PATTERNS AND DETERMINANTS OF INTRA-INDUSTRY TRADE: CASE FOR INDONESIA AND ITS TRADING PARTNER UNDER REGIONAL COMPREHENSIVE ECONOMIC PARTNERSHIP (RCEP) FRAMEWORK

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PATTERNS AND DETERMINANTS OF INTRA-INDUSTRY TRADE: CASE FOR INDONESIA AND ITS TRADING PARTNER UNDER REGIONAL COMPREHENSIVE ECONOMIC PARTNERSHIP (RCEP) FRAMEWORK

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Abstract

This study analyzes the patterns and determinants of intra-industry trade (IIT) during the period 2010-2017 between Indonesia and trading partner countries under Regional Comprehensive Economic Partnership (RCEP), consists of Malaysia, Singapore, Thailand, Vietnam, Philippines, Cambodia, China, Japan, South Korea, India, Australia and New Zealand. The analyzes divided into three groups which are primary product, manufacture, and total commodity based on Standard International Trade Classification (SITC). The Grubel-Lloyd Index is used to calculate intra-industry trade and the Generalized Method of Moments (GMM) method is used to analyze dynamic panel data. The results showed that trade patterns were dominated by intra-industry trade compared to inter-industry trade. Determinants in the form of average Gross Domestic Product (GDP) has a significant positive effect in primary product and manufacturing IIT but has negative effect in total IIT. Distance has a significant negative effect on primary product and manufacturing IIT but has a positive effect in total IIT. Research & Development (R&D) has a significant positive effect on IIT in all groups. Foreign Direct Investment (FDI) has a significant negative effect on primary product and manufacturing groups but has a positive effect on overall total IIT.

Keywords: Intra-industry trade, primary product, manufacture, Research & Development (R&D), Generalized Method of Moments (GMM), Regional Comprehensive Economic Partnership (RCEP).

JEL: F4; F15; F6

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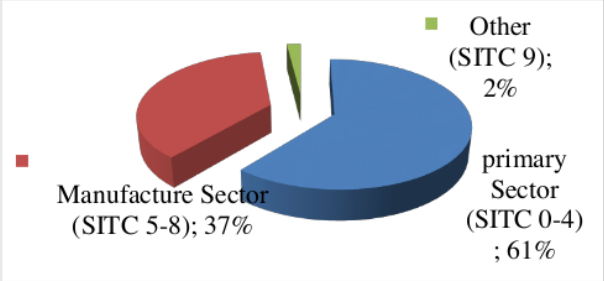
1. INTRODUCTION

International trade has an important role in contributing to the economic growth of the Association of Southeast Asian Nations (ASEAN) member countries consists of Indonesia, Malaysia, Singapore, Thailand, Vietnam, Philippines, Cambodia, Myanmar, Brunei Darussalam, Lao P.D.R. and the other six countries, namely China, Japan, South Korea, India, Australia and New Zealand. The Regional Comprehensive Economic Partnership (RCEP) is a form of cooperation in trade and economic relations between countries in the Asia Pacific region in the form of free trade agreements namely ASEAN with China (ACFTA), Japan (AJCEP), South Korea (AKFTA), India (AIFTA), Australia and New Zealand (AANZFTA). RCEP as an economic region is likely to have great potential in the future because the sixteen members cover almost half of the world's population, which is around 3.4 billion people, covering more than 39% of the world's total Gross Domestic Product (GDP) of $ 49.5 trillion and more than 25% of global exports according to ASEAN Statistics in 2017. The study from Pwc Global (2013) also predicts that RCEP in 2050 will dominate half of the global economy with total GDP of RCEP members estimated to reach $250 trillion which the GDP of China and India is expected to cover half of the world economy, then America will be at the third place. With all the potential that RCEP has, the GDP of China, India and Indonesia is expected to grow beyond $100 trillion in the year 2050 (Pwc Global, 2013). Figure 1 shows the share of Indonesian Export by commodities in 2018. Most of Indonesian export commodities are from primary sector (61%) , followed by manufacture sector commodities (37%) and other (2%), respectively. This study attempt to analyze Indonesian Intra Industri Trade using these two commodities.



Source: UNCOMTRADE (2018)

Figure 1. Share Of Indonesian Export By Main Commodities

International trade in the form of regional economic cooperation can be divided into two, namely intra-industry trade (hereinafter abbreviated as IIT) and inter-industry trade. According to Carbaugh (2008), intra-industry trade is a two-way trade (exports and imports) with the same commodity of trade, while inter-industry trade is trade that has a different commodity between its exports and imports. An example of intra-industrial trade is that Indonesia will import and export oil palm, Japan will export and import television. Meanwhile, the example of inter-industrial trade is that Indonesia excels in rubber production, while Korea is superior in the production of cellular telephones. Therefore, Indonesia will export rubber and import cellular phones from Korea, and Korea will export cellular phones and import rubber. Grubel and Lloyd (1975) developed an index with values between zero and one (0-1) used to analyze patterns of intra-industry trade by measuring the balance between its exports and imports. If the value of

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Grubel-Lloyd index is close to one (1), it means that the amount of imports and exports from a country is almost balance or in other words is getting closer to intra-industry trade. Conversely, if the value of Grubel-Lloyd index is close to zero (0), then the country is only focusing on one activity (either export or import) to another country, in other words it is getting closer to inter-industry trade. Intra-industry trade (IIT) between Indonesia and RCEP member countries (Malaysia, Singapore, Thailand, Vietnam, Philippines, Cambodia, China, Japan, South Korea, India, Australia and New Zealand) are classified based on primary product, manufacture and others according to Standard International Trade Classification (SITC). Primary products are products that are available from processing raw materials without manufacturing processes, usually used as raw materials in production processes such as agriculture, fisheries, forestry and mining (Pettinger, 2017). Manufacture products are namely products that have been processed into intermediate good or final goods. Others are products that are not categorized into primary or manufacture products. Total is a combination of primary, manufacture and other products. Primary products are classified in SITC code 0-4, manufactures are classified in SITC code 5-8, while others are classified in SITC code 9 and total commodities use SITC code 0-9. The Standard International Trade Classification (SITC) is used to distinguish primary product groups (SITC 0-4), manufacturing groups (SITC 5-8) and total totals (SITC 0-9). SITC code zero (0) is food and live animals. Code one (1) is a beverage and tobacco. Code two (2) is raw material, not edible, except fuel. Code three (3) is fuel oil, lubricants and similar materials. Code four (4), namely animal oil and vegetables, fat, wax. Code five (5) is a chemical and similar product. Code six (6) is a manufactured product. Code seven (7) is a transportation machine and equipment. Code (8) is another manufacturing product and code nine (9) is commodity and transaction (coins and gold).

This study aims to analyze patterns and determinants of intra-industry trade between Indonesia and six ASEAN countries (Malaysia, Singapore, Thailand, Vietnam, Philippines and Cambodia) as well as China, Japan, South Korea, India, Australia and New Zealand and analyze effects of independent variables in this study on dependent variables specified in the model. The dependent variables used in this paper are intra-industry trade (IIT) of primary product, manufacture, and total commodity. Independent variables used in this paper are Average Gross Domestic Product (AGDP), geographical distance (DIST), Research & Development (R&D) and Foreign Direct Investment (FDI) using the Generalized Method of Moments (GMM) method. This research is organized as follows. The next section provides a brief review of the literature. Section 3 describes the measurement methodology specification regression model that is used to identify the determinants of IIT between Indonesia and RCEP countries. Section 4 presents the results of estimation of each country in the sample in all three categories (primary products, manufacturing, total) and Section 5 summarizes conclusion of the analysis.

2. LITERATURE REVIEW

International trade arises due to the globalization of trade where every country with an open economy feel the urgency to exchange goods, services and production factors across national borders to fulfil their needs. According to Carbaugh (2014), international trade results on an increase in the level of consumption because consumers will have more diverse product choices, increase the investment rates higher, reduce commodity prices and production factors for producers. Declining trade barriers can widen the flow of information and enlarge the taps of exchange of goods, services and factors of production between countries. Intra-industry trade (IIT) is a unique phenomenon that occurs in international trade nowadays. Unlike inter-

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industry trade which exchanges different goods and services between countries, intra-industry trade (IIT) will exchange the same goods and services (export and import the same product categories) from one country to another country.

Previous research that study determinants of intra-industry trade has been carried out. According to Appleyard (2014), the theory of comparative advantage based on factors endowment was not able to explain the pattern of IIT very well because the phenomenon of IIT is quite complex. Based on Appleyard (2014), the exchange of goods in IIT is determined by product differentiation and transportation costs. Research conducted by Tharakan (1984) and Clark & Stanley (1999) suggests that IIT determinants in the form of distance that has a negative effect on IIT. The farther the distance between countries, the higher the transportation costs, the possibility of IIT will also decrease. The studies of Akram & Mahmood (2012) and Phan & Jeong (2014) state that one of the important determinants of IIT is the average GDP. The average GDP of countries is an indicator to view the rate of demand factors in both countries. The higher the demand, the higher the likelihood of an IIT. With the presence of intra-industry trade, the market for products will be even wider.

The determinant in the form of research & development (R&D) which has been investigated by Doruk (2015) states that the intensity of R&D has a positive influence on the growth of IIT because R&D is used as an indicator to see the level of product differentiation. The more differentiated the product, the higher the likelihood of IIT occurring. Another study conducted by Fukao, Ishido & Ito (2003) and Kandogan (2003) states that FDI determinants have a positive influence on IIT because investment can lead to the higher IIT. Through intra- industry trade, a country will have the opportunity to gain additional benefits from international trade rather than just trading based on comparative advantage or absolute advantage.

3. METHODOLOGY AND DATA

Data used in this paper are secondary data in the form of panel data that combines cross data and time series data. The cross section used in this paper are RCEP countries, while the time series data used in this study are 2010-2017. Data on GDP and FDI were obtained from the World Bank, distance data was obtained from CEPII *(Center d'Etudes Prospectives et d'Informations Internationales)*, and R&D data were obtained from GII (Global Innovation Index). The intra-industry trade (IIT) in this study being calculated by the Grubel-Lloyd index (1975) with export import data from the United Nation Commodity Trade (UN Comtrade) between Indonesia and RCEP member countries. The Grubel-Lloyd index is as follows.

$$IIT = 1 - \frac{|X_c - M_c|}{X_c + M_c} \quad (1)$$

where IIT is intra-industry trade, Xc is the export of certain commodities, Mc is the import of certain commodities. This index has a value between 0 and 1. If a country has an IIT index close to or equal to 0, trade in that country will incline to inter-industry trade. Meanwhile, if the country has an IIT index close to or equal to 1, trade in that country will lead to intra-industry trade.

This study uses the GMM (Generalized Method of Moments) dynamic panel data method which is used to capture the dynamics of adjustment in economic relations reflected in the lag

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of the dependent variable in the model. Therefore, the use of dynamic panel data analysis is more appropriate to reflect the true phenomenon of intra-industry trade. The existence of a dynamic relationship occurs when there is a lag of the dependent variable. Analysis of regression models that are not only influenced by the current period but also influenced by the previous period of independent variables are called distributed lag models (Gujarati, 2006). According to Baltagi (2005) the dynamic panel data model is formulated as follows.

$$y_{it} = \delta\, y_{i,t-1} + x'_{it}\,\beta + u_{it}; \quad (2)$$

$(i = 1,\ldots,N;\ t = 1,\ldots,T)$

In above model, δ represents a switch, x'_{it} represents the matrix in the form of 1 x K and β represents the matrix shaped K x 1. Based on the dynamic panel model proposed by Baltagi (2005) above, models used in this study are as follows.

$$IITprim_{it} = \alpha_1\, IITprim_{it-1} + \alpha_2\, lnAGDP_{it} + \alpha_3\, lnDIST_{it} + \alpha_4\, lnRD_{it} + \alpha_5\, lnFDI_{it} + \varepsilon_{it} \quad (3)$$

$$IITmanu_{it} = \alpha_0 + \alpha_1\, IITmanu_{it-1} + \alpha_2\, lnAGDP_{it} + \alpha_3\, lnDIST_{it} + \alpha_4\, lnRD_{it} + \alpha_5\, lnFDI_{it} + \varepsilon_{it} \quad (4)$$

$$IITtotal_{it} = \alpha_0 + \alpha_1\, IITtotal_{it-1} + \alpha_2\, lnAGDP_{it} + \alpha_3\, lnDIST_{it} + \alpha_4\, lnRD_{it} + \alpha_5\, lnFDI_{it} + \varepsilon_{it} \quad (5)$$

where $IITprim_{it}$ is an index of intra-industry trade in primary products between Indonesia and RCEP member countries in year t, $IITmanu_{it}$ is an index of intra-industry trade in manufacture between Indonesia and RCEP member countries in year t, $IITtotal_{it}$ is an intra-trade trade index in total commodity between Indonesia and RCEP member countries in year 1, $IITprim_{it-1}$ was the lag of the index of intra-industry trade in primary products of the previous year, $IITmanu_{it-1}$ was the lag of intra-industry trade in manufacture of the previous year, $IITtotal_{it-1}$ is the lag of intra-industry trade of total commodity of the previous year, AGDP is the average Gross Domestic Product between ASEAN and China, Japan and South Korea, India, Australia and New Zealand. In year t, DIST is the distance between the capital (economic centre) of ASEAN countries and China, Japan and South Korea, India, Australia and New Zealand. In year t, RD was Research & Development (R & D) using ASEAN innovation sub-input index with China, Japan and South Korea, India, Australia and New Zealand. In year t, ε_{it} was an errorterm.

The validity of GMM model can be tested by using the Sargan or Hansen test for over-identifying restrictions. In the Sargan or Hansen test, there is a probability value of chi-square. If the probability value is below the 1%, 5% or 10% significance level, the null hypothesis (H_0) is rejected, or in other words the model is invalid. Conversely, if the probability value is above the 1%, 5% or 10% significance level, the null hypothesis (H_0) is not rejected, or in other words the model is valid. Arellano-Bond autocorrelation test (AR2) was used to see the consistency of the regression results from the GMM model used. The null hypothesis (H_0) in the Arellano- Bond autocorrelation test is that there is no autocorrelation, while the first hypothesis (H_1) is autocorrelated. In the Arellano-Bond autocorrelation test, there is a probability value of z. If the probability of z is below the significance level of 1%, 5% or 10% then H_0 is rejected, or in other words there is autocorrelation (invalid model). Conversely, if the probability value z is above the significance level of 1%, 5% or 10% then H0 is not rejected, so the conclusion is that there is no autocorrelation problem (model is valid).

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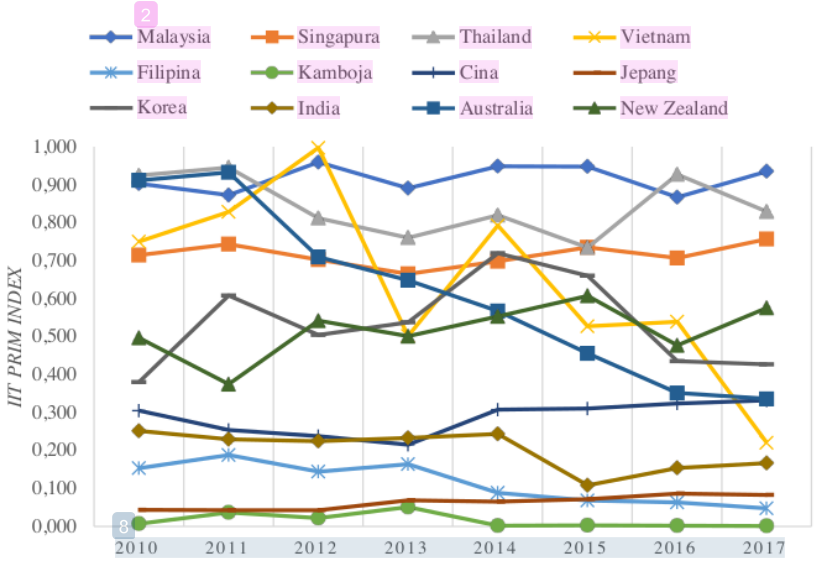
4. RESULTS AND DISCUSSION

Pattern of Intra-Industry Trade between Indonesia and RCEP Countries



Source: United Nations Commodity Trade (2019), Author's Calculation

Figure 2 Development of IIT in Primary Products (SITC 0-4) between Indonesia and RCEP Member Countries 2010-2017

This study uses the Grubel-Lloyd index with values ranging from zero (0) to one (1). The closer it is to zero, the closer it is to inter-industry trade, and the closer it is to one, the closer it is to intra-industry trade. The highest primary product intra-industry trade index in 2017 is Malaysia with 0.93 which is very close to intra-industry trade, followed by Thailand with index 0.82 and Singapore with index of 0.75 in 2017. Meanwhile, the index IIT which is close to zero (approaching inter-industrial trade) is Cambodia with an average index of IIT 0.016. In the manufacturing group, the highest manufacturing intra-industry trade index in 2017 is with Malaysia at 0.88 which is very close to intra-industry trade. Other countries with indices that are getting closer to intra-industry trade in manufacturing groups are Singapore, Thailand, India, Vietnam, New Zealand, Australia and Japan. China and Cambodia tend to have a low manufacturing IIT index that leads to inter-industrial trade.

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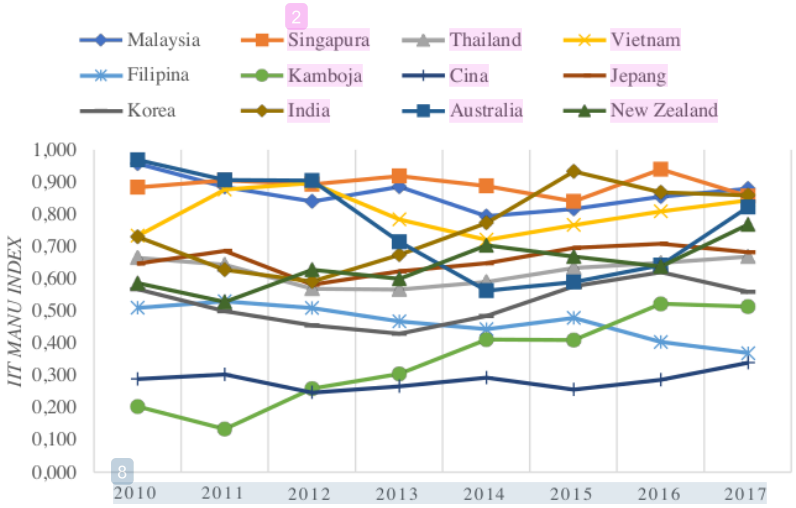
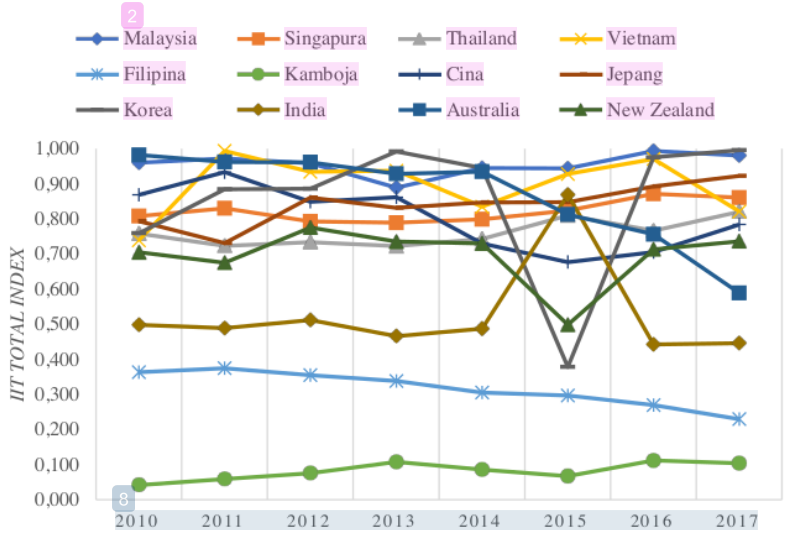


Source: United Nations Commodity Trade (2019), Author's Calculation

Figure 3 Development of IIT in Manufacture (SITC 5-8) between Indonesia and RCEP Member Countries 2010-2017

For total commodities, the highest intra-industry trade index in 2017 is South Korea with an IIT index of a total of 0.996 which is very close to intra-industry trade, followed by Malaysia with an IIT index of 0.98 in 2017. Other RCEP member countries has a trend of total IIT index approaching one (increasingly intra-industry) in the period 2010-2017, namely Japan, Singapore, Vietnam, Thailand, China, New Zealand Australia and India. Whereas RCEP member countries that have a total IIT index approaching zero (increasingly inter-industrial), namely Cambodia, with an average IIT index of 0.082 and the Philippines with an average IIT index of 0.317 in total IIT.



Source: United Nations Commodity Trade (2019), Author's Calculation

Figure 4 Development of Total IIT (SITC 0-9) between Indonesia and RCEP Member Countries 2010-2017

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Determinants of Intra-Industry Trade between Indonesia and RCEP Countries

This study aims to analyze the effect of average Gross Domestic Product (GDP), distance, Research & Development (R&D), and Foreign Direct Investment (FDI) on intra-industry trade (IIT) of primary products, manufactures, and total commodities. The period used is 2010-2017 with the Generalized Method of Moments (GMM) panel data regression method. The following is the estimation result from GMM on average GDP, distance, Research & Development (R&D), and Foreign Direct Investment (FDI) that affects IIT. Table 1 shows the results of the GMM-SYS estimation with the lag of the dependent variable that is significant at level 1% and 10% which shows that IITs in the three groups still have a correlation between times, so that there are dynamic relationships in this analysis. All independent variables are significant at level 1%, 5% and 10% in influencing IIT of primary products, manufactures, and total commodities. The value of prob > F is 0,000 which means that the significant probability values at level 1% and H_0 are rejected so that variables of average GDP, distance, R&D, FDI are simultaneously influence IIT in all three models between Indonesia and RCEP countries.

The GMM specification test on the primary product model was carried out using the Hansen test (Hansen test) of 0.911 which means that the value is not significant at the level of 1%, 5% or 10%. Therefore, it is concluded that H_0 is not rejected where overidentifying restriction is accepted, then it can be concluded that the primary product model is valid.

Table 4. GMM System Estimator Results

Variable	GMM Coefficient of Primary Product	GMM Coefficient of Manufaktur	GMM Coefficient of Total Product
Lag IIT	0.462***	0.462*	0.423***
Average GDP	0.170***	0.124***	-0.339***
Distance	-0.319**	-0.144***	0.171***
R&D	0.168***	0.148**	0.235***
FDI	-0.106***	-0.105***	0.085***
Constanta	-	-0.002	5.554
Diagnostic Test:			
Prob>chi^2	0.000	0.000	0.000
# of instruments	20	16	20
# of groups	12	12	12
AR (1)	0.169	0.096	0.010
AR (2)	0.441	0.933	0.738
Sargan test	0.000	0.806	0.024
Hansen test	0.911	0.814	-
GMM*: Hansen*/*Sargan test*	0.653 (h)	0.326 (h)	0.800 (s)
Difference GMM*: Hansen*/*Sargan test*	0.937 (h)	0.968 (h)	0.001 (s)
IV Hansen/*Sargan test*	0.890 (h)	0.973 (h)	0.033 (s)
Difference IV Hansen/*Sargan test*	0.568 (h)	0.233 (h)	0.144 (s)

Source: Processed data using Stata 14, 2019
*Remarks: *** significantly below level 1% (α = 0.01), ** significantly below the level of 5% (α = 0.05), * significant below the level of 10% (α = 0.1), (h) Hansen test, (s) Sargan test*

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Tests on the manufacturing group model are carried out using the Hansen test of 0.814 which means that the value is not significant at the level of 1%, 5% or 10%. It can also be concluded that the manufacturing model is valid. Testing on the total commodity model is carried out using the Sargan test of 0.024 which means that the value is not significant at the level of 1%. It can also be concluded that the total commodity model is valid. Test of primary product autocorrelation shows that the value of AR (2) is 0.441 which means that the value is not significant at level 1%, 5% or 10% so that H_0 is not rejected which indicates that there is no autocorrelation between variables in the primary product model. In the manufacture model shows that the value of AR (2) is 0.933 which means that the value is not significant at level 1%, 5% or 10% so that H_0 is not rejected which indicates that there is no autocorrelation between variables in the manufacturing model. In the total commodity model shows that the value of AR (2) is 0.738 which means that the value is not significant at level 1%, 5% or 10% so that H_0 is not rejected which indicates that there is no autocorrelation between variables in the total commodity model.

Average GDP has a positive and significant effect on IIT in primary products and manufactures, while for total IIT, the average GDP has a negative effect. Average GDP shows the average market size between Indonesia and each RCEP member country. The thing that determine the amount of trade volume between two countries is the size of the economy that can be seen from the Gross Domestic Product (GDP) of the two countries (Krugman, et al., 2012: 13). When an average GDP increase of 1% occurs, the primary product intra-industry trade (IIT) will increase by 0.170% assuming other independent variables are constant (ceteris paribus). When there is an increase in average GDP of 1%, manufacturing intra-industry (IIT) trade will increase by 0.124% assuming other independent variables are constant (ceteris paribus). In the total IIT model, the average GDP in this study shows a negative and significant relationship to the total IIT between Indonesia and RCEP member trading partner countries. When an average GDP increase of 1% occurs, total intra-industry trade (IIT) will decrease by 0.339% assuming other independent variables are constant (ceteris paribus). In line with previous research conducted by Sawyer et al. (2010), countries with similar economic measures will tend to do more intra-industry trade in Asia, while the more different economic measures between the two countries will reduce the total IIT of commodities. Indonesia's highest trading partner country with IIT level is South Korea, but the economic size of the two countries is not similar so it can trigger a decline in total intra-industry trade.

In the primary product model, the distance in this study shows a negative and significant effect to IIT in primary products between Indonesia and RCEP member trading partner countries. When the distance is 1% further, then intra-industry trade (IIT) in primary products will decrease by 0.170% assuming other independent variables are constant (ceteris paribus). In the manufacturing model, the average GDP also shows a negative and significant effects to the IIT in manufactures between Indonesia and the RCEP members. When the distance is 1% further, then intra-industry trade (IIT) in manufactures will decrease by 0.144% assuming other independent variables are considered constant (ceteris paribus). With further distance, the costs of transportation and communication will become more expensive, which can lead to a decrease in IIT. Whereas in the total IIT model, the distance in this study shows a positive and significant relationship to the total IIT overall between Indonesia and RCEP member trading partner countries. When the distance is 1% further, total intra-industry trade (IIT) will increase by 0.171%. Jienwatcharamongkol (2012) conducted empirical research in Sweden regarding distance sensitivity to Swedish exports. The results of the study state that homogeneous products are more sensitive to distance than differentiated products because homogeneous

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products are more standardized, so competition or competition to get markets at close range can be fiercer than differentiated products. As explained earlier that intra-industry trade is dominated by differentiated products, the trade in IIT total is not sensitive to distance. In Indonesia, distance have a positive effect on Indonesia's total IIT because exports are dominated by differentiated products rather than homogeneous products.

R&D results in all three models of primary, manufacture and total product showed a positive and significant relationship to IIT. When R&D increases by 1%, intra-industry trade (IIT) of primary products will also increase by 0.168% assuming other independent variables are constant (ceteris paribus). In the manufacture model, R&D also shows a positive and significant relationship to the IIT of manufactures between Indonesia and member countries of the RCEP trading partners. When R&D increases by 1%, intra-industry trade (IIT) of manufacture will increase by 0.148% assuming other independent variables are constant (ceteris paribus). When R&D increases by 1%, total intra-industry trade (IIT) also increases by 0.235% assuming other independent variables are constant. R&D can trigger new innovations. With the increase of new innovations, the product differentiation will also increase. The more product differentiation from a country, the higher demand in other countries will be and those effect will increase IIT in all sectors.

In the primary product model, FDI shows a negative and significant relationship to the primary product IIT between Indonesia and RCEP member countries. When FDI increases by 1%, intra-industry trade (IIT) of primary products will decreases by 0.106% assuming other independent variables are constant (ceteris paribus). In the manufacture model, FDI also shows a negative and significant relationship to the IIT in manufacture between Indonesia and RCEP member countries. When FDI increases by 1%, intra-industry trade (IIT) of manufacture will decrease by 0.105%. Balassa and Bauwens (1987) conducted research in several developing countries and developed countries in Europe and stated that FDI had a negative effect on manufacturing IITs due to the replacement of exports from products differentiated orientation to foreign products and compounded by language barriers among countries. Looking at the background of each RCEP member country which have different languages from each other (language border), this can be a trigger that allows FDI to negatively influence IIT in the primary product and manufacturing sectors. Based on data from the Investment Coordinating Board of Indonesia (BKPM) in 2018, the realization of FDI in Indonesia in primary products was only around 17%, manufacture by 35%, and others by 48%. Therefore, the largest percentage of FDI is not invested in primary or manufacture products, but in other sectors, especially services so that the FDI in primary product and manufacture shows a negative influence on IIT. In the total IIT model, FDI have a positive and significant relationship to the total IIT overall between Indonesia and RCEP member countries. When FDI increases by 1%, intra-industry trade (IIT) in total will increase by 0.085% assuming other independent variables are constant (ceteris paribus). In RCEP member countries, a large amount of FDI is invested in good with a high IIT index. If FDI gets higher, overall total IIT will increase as well because investment can encourage the breakdown of parts of production that are spread internationally by multinational enterprise companies. It would lead an increase in the level of product differentiation that could automatically increase the volume of exports and intra-industry trade.

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5. Conclusions and Policy Recommendation

Based on the calculation of the intra-industry trade using Grubel-Lloyd index (1975), the pattern of total and manufacturing trade between Indonesia and RCEP Member States tends to lead to intra-industry trade rather than inter-industry, while primary products are more likely to lead to inter-industry than intra-industry trade. Based on GMM estimation results, the determinants of intra-industry trade between Indonesia and RCEP member countries include the average GDP, distance, R&D, FDI because based on the results of simultaneous tests, all independent variables are significantly influence the IIT. The average GDP in the primary product and manufacture models has a positive and significant effect on the IIT, while in the total average model GDP has a negative and significant effect on IIT. Distance in the primary product and manufacture models has a negative and significant effect on IIT, while the total distance model has a positive and significant effect on IIT. R&D in all models has a positive and significant effect on IIT. FDI in the primary product and manufacture models has a negative and significant effect on IIT, while in the total FDI model it has a positive and significant effect on IIT.

The Study conclude that the average GDP could either have a positive or negative effect on the IIT, then ASEAN need to add members from major trading partner countries who have not joined RCEP yet to increase market potential, such as United States, European Countries, African countries, Middle east countries and so forth. On the other hand, the government needs to increase competitiveness and improve the quality of human resources. The R&D level in ASEAN is still low compared to other RCEP countries outside ASEAN, so hopefully the government of Indonesia and other ASEAN countries can increase the level of R&D in their countries to encourage IITs and increase economic growth. In terms of investment, the government needs to increase ease of doing business in Indonesia to attract more FDI into the primary product and manufacture sector in Indonesia. Because of the limitations of the study, it is expected that further research can cover more specific commodities, containing other intra-industry determinants that are still rarely used such as market or business sophistication, and breaking up IITs into horizontal IIT vs vertical IIT, or industry-specific vs country-specific have not been able to be appointed in this study.

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