBT as non-tariff barriers variables are found to have a negative and significant effect on Indonesia's export performance with resulting that SPS requirements by importing countries will be reduced by 5.7% (Model 2), TBT requirements by 6.02% (Model 3), and the combination of fulfilling SPS and TBT requirements 8.4% (Model 4) on Indonesia's export performance. In the REM model, RTA as a variable of FTA has a negative and significant impact on the value of Indonesia's exports with 3.8% effects. RTA policies with several countries such as Japan, Singapore and South Korea have not been effective in increasing Indonesia's exports for several periods. Meanwhile the trade between the USA and Indonesia without an FTA mechanism has actually increased the value of exports from 2003 to 2020. Furthermore, the implementation of meeting the requirements of non-tariff barriers could have a negative effect on Indonesia's export performance, and trade relations occur with four countries with the largest and negative intercept effect, namely Japan, followed by Singapore, USA and South Korea.

Keywords: Free Trade Agreement; Non-Tariff Measures; Exports; Gravity Model

INTRODUCTION

The involvement of a country in trade tends to be influenced by several indicators such as the influence of trade globalization, the achievement of trade volume, trade dependence, trade patterns and revealed comparative advantage (RCA), the existence of

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trade overlap and intra-industry trade (IIT). Trade could not always run smoothly and ideally as many parties want. In the context of trade between countries, barriers can arise in the form of tariff barriers and NTMs that cause obstacles in conducting trade. Profits in a trade are usually based on the absence of restrictions on trade between countries.

International Trade Centre (ITC) has issued a press release in 2013 which result that thirty-seven percent of Indonesian exporters and importers are affected by trade-restricting measures, according to a survey of nearly 1,000 Indonesian companies by the International Trade Centre (ITC). This compares with an average ratio of 55% in more than 20 other developing countries surveyed by ITC during the last three years. NTMs, which include a variety of regulations on imports and exports, such as technical requirements, quotas and rules of origin, have become a major impediment to international trade as companies struggle to comply with an increasingly complex web of policies and technical standards. Among the companies interviewed, 34% reported having faced difficulties dealing with export regulations in Indonesia. Exporters also reported delays and unusually high fees and charges as major procedural obstacles to trade. This condition are the challenges that should be easy to address in order to increase the country's competitiveness.

ITC also reported that nearly two-thirds (66%) of exporters reported burdensome regulations applied by partner countries. More than 55% of these barriers are technical requirements, such as product specifications that exported products need to comply with. Among the technical requirements deemed to be difficult, fumigation issues were the most commonly mentioned. Conformity assessment procedures account for 24% of burdensome NTMs applied by importing countries, which include certification. Affected export products include seafood, coffee and coffee substitutes, cocoa, wood manufactures and footwear.

As well as ITC, the Export Development Directorate of the Indonesian Ministry of Trade explained that in the face of the COVID-19 pandemic which is still being experienced by all countries to date, Indonesia has five main challenges in the global trade industry. One of them is trade protectionism and increasing trade barriers. Among them are the imposition of tariffs by trading partner countries, import license obligations from trading partner countries, and sustainable issues (in which export products must be environmentally friendly).

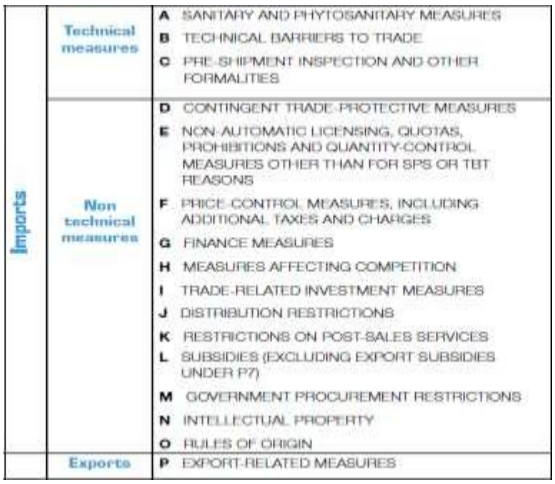
Based on the aforementioned matters, the authors are interested in conducting a study on how the influence of NTMs on Indonesia's export performance to several main export destination countries with data ranges taken from 2000 to 2020 and will also conduct a simple analysis using Revealed Comparative Advantages (RCA) of Indonesia's leading export commodities that have export competitiveness in the world. In this paper proposal, with the introduction as the first part from this study, the discussion is further divided into several major sections such as an overview of the Indonesian economy; study of literature; and research methodology.

LITERATURE REVIEW

Non-Tariff Measures

United Nations Conference on Trade and Development (UNCTAD) on International Classificationon Non-Tariff Measures 2012 Version published in 2015 said that non-tariff measures aregenerally defined as policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both. Since this definition is broad, a detailed classification is of critical importance so as to better identifyand distinguish among the various forms of non-tariff measures. NTMs classification by chapter is as follow.

Figure 1. NTMs Classification



In the table above there is NTMs classification is broadly divided into 2 (two) main parts, namely import measures (in the form of technical and non-technical measures) and export measures (in the form of export related measures). NTMs in imports categorizes the majority into two groups, namely technical measures that consist of sanitary/phytosanitary measures (SPS); technical barriers to trade (TBT); and Pre-shipment inspection and other formalities (PSI) and the other is non-technical measures.

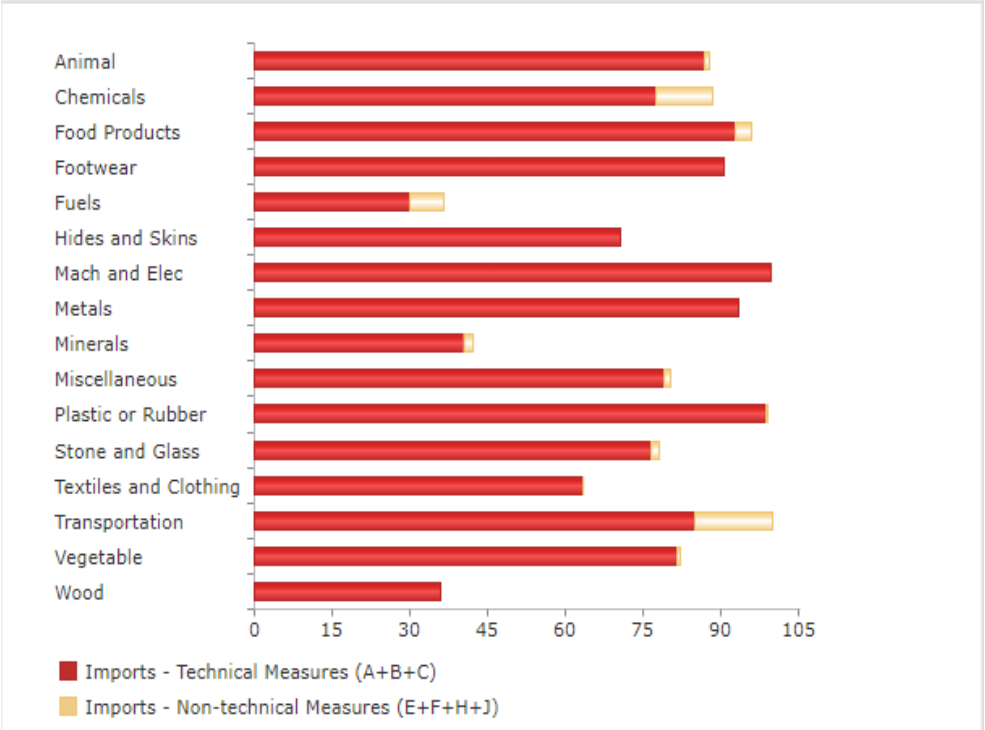
SPS measures that are applied to protect human or animal life from risks arising from additives, contaminants, toxins or disease-causing organisms in their food; to protect human life from plant- or animal-carried diseases; to protect animal or plant life from pests, diseases, or disease-causing organisms; to prevent or limit other damage to a country from the entry, establishment or spread of pests; and to protect biodiversity. These include measures taken to protect the health of fish and wild fauna, as well as of forests and wild flora.

TBT measures referring to technical regulations, and procedures for assessment of conformity with technical regulations and standards, excluding measures covered by the SPS Agreement. While, PSI means compulsory quality, quantity and price control of goods prior to shipment from the exporting country, conducted by an independent inspecting agency mandated by the authorities of the importing country. Example: A pre-shipment inspection of textile imports by a third party for verification of colors and types of materials is required.

NTMs in export-related measures are measures applied by the government of the exporting country on exported goods. Some of them are export-license, -quota, -prohibition and other quantitative restrictions; state-trading enterprises, for exporting; other selective export channels; export price- control measures; measures on re-export; export taxes and charges; export technical measures; export subsidies; export credits; and export measures, N.E.C.

Based on World Integrated Trade Solution (WITS) in 2015, Indonesia's measure composition on NTMs is dominated by the NTMs imports technical measures (SPS + TBT + PSI). Some number of NTMs imports technical measures based on product group are product of animal (87); chemicalsproduct (78); food product (93); footwear product (90); fuels product (30); hides and skins product(71); machine and electronics product (100); metal product (93); minerals product (41); miscellaneous product (79); plastic or rubber product (99); stone and glass (77); textiles and clothing (64); transportation product (85); vegetable product (82); and wood product (36). Its composition can be seen in the following bar chart.

Figure 2. Indonesia's Measure Composition on NTMs



Export Value

The value of Indonesia's exports to ten export destination countries is measured by the value of FOB/Free on Board (Million USD). Japan was the largest export destination country until the 2016 period, but after that period until the 2020 period, China took over as Indonesia's largest export destination. From the accumulated export value from 2020 to 2020, Indonesia's largest export destination countries can be ranked, namely Japan (USD 419,654.1 Million); China (USD 307.326.5 Million); USA (USD 279,428.9 Million); Singapore (USD 235,548.4 Million); South Korea (USD 171.861.9 Million); India (USD 165,712.8 Million); Malaysia (USD 138,421.2 Million); Thailand (USD

86,054.2 Million); Philippines (USD 67,348.1 Million); and Vietnam (USD 43,832.6 Million). The following is a graph of Indonesia's export value (data from the World Bank, processed):

Figure 3. Indonesia Export Value

Gravity Model

The model used in this research is the Gravity model. This model is based on Newton's law of gravity, which states that the gravitational force between two objects is directly affected proportionally by the masses of the two bodies and vice versa is proportionally affected by the quadratic distance between them. The gravity model has been widely used to estimate the effects of NTMs because it has become the workhorse model to estimate the impact of trade costs on trade flows.

In a trade context, gravity models emphasizing country size and economic distance between countries as factors explaining trade. the gravity models are attractive because they produce a relatively good fit to the data with relatively few explanatory variables. Thus, the ability of either method to detect effects of NTMs in the data begins with residual of the model when a dummy variable for the presence of an NTM is introduced into a regression model, the estimated coefficient for that model is essentially equivalent to an estimate of the value of the residual for the particular observation(s) that the NTM applies.

Since the early 1960s, economists have observed that international trade flows tend to be larger between pairs of large economies and smaller between pairs of economies which are more physically distant from each other (Tinbergen (1962); Pöyhönen (1963)). As has already been mentioned, gravity modelling allows the analyst to give a reasonably good statistical account of the levels of trade flows with just three variables (exporter’s GDP, importer’s GDP, and a measure of distance) or even only two

(many applications use the product of exporter's GDP and importer's GDP as a single variable). Physical distance is accounted for either by "great circle" or air distance, waterborne shipping distance, or time zones.

Impediments to trade can be viewed as additional factors which increase economic distance. Additional variables can be included in the model almost without limit; "cultural" distance factors such as linguistic distance (Boisso and Ferrantino (1997)), cultural "good feeling" (Noland (2005)), ethnic networks (Rauch and Trinidade (2002)), and bilateral trust of business persons (Guiso, Sapienza, and Zingales (2005)). One can add measures of "policy distance" such as tariffs, NTMs, the presence or absence of free trade agreements (FTAs), membership in international organizations, etc. Measures of economic freedom, institutional quality, transparency or corruption have also been used in gravity models.

Howard (1999) included the use of a partly subjective trade policy index that accounts for forms of protection that are difficult to quantify, such as administrative barriers, unilateralism, procurement restrictions, corruption, etc. in to the gravity model to estimate the cost of protection. When the result is trade policy explained negatively. Ayu (2014) analyzes the effect of NTMs on the export of Indonesia's CPO commodity to the main export destination countries, with the results that the real GDP of the importing country; population of importing countries and the real exchange rate has a positive effect on the performance of Indonesia's CPO exports. Meanwhile, the NTMs policies are in the form of SPS, TBT, and/or trade remedies; and economic distance has a negative effect on Indonesia's CPO export performance. Dini (2007) conducted a study on the analysis of the determinants of Indonesia's bilateral trade using a gravity model approach. The results of the study concluded that domestic income, population size, and the same size of the economy had a positive impact on Indonesia's bilateral trade, while distance had a negative effect on Indonesia's bilateral trade. Meanwhile, endowment factors and bilateral agreements have no impact on Indonesia's bilateral trade.

The comparison with gravity derives from GDP being a proxy for economic mass and distance a proxy for resistance. In its general form, exports from country i to country j are explained positively by their economic sizes (GDP) and negatively by the geographical distance between countries, while a set of dummies can be incorporated indicating some kind of institutional characteristics common to specific flows the basic model, shown in equation 1 (Jakab, Kovacs, & Oszlay, 2001; Martinez-Zarzoso & Nowak-Lehmann, 2003), expressed in log form.

$$lnX_{ij} = \beta 0 + \beta 1 lnY_i + \beta 2 lnY_j - \beta 3 lnD_{ij} + \beta 4 lnA_{ij} + u_{ij} \quad (1)$$

where X_{ij} is the export of goods by country i to country j, Y_i and Y_j are the GDP of the exporter and importer countries, D_{ij} is the distance between the two countries, A_{ij} represents any other factors influencing trade between the countries and u_{ij} is the error term.

Hypothesis

Based on the description above, some provisional estimates that need to be tested are as follows: GDP per capita of importing and exporting country; physical capital of importing country; economic similarity index; and the dummy variable for FTAs presumed has a positive effect on Indonesia's export performance. Meanwhile, remoteness (economic distance between countries); differences in endowment factors; and the dummy variable for NTMs, which could be SPS and/or TBT, presumed has a negative effect on Indonesia's export performance to several major countries.

RESEARCH METHOD

Table 1 below presents the description of the variables used in the analysis:

Table 1. Data Description

Variable	Description	Source
Exports Total ($\boldsymbol{EXP_{ij}}$)	FOB value of exports of the exporting country (i) for each of the importing countries (j), in the year t in natural log (ln).	BPS; Ministry of Trade; IMF
Gross Domestic Product Per Capita ($\boldsymbol{GDPCap_i}$)	national income measured by the GDP Per Capita of the exporting country.	World Bank
Gross Domestic Product Per Capita ($\boldsymbol{GDPCap_j}$)	national income measured by the GDP Per Capita of the importing country.	World Bank
Partner Physical Capital ($\boldsymbol{PhysicCap_j}$)	Gross Capital Formation (% of GDP) * GDP of the importing country, in %.	World Bank
Factor Endowment ($\boldsymbol{ENDOWij}$)	the difference between the endowment factors of the exporting country (GDP/Population) and the importing country (GDP/Population), in natural log (ln).	World Bank
the same size of the economy ($\boldsymbol{SIMILARij}$)	the similarity index of the size of the economy is measured by the formula (Di Mauro, 2000), where is the formula ,	World Bank
Remoteness ($\boldsymbol{REMOTij}$)	Remoteness is included as the product of the remoteness indicators for the two trading countries. This variable captures an expected increase in trade for bilateral trading partners that are remote from the rest of the world. With formula: $= Distance\,(KM)\ x\ \frac{GDPj}{GDPworld}$, in natural log (ln).	CEPII, World Bank
Membership in FTA ($\boldsymbol{FTAij}$)		similarity of membership in the free trade area

(a treaty between two or more governments that define the rules of trade for all signatories) using a dummy variable, D = 1 for trading	WTO

	partners who have the same membership, and D = 0 for trading partners who have different memberships.	
Non-Tariff Measures ($\boldsymbol{NMTsij}$)	Dummy variable that assumes values 1 if the country j issued notifications (TBT and/or SPS) to the commodity imported from country i, in the year t, and zero for the others.	UNCTAD

Econometric Models

More recently, Baier and Bergstrand (2005) have shown that many of the advantages of Anderson and van Wincoop's approach to estimation of the gravity model can be obtained by using standard statistical software which runs ordinary least squares (OLS) by use of an appropriate approximation. Gravity models estimated on panel data can also be used to do "*before-and-after*" analyses when the estimation is performed on a series of annual cross sections.

The analysis of this study uses panel data with an annual time series from 2000 to 2020 and a cross section of ten (10) main export destination countries for Indonesia, namely China, Japan, the United States, India, South Korea, Singapore, Malaysia, Thailand, the Philippines, and Vietnam. The next step is to determine the panel data model to be used, namely whether to use the common (CEM) or fixed effect (FEM) or random effect (REM) method. To perform these tests used the Chow Test and Hausman Test. For the Chow test, if p-value > 5% then Ho is accepted (or the model follows CEM) and if p-value < 5% then Ho is rejected, then the model follows FEM. After the Chow test, we do the Hausman Test, if p-value > 5% then Ho is accepted (or the model follows REM) and if p-value < 5% then Ho is rejected, then the model follows FEM. Then the analysis of the discussion of the results will include an explanation of the economic, statistical criteria and comparisons with previous studies.

Meanwhile, Classical Assumption Test for Panel Data Regression will be carried out such as Heteroscedasticity Test and Multicollinearity Test as well as model parameter testing aiming to determine the model and whether the estimated coefficients are in accordance with the theory or hypothesis, namely the F-Test and Coefficient of Determination ($R2$). All data processing in this research uses the help of the statistical application of E-Views Version 10.

The econometric model models used in this study is as follows.

Model 1:

$$lnEXP_{ijt} = \beta_0 + \beta_1 GDPCap_{jt} + \beta_2 GDPCap_{it} + \beta_3 PhysicCap_{jt} + \beta_4 lnENDOW_{ijt} + \beta_5 lnSIMILAR_{ijt} + \beta_6 lnREMOT_{ijt} + \beta_7 FTA_{ijt} + u_{ijt} \quad (2)$$

Model 2:

$$lnEXP_{ijt} = \beta_0 + \beta_1 GDPCap_{jt} + \beta_2 GDPCap_{it} + \beta_3 PhysicCap_{jt} + \beta_4 lnENDOW_{ijt} + \beta_5 lnSIMILAR_{ijt} + \beta_6 lnREMOT_{ijt} + \beta_7 NTM(SPS)_{ijt} + u_{ijt} \quad (3)$$

Model 3:

$$lnEXP_{ijt} = \beta_0 + \beta_1 GDPCap_{jt} + \beta_2 GDPCap_{it} + \beta_3 PhysicCap_{jt} + \beta_4 lnENDOW_{ijt} + \beta_5 lnSIMILAR_{ijt} + \beta_6 lnREMOT_{ijt} + \beta_7 NTM(TBT)_{ijt} + u_{ijt} \quad (4)$$

Model 4:

$$lnEXP_{ijt} = \beta_0 + \beta_1 GDPCap_{jt} + \beta_2 GDPCap_{it} + \beta_3 PhysicCap_{jt} + \beta_4 lnENDOW_{ijt} + \beta_5 lnSIMILAR_{ijt} + \beta_6 lnREMOT_{ijt} + \beta_7 NTM(SPS\&TBT)_{ijt} + u_{ijt} \quad (5)$$

Where EXP_{ij} is the export of goods by country i to country j, $GDPCap_i$ and $GDPCap_j$ are the GDPper capita of the exporter and importer countries,$PhysicCap_j$ is the gross capital formation (% of GDP)* GDP of the importing country, $ENDOW_{ij}$ is differences in endowment factors of exporter and importer countries, $SIMILAR_{ij}$ is Economic similarity index of exporter and importer countries, $REMOT_{ij}$ is the economic distance between countries, FTA_{ij} is equality of members in the free trade area, and NTM_{ij} is measures applied by the government of the importing country (SPS and/or TBT), and u_{ij} is the error term.

RESULTS AND DISCUSSION

Panel Data Analysis with Gravity Model

Before performing panel data regression, it is necessary to select the panel data model whether to use the Common Effect Model (CEM), Fixed Effect Model (FEM) or Random Effect Model. For this selection, the Chow Test and Hausman test was carried out. Based on the Chow Test, it was found that the p-value < 5% i.e. (0.000 <5%) then Ho is rejected, then the model follows FEM. After that we do the Hausman test, for Model 1 it was found that p-value > 5% i.e. (1.0000>5%) then Ho is not rejected, then the model follows REM.

Meanwhile, for models 2 to 4, it was found that the p-value < 5% i.e. (0.000 <5%) then Ho is rej ected, then the model follows FEM. The use of FEM is in line with this model because it examines changes that occur in entities, namely the relationship between Indonesia and the importing country.

Table 2. Chow and Hausman Tests

Chow Test	**Fixed Effects Tests**		
	Stat.	**d.f**	**Prob.**
Cross-section F	4.597925	(9,183)	0.0000
Cross-section Chi-square	40.772158	9	0.0000

Hausman Test – Model 1	**Correlated Random Effects**		
	Chi-Sq. Stat.	**Chi-Sq. d.f**	**Prob.**
Cross-section random	0.000000	7	1.0000
Hausman Test – Model 2 to 4			
Cross-section random	31.216722	7	0.0001

The feasibility test of the model can be seen through the F-Statistic value used is 0.0000, so it can be concluded that there is at least one independent variable in the model that affects the dependent variable. The goodness of fit test shown by the R-squared value

for models 2 to 4 is 0.51 which means that the variations of the independent variables in the model are GDP per capita of the destination country, GDP per capita of the exporting country, physical capital of the importing country, endowment factor, index economic similarity, and economic distance are able to explain the dependent variable (export value) by 51% while the other side is explained by other variables outside the model. While model 1 found an R-squared value of 0.42.

Table 3. Feasibility Test - Model 1

R-squared	0.424130	Mean dependent var	0.072107
Adjusted R-squared	0.403135	S.D. dependent var	0.166525
S.E. of regression	0.128652	Sum squared resid	3.177867
F-statistic	20.20123	Durbin-Watson stat	1.571413
Prob(F-statistic)	0.000000		

Table 4. Feasibility Test - Model 2 to 4

R-squared	0.513343	Mean dependent var	0.072107
Adjusted R-squared	0.470794	S.D. dependent var	0.166525
S.E. of regression	0.121141	Akaike info criterion	-1.302553
Sum squared resid	2.685554	Schwarz criterion	-1.022196
Log likelihood	147.2553	Hannan-Quinn criter.	-1.189097
F-statistic	12.06469	Durbin-Watson stat	1.706722
Prob(F-statistic)	0.000000		

The basic assumption test of the panel data model is carried out in order to obtain an estimate that is BLUE (Best Linear Unbiased Estimator), namely normality test, multicollinearity test, and heteroscedasticity test. In the normality test, in all models found p-value> 5%, so that the data in the model is normally distributed. For the multicollinearity test, there is no value > 0.8 in the correlation between the independent variables in the model and the heteroscedasticity test found that the model does not have heteroscedasticity symptoms with p-value > 5%.

Normality Test

Figure 4. Model 1

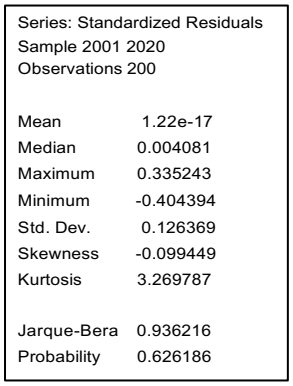
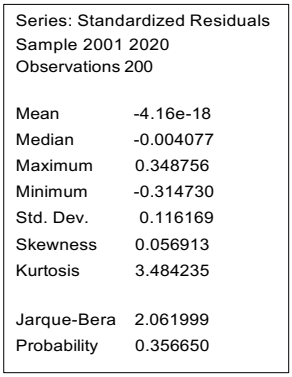


Figure 5. Model 2 to 4



Multicollinearity Test

Table 5. The Result of The Test

	D(SIMILAR)	D(ENDOW)	D(REMOT)	D(PARTNER_GDP_PER_CAPITA)	D(INDO_GDP_PER_CAPITA)	D(PARTNER_PHYSICAL_CAPITAL)	SPS_TBT
D(SIMILAR)	1.000000	0.319739	-0.304113	-0.064026	0.111835	-0.190806	0.146252
D(ENDOW)	0.319739	1.000000	-0.506416	-0.165417	0.512432	-0.241581	0.067050
D(REMOT)	-0.304113	-0.506416	1.000000	0.232142	-0.006088	0.265093	-0.130674
D(PARTNER_GDP_PER_CAPITA)	-0.064026	-0.165417	0.232142	1.000000	0.355091	0.286820	-0.018170
D(INDO_GDP_PER_CAPITA)	0.111835	0.512432	-0.006088	0.355091	1.000000	0.143942	0.011797
D(PARTNER_PHYSICAL_CAPITAL)	-0.190806	-0.241581	0.265093	0.286820	0.143942	1.000000	0.065415
SPS_TBT	0.146252	0.067050	-0.130674	-0.018170	0.011797	0.065415	1.000000

Heteroskedasticity Test

Table 6. The Result of The Test

Panel Cross-section Heteroskedasticity LR Test
Null hypothesis: Residuals are homoskedastic
Equation: UNTITLED
Specification: D(EXP01) C D(SIMILAR) D(ENDOW) D(REMOT) D(PARTNER_GDP_PER_CAPITA) D(INDO_GDP_PER_CAPITA) D(PARTNER_PHYSICAL_CAPITAL) SPS_TBT

	Value	df	Probability
Likelihood ratio	14.53867	10	0.1498

LR test summary:

	Value	df
Restricted LogL	131.8161	192
Unrestricted LogL	139.0855	192

Regression Results

In a study that raised the topic of the effect of FTAs and Non-Tariff Barriers on Indonesia's export performance to ten export destination countries during the period 2000 to 2020, four models were used. The first model includes FTA variables, while the second to fourth models include each of the non-tariff barriers, namely SPS, TBT, and the combination of the imposition non-tariff barriers of SPS and TBT at the same time by the importing country on exportation from Indonesia. The regression results are shown by the table below:

Table 7. The REM and FEM Regression Results:

Variables	REM		FEM							
	Model 1		Model 1		Model 2		Model 3		Model 4	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.028421	0.1158	0.061075	0.0026	0.017825	0.1728	0.011612	0.3417	0.009653	0.4183
D(SIMILAR)	-0.088557	0.5582	0.105672	0.5254	0.121981	0.4722	0.207307	0.2237	0.192162	0.2559
D(ENDOW)	-0.465227	0.0030*	-0.224086	0.1726	-0.150198	0.3616	-0.125593	0.4450	-0.127059	0.4387
D(REMOT)	-0.227798	0.1235	-0.501778	0.0015*	-0.487747	0.0025*	-0.453956	0.0046*	-0.455242	0.0044*
D(PARTNER_GDP_CAPITA)	2.56E-06	0.6607	1.95E-05	0.0050*	1.98E-05	0.0052*	1.92E-05	0.0068*	1.86E-05	0.0086*
D(INDO_GD	0.000509	0.0000*	0.000407	0.0000*	0.000380	0.0000*	0.000376	0.0000*	0.000381	0.0000*

P_ CAPITA)										
D(PARTNER_PHYSICAL_CAPITAL)	1.19E-13	0.0724***	2.06E-13	0.0213**	1.85E-13	0.0406**	1.89E-13	0.0376**	1.99E-13	0.0288**
RTA	-0.038503	0.0531***	-0.081103	0.0008*						
SPS					-0.057010	0.0286**				
TBT							-0.060241	0.0503**		
SPS&TBT									-0.084610	0.0320**

Note: * significant at = 1%; ** Significant at = 5%; and *** Significant at = 10%.
Source: E-Views output (processed).

The FEM models can provide additional interpretation of the variations that occur between entities, namely the magnitude of the effect between Indonesia and each export destination country. This table also includes model 1 if regression is done with FEM. This explanation can be obtained through the cross-section effect as shown in the table below as follows.

Table 8. Cross-Section Effects

No.	PARTNER	Model 1	Model 2	Model 3	Model 4
		Effect			
1	China	0.009790	0.026113	0.018098	0.017078
2	Japan	-0.085768	-0.083614	-0.089460	-0.083427
3	USA	-0.129464	-0.051061	-0.072115	-0.069700
4	Singapore	-0.042191	-0.070958	-0.063558	-0.061716
5	Malaysia	0.031745	0.003598	0.013132	0.011146
6	India	0.065548	0.073571	0.072388	0.073227
7	South Korea	-0.060778	-0.052307	-0.053245	-0.050313
8	Thailand	0.040016	0.030104	0.028176	0.024440
9	Philippines	0.065589	0.043735	0.050004	0.053407
10	Vietnam	0.105513	0.080820	0.096580	0.085858

Model 1 (REM) shows that the difference in endowment factors between Indonesia and importing countries and FTAs negatively and significantly affects Indonesia's export performance. This indicates that the higher the endowment factor difference between Indonesia and the importing country, the lower Indonesia's export performance (a 1% increase in the endowment factor difference between Indonesia and partner countries will cause Indonesia's export value to decrease by 46.5%) and vice versa if the lower the endowment factor difference between the two trading partner countries, Indonesia's export performance will also increase (a 1% decrease in the endowment factor difference between Indonesia and partner countries will increase the export value by 46.5%). The relationship between difference of endowment factor is in line with the hypothesis. There are differences with some previous studies and the existing theory that RTA should improve a country's export performance because of a free trade agreement (RTA) that does not protect trade in terms of tariffs. Meanwhile, from the regression results, it was found that presence of RTA was negatively and significantly related to Indonesia's export performance (implementation of RTA will cause Indonesia's export value to decrease by 3.8%). Based on export value data, FTAs with China from 2007 to 2020, Indonesia's export value tends to fluctuate. FTA with Japan since 2015, Indonesia's

export value has tended to decline until 2020. FTA with Singapore since 2012, Indonesia's export value has tended to decline until 2020. Meanwhile, FTA with South Korea, since 2017, Indonesia's export value has decreased until 2020. Trade between the USA and Indonesia without an FTA mechanism has actually increased the value of exports from 2003 to 2020. This may be caused by other things besides tariff issues that need to be considered, namely non-tariff barriers. Meanwhile, Indonesia's GDP per capita variable and partner physical capital have a positive and significant impact on Indonesia's export performance.

In models 2 to 4, it is found that remoteness or economic distance between Indonesia and export destination countries has a negative and significant relationship that affects Indonesia's export performance during the period 2000 to 2020. This is in line with the hypothesis and indicates that the greater the economic distance between Indonesia and other trading partners will reduce the value of Indonesia's exports (a 1% increase in economic distance or remoteness will reduce the value of Indonesia's exports by 45 to 48%), and vice versa if the economic distance or remoteness decreases, Indonesia's export performance will be higher. Meanwhile, the variables of Indonesia's GDP per capita, GDP per capita of export partner countries, and physical capital variables of partner countries have a positive and significant relationship to Indonesia's export performance during the period 2000 to 2020.

As in models 2 to 4, it can be seen that non-tariff barriers have a negative and significant relationship in influencing Indonesia's export performance during 2000 to 2020, with different magnitudes of influence. For non-tariff barriers in the form of the application of SPS requirements by import countries will reduce Indonesia's export performance by 5.7%, fulfillment of TBT requirements by import countries will reduce Indonesia's export performance by 6.02% and the combination of fulfilling SPS and TBT requirements at the time of export causes Indonesia's export value to decrease by 8.4%. We can see that the simultaneous imposition of SPS and TBT requirements on Indonesian export commodities has the greatest impact in reducing the value of Indonesia's exports.

In the cross-section effect table above, we can see the magnitude of the effect that each export destination country has on Indonesia's export performance. In model 1 we can see that there are 4 out of 10 countries, namely the USA, Japan, South Korea, and Singapore that have a negative intercept effect with respect to differences in endowment factors and the implementation of RTA in influencing Indonesia's export performance, with USA having the largest effect, followed by Japan, South Korea and Singapore. Meanwhile, the other 6 export destination countries had a positive effect on Indonesia's export performance, with Vietnam having the largest effect. Meanwhile, in models 2 to 4, we can see that the implementation of meeting the requirements of non-tariff barriers can have a negative effect on Indonesia's export performance, and trade relations occur with four countries with the largest and negative intercept effect, namely Japan, followed by Singapore, USA and South Korea. While the biggest positive effect is with trading partners Vietnam.

CONCLUSION

The fulfillment of technical requirements or non-tariff barriers in Indonesia's trade with ten exportdestination countries in the form of fulfilling the requirements of SPS, TBT, or a combination of SPS and TBT has a negative and significant effect on Indonesia's export performance. Using the FEM model in the data panel, it was found that SPS requirements by import countries will reduce Indonesia's export performance by 5.7%, fulfillment of TBT requirements by import countries willreduce Indonesia's export performance by 6.02% and the combination of fulfilling SPS and TBT requirements at the time of export causes Indonesia's export value to decrease by 8.4%. In the REMmodel, RTA has a negative and significant impact on the value of Indonesia's exports, namely the implementation of RTA will cause Indonesia's export value to decrease by 3.8%. This indicates that the RTA policy in the form of tariff exemption has not been effective in improving Indonesia'sexport trade performance with partner countries, and this may be caused by other things besides tariff issues that need to be considered, namely non-tariff barriers.

In models 2 to 4, the variable remoteness or economic distance between Indonesia and export destination countries has a biggest negative and significant relationship that affects Indonesia's export performance during the period 2000 to 2020, namely a 1% increase in economic distance or remoteness will reduce the value of Indonesia's exports by 45 to 48%. While in model 1, the difference in endowment factors has the biggest negative and significantly affects Indonesia's export performance, namely a 1% increase in the endowment factor difference between Indonesia and partner countries will cause Indonesia's export value to decrease by 46.5%. To capture the magnitude of the influence of each export destination country on Indonesia's export performance, it can be seen through the cross-section effect table. In model 1 we can see that there are 4 out of 10 countries, namely the USA, Japan, South Korea, and Singapore that have a negative intercept effect with respect to differences in endowment factors and the implementation of RTA in influencing Indonesia's export performance. Meanwhile, in models 2 to 4, the implementation of meeting the requirements of non-tariff barriers can have a negative effect on Indonesia's export performance, and trade relations occur with four countries with the largest and negative intercept effect, namely Japan, followed by Singapore, USA and South Korea.

The author realizes that there are limitations in the use of models and statistical data processing, so that it is hoped that further research can improve this. Regarding the R-squared value in models 1 to 4 which only ranges from 0.42 to 0.51 indicates that there are independent variables outside the research model that can better explain the variation in the dependent variable, so there is great hope for further research to add other independent variables to the research model. in models.

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