

Analysis of Asean Economic Integration toward Indonesian Fishery Export

Harsuko Riniwati^{1*}, Nuddin Harahab¹, Pebrie²

¹*Department of Fisheries Socioeconomic, Faculty of Fisheries and Marine Science
Brawijaya University, Indonesia.*

²*Department of Fisheries, Ministry of Fisheries and Maritime Affairs.*

Abstract: *This research was aimed to analyze the effect of ASEAN economic integration on Indonesian fishery export. This research employed gravity model which was used to analyze Indonesian fishery export with ASEAN countries and other non-ASEAN main trading partners. The result of this research indicated that Indonesian fishery export in 2000 - 2015 fluctuated with an upward trend. The main commodities of Indonesian fishery export were shrimp, lobster, tuna, and crab. Non-tariff barrier faced by Indonesian fishery sector was that there were only few international certified products, thus it was related to low competitiveness. The estimation of panel data using gravity model found that factors affecting Indonesian fishery export were GDP per capita of exporting country, real exchange rate, economic distance and Indonesian participation in Asean Free Trade Area (AFTA). Joining AFTA had a positive effect for Indonesia and it was able to increase the export of Indonesian fishery sector.*

Keywords: *economic integration, fishery export, gravity model, AFTA*

I. Introduction

The Indonesian state that has a population very much, maintains inter-state trade relations is very important. The current era of globalization has led to changes in the economy and trade. Based on the idea that free trade will bring greater benefits, the demand for liberalization of world trade from some countries in trade negotiation forum escalates quickly.

The economic liberalization of the Southeast Asian region has been discussed since the 1970s and it began to be declared in the 1990s. The purpose of regional integration in all matters is industrialization. National markets are considered too narrow; a regional market may be able to support modern industry (Lindert and Kindleberger 1982).

One of the forms of economic liberalization agenda of Southeast Asia region is tariff elimination scheme at AFTA (ASEAN Free Trade Area). It is hoped that the partnership will be able to make Southeast Asia region as the base of world market production and to improve the economic competitiveness of ASEAN countries in the future.

Fishery sector in Indonesia is one of the potential sectors having good prospects if it is managed properly. Based on the data from Statistics Indonesia, the value of fishery export in 2016 increased for all countries. For ASEAN countries, it increased from 247,240 billion to 271,511 billion. This is certainly good news for business actors and investors who want to invest in the fishery sector (Statistics Indonesia, 2016).

It can be seen from the growth of GDP (Gross Domestic Product) of Fishery Subsector from year to year which has increased quite high. This indicates an increase in purchasing power of marine and fishery sub-sector actors compared to other sub-sectors in national agriculture, forestry, and fishery groups.

Gravity model is an international trade theory which states that trade relations of two countries (export and import) are positively influenced by GDP (Gross Domestic Product) value of two countries and negatively influenced by the distance between these countries.

The theory in the gravity model is adapted from Law of Universal Gravitation from Isaac Newton which states that the attraction between two objects is influenced by the mass and distance. In economics, this theory was first introduced by Jan Tinbergen, he stated that international trade flows have a similarity to the gravitational theory of Isaac Newton (Head, 2003). Gravity model in international trade has specific terms; the mass of objects is analogous with GDP while the distance represents the distance of two countries.

The objectives of this research were (1) to describe the export of Indonesian fishery sector (2) to analyze the factors affecting Indonesian fishery export (3) to analyze the influence of ASEAN economic integration on Indonesian fishery export.

II. Research Method

This research was a quantitative research. According to Rianse (2012), a quantitative research is designed to see the relationship between research variables, test a theory, and find a generalization which has predictive value.

The data involved in this study were secondary data from several websites such as: www.OECD.org; www.worldbank.org; www.comtrade.un.org; www.bps.go.id; www.inf.org; and www.geobytes.com.

2.1 Operational Definitions and Research Variables

Operational definition is the definition or explanation of each variable used in the research. The independent variables of this research were GDP per capita of the exporting country (GDPPC_{it}), GDP per capita of the importing country (GDPPC_{jt}), real exchange rate, and distance. Meanwhile, the dependent variable was real export data.

a. GDP Per Capita of Exporting Country (GDPPC_{it})

Gross Domestic Product (GDP) is the value of goods and services produced by various production units in the territory of a country within a year. Meanwhile, GDP Per Capita means the value of goods and services produced by each individual of the country's population.

The data used were GDP values per capita of Indonesia from 2000 to 2013 that reflected the production capability of each Indonesian as a whole regardless of where the factors of production came from. The data were obtained from World Economic Outlook Database and International Monetary Fund.

b. GDP per Capita of Importing Country (GDPPC_{jt})

The data used were annual data of total GDP per capita of each importing country such as United States, Japan, China, Italy, Singapore, Malaysia, Philippines, Thailand and Vietnam. The data were from 2000 to 2013 and it was obtained from the World Economic Outlook Database and International Monetary Fund

c. Real Exchange Rate (RER)

Rate is the relative price of the goods of the two trading countries. Real exchange rate is the exchange rate that a person uses when exchanging goods and services of a country with goods and services of another country. Real value (real exchange rate) is the value a person uses when exchanging goods and services from a country with goods and services from another country (Mankiw, 2000), The data were obtained from UN Comtrade and World Bank.

d. Economic Distance

Economic distance is a proxy for transportation costs. The distance used in the gravity model is the economic distance because the geographical distance between the capital of a country is unchanged (constant). Distance variable is replaced by using a weighted average of economic distance to indicate trade costs. The data used were obtained from geobytes.com and World Bank sites.

2.2 Data Analysis Method

Descriptive analysis and econometric analysis of the combined data of Cross section and time series data or commonly known as panel data were employed to answer the objectives of this research. Based on previous research on the use of gravity model to analyze trade, the specification of gravity equation between Indonesia and trading partner of fishery sector was formulated by using export variable as dependent variable; and GDP value per capita of country *i* and country *j*, distance between country *i* and country *j*, real exchange rate, and

dummy variable as independent variables. Dummy variable was used to differentiate Indonesian trading partners who belonged to members of ASEAN, AFTA, and not AFTA members. The equation model used in this research was as follows:

$$\text{LogEXP}_{ij} = \alpha_0 + \alpha_1 \text{LogGDPPC}_{it} + \alpha_2 \text{LogGDPPC}_{jt} + \alpha_3 \text{RER}_{ijt} + \alpha_4 \text{DIST}_{ij} + \alpha_5 \text{D}_{ASEAN} + \varepsilon_{ijt}$$

Notes:

- EXP_{ij}: Total Fishery Export from Country i and j in year t
- GDPPC_{it}: Total GDP Per Capita from Country i in year t
- GDPPC_{jt}: Total GDP Per Capita from Country j in year t
- RER_{ijt}: Real Exchange Rate of Country i and j in year t
- DIST_{ij}: Economic Distance from country i to j
- D_{ASEAN}: Dummy ASEAN is the dummy variable used to describe the AFTA membership of country i and j in year (t). Year (t) AFTA enactment 2003
- E_{ijt}: Error term

III. Results And Discussion

3.1 Description of Indonesian Fishery Sector Export

The export value of fishery products from 2000 to 2015 fluctuated with a tendency to increase, in 2000 the export value of 1.6 billion US\$ became 3.6 billion US\$ in 2015. The graph of export value of Indonesian fishery sector can be seen in figure 1.

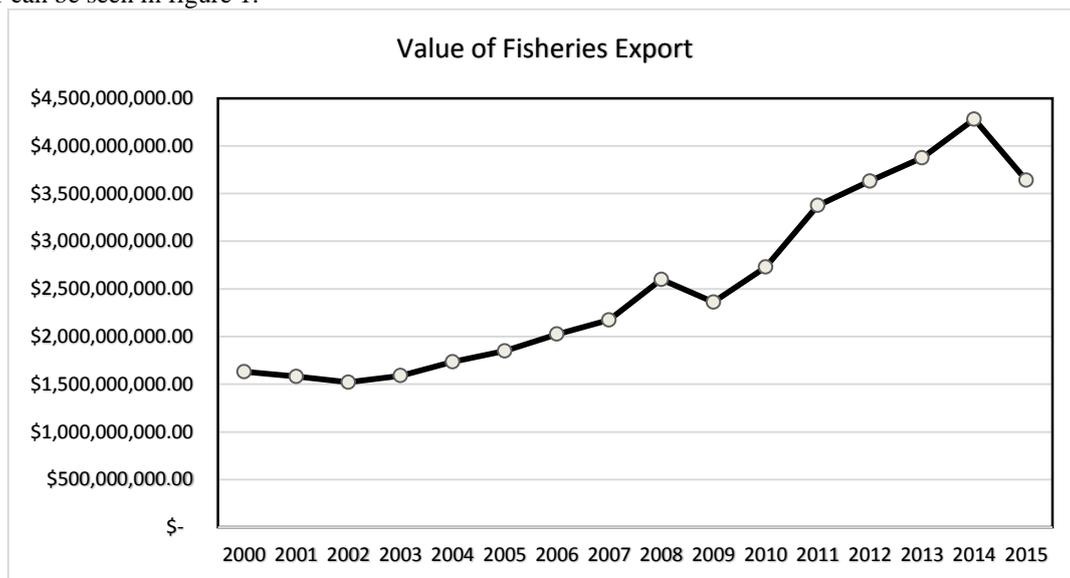


Figure 1. Export Value of Indonesian Fishery (Un Comtrade, 2017)

Based on the preceding graph, the growth value of Indonesian fishery export went up with the average of 6% per year. The highest increase was in 2011 by 24%. Meanwhile, the export value declined by 15% compared to the previous year. This export value decline might be caused by changes in product volumes due to extreme climate change.

3.2 Export Value Based on Subsector

The main commodities of fishery export were shrimp, lobster, tuna, little tuna, skipjack tuna, and crab. The highest trend was from 2009 – 2014; the commodities based on volume were tuna, little tuna, and skipjack tuna with 10.7%. Meanwhile, the highest commodity based on value was crab with a trend of 21.72% and the total trend from 2009 – 2014 was 13.61% (Statistics Indonesia in Center for Agriculture Data and Information System –PUSDATIN, 2016).

3.3 Contribution of Fishery Sector

In 2015, the role of export value of fishery products to the total value of non-oil and gas product export to several destination countries decreased. Export of fishery products up to November 2015 accounted for 0.23% (volume) and 2.98% (value) of total export of Indonesian non-oil products (Center for Agriculture Data and Information System –PUSDATIN, 2016).

There was a decrease in the percentage of the role of export value of fishery products based on destination countries from 2014 to 2015. The increase occurred in the largest main destination country contributing to the largest role to the percentage of the role of export value of fishery products; it was United States with 11.63%. Meanwhile, the largest destination in the ASEAN region was Vietnam which had role by 5.44%, with the total role of 3.18% in 2014 and 2.98% in 2015 (Center for Agriculture Data and Information System –PUSDATIN, 2016).

3.4 Balance of Trade of Fishery Commodity

The balance of trade of fishery sector in 2014 showed a trade surplus and an increase of 13.39 percent over the previous year or US\$ 4.2 billion, with a 5-year average increase of 14.45% (Statistics Indonesia in Center for Agriculture Data and Information System –PUSDATIN, 2015). The balance of trade graph can be seen in Figure 2.

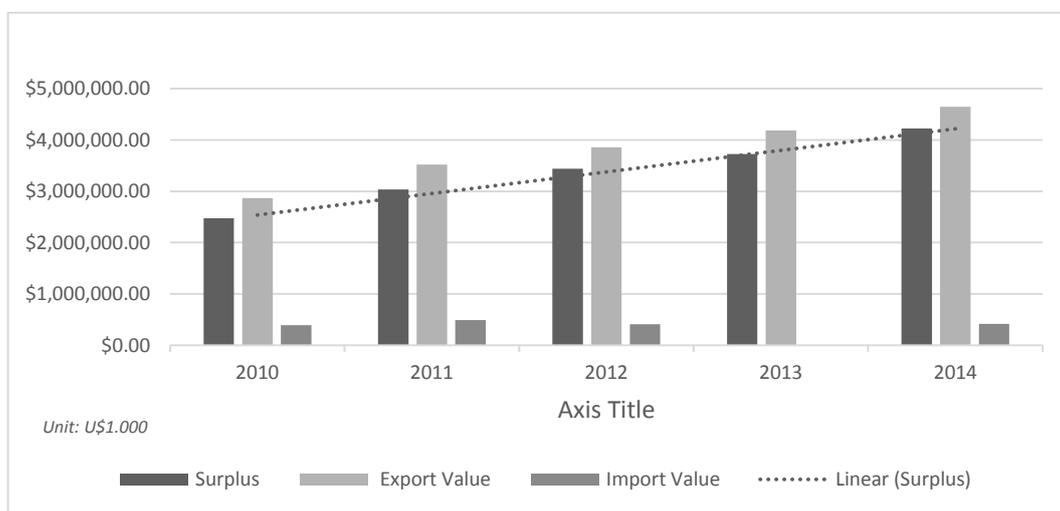


Figure 2. Balance of Trade of Fishery Commodity (Statistics Indonesia in PUSDATIN, 2015)

Based on the preceding graph, the export value from year to year was higher than import value and it was a remarkable increase. It indicates that Indonesian fishery export is getting better and higher.

3.5 Hindrance of Fish and Fish Products Export Trade

One of the hindrances to the export of fishery products that Indonesia still faces is non-tariff barrier. Until 2017, fisheries catch products from Indonesia have not been certified internationally by Marine Stewardship Council (MSC); the products were still produced in a sustainable way. There are only 16 products which have MSC certification.

During 2016, Indonesian fishery products had seven cases in the European Union. As a result, these fishery products were rejected when it was exported to Indonesia's trading partner countries in that union. There were two reasons of consumption cases, quality and administration. In 2016 there were seven cases. Russia had the most cases; there were 4 cases of heavy metals content. (Pribadi and Shintaloka, 2017).

The requirements applied in each of the export destination country of fishery products are different. It has rules and requirements that must be met with the EU and ASEAN standards in general including Sanitary and Phytosanitary (SPS), which is then set forth in the Food Law or Regulation in Food Hygiene in each country. The law aims to provide quality assurance of food / fishery products that enter the country. Prior to export, the product must have Health Certificate, and must also have high competitiveness as described by Li and Bender (2002), Khan Z and Batra (2005).

3.6 Analysis and Discussion of Statistical Test

Based on the results of Chow test, LM test, and Hausman test, the method employed in this research was panel data regression Fixed Effect Method (FEM).

1. Chow Test

Based on the result of Chow, the probability value of cross section chi-square was 0 with significant level of $\alpha = 5\%$, thus it rejected H_0 and accepted H_1 ($H_0 = \text{CEM}$, $H_1 = \text{FEM}$) assuming the intercept and slope coefficients were not valid. So based on Chow test result, the appropriate panel data model to estimate was Fixed Effect Method (FEM).

2. Langrange Multiplier Test

Langrange Multiplier test was used to determine the appropriate method for panel data estimation whether using Common Effects Method (CEM) or Random Effect Method (REM). Based on the result of Langrange Multiplier (LM) test, the value of Berusch Pagan was 0.00 with $\alpha = 5\%$, hence it could be concluded that H_0 was rejected and H_1 was accepted ($H_0 = \text{CEM}$, $H_1 = \text{REM}$). So, the appropriate method for estimating panel data was Random Effect Method (REM).

3. Hausman Test

Hausman test was used to determine the most efficient between Fixed Effect Method (FEM) and Random Effect Method (REM) in estimating regression equation model. Based on the result of Hausman test, it could be seen that the probability value of cross section random was 0.0174 with significant level $\alpha = 5\%$. Thus H_0 was rejected and H_1 was accepted ($H_0 = \text{REM}$, $H_1 = \text{FEM}$). So the appropriate data panel model to estimate panel data was Fixed Effect Method (FEM).

4. Classical Assumption Test

In panel data regression, not all classical assumption tests in OLS method were used, only multicollinearity and heteroscedasticity were required. The classical assumptions used in panel data were Multicollinearity test and Heteroscedasticity test

5. Multicollinearity Test

In order to know the multicollinearity problem, the researchers could see the correlation matrix of independent variables. If there was a correlation coefficient of more than 0.80 then there was multicollinearity (Gujarati, 2006). Based on the results of multicollinearity test, it could be seen that there was no variable in output that had a value of more than 0.8. So, it could be concluded that there was no multicollinearity in the regression model, or in other words independent variables in this study had no linear relationship (correlation) between variables.

6. Heteroscedasticity Test

Heteroscedasticity test in this study used Glejser test. Based on the results of Glejser test to detect heteroscedasticity, it could be revealed that the probability value of each independent variable was 0.4603, 0.3319, 0.7557, 0.4751, 0.1909, and 0.0586. These results indicated that the value of each variable was higher than alpha value of 0.05. Thus, H_0 was accepted or no heteroscedasticity occurred.

7. Goodness of Fit Test for Regression Model of Factors Affecting Export

In this study, the variables in the gravity model were estimated by using FEM (Fixed Effect Method). According to Widarjono (2007), Fixed Effect Model approach assumes that the intercept of each individual is different while the slope between individuals is fixed (equal). This technique employed a dummy variable to detect the intercept of individual differences. Then, regression test was conducted by using Fixed Effect Method (FEM).

8. Coefficient of Determination R^2

Based on panel data estimation result using Fixed Effect Method (FEM), the coefficient of determination was 0.914786 or 91.4%. Based on that result, the ability of independent variables (GDP per capita of exporting countries, GDP per capita of importing country, real exchange rate, economic distance and dummy ASEAN) in explaining the variance of the dependent variable (Indonesian fishery sector export) was 91.4%. Thus there was 8.6% (100% -91.4%) variant of dependent variable described by other factors.

9. Overall Test (F Test)

Based on the panel data estimation, the probability value F was smaller than the alpha value 0.05; H_1 was accepted. Thus it could be concluded that simultaneously $GDPPC_{it}$, $GDPPC_{jt}$, RER_{ijt} , $DIST_{ijt}$, DASEAN had a significant effect on Indonesian fishery export.

10. t Test

The results of t-test can be seen in Table 1

Table 1. Result of t-test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.618310	1.008784	-1.604219	0.1115
GDPPCIT	1.286067	0.308626	4.167077	0.0001
GDPPCJT	0.356904	0.306800	1.163311	0.2472
RERIJT	1.410169	0.337784	4.174769	0.0001
DISTIJT	-0.861290	0.274942	-3.132626	0.0022
DASEAN	0.201238	0.082478	2.439903	0.0163

The alpha of this research was 0.05 and the value of t table was 1.65754. Based on the table, there was one variable which was not significant namely GDPPCJT or GDP per capita of importing country.

3.7 GDP per Capita of Exporting Country (GDPPCIT) toward Indonesian Fishery Export

GDP per capita was used as a proxy for measuring development. GDP per capita of exporting country (Indonesia) had positive and significant effect because t value was more than t table; so if GDP per capita of exporting country (Indonesia) increased by 1% hence it affected the addition of Indonesia fishery export by 1.286067%. This finding fits the theory in the gravity model that the economic size (GDP per capita) positively affects the flow of trade between countries.

3.8 GDP per Capita of Importing Country toward Indonesian Fishery Sector Export

GDP per capita of importing country was used to measure the absorption rate of fishery products from Indonesia. The results showed that GDP per capita of importing country did not significantly affect Indonesian fishery sector export. It can happen because if a country has a high GDP per capita, it shows that the country is a developed country. If the economy of a country is better, then there will be more justification or choices to import goods. It is possible that a country is more likely to import goods from countries that have higher quality products.

This finding is also in line with a research conducted by Puspita (2014) which states that GDP per capita of importing country has no significant effect on the total volume of agricultural export in Indonesia. GDP per capita as a proxy of income also showed a positive but insignificant effect.

3.9 Real Exchange Rate (RERijt) toward Indonesian Fishery Export

Indonesian rupiah exchange rate toward the exchange rate of the trading partners had a positive relationship with the value of Indonesian fishery export. The exchange rate had a positive effect with a significant level of 5% and with a coefficient of 1.410169. Based on the result, it could be concluded that if the exchange rate of rupiah toward the exchange rate of the trading partner country was depreciated by 1% then it would increase Indonesian fishery export to its main trading partner of 1.410169%.

According to Wahyudi and Riyandi (2015), the real exchange rate indicates the ability to buy domestic output by trading partners. The exchange rate had a positive relationship on export and it was significant. It was found that if an increase in the exchange rate or depreciation of Indonesian rupiah will stimulate export from Indonesia.

3.10 Economic Distance (DISTijt) toward Indonesian Fishery Export

Distance is a reflection of the transportation costs incurred by exporting and importing country in international trade. The result indicated that the distance variable had a significantly negative effect. If the distance of exporter and importer countries increased by 1%, the total trade made by exporter country (Indonesia) with the trading partner decreased by 0.861290%.

3.11 Dummy ASEAN (D_{ASEAN}) toward Indonesian Fishery Export

The result indicated that dummy ASEAN variable had positive and significant effect on Indonesian fishery sector export. Thus Indonesia's participation in AFTA is able to increase the total export of Indonesian fishery sector.

This finding is in line with a research conducted by Lembang and Yulius (2013) which states that there is a relationship between trade blocs and export. In general, the existence of trade blocks can encourage or even loose the flow of export to fellow member countries. The research found that Indonesia's membership in ACFTA gave positive and significant difference in Indonesia's rubber export to its 15 major trading partners.

3.12 Gravity Model of Indonesian Fishery Export

Based on the panel data estimation result, it was found that the main variables in gravity model which were distance and GDP per capita of exporting country significantly affected the trade relation between two countries, in this case Indonesian fishery export. GDP per capita of importing country had a positive effect but it was not significant. This is in line with the theory in gravity model in which the variable of GDP per capita positively affects the trade relation; if GDP per capita, in this case significant GDP per capita of exporting country, is higher, it will increase trade relation of Indonesian fishery export. GDP per capita of importing country had positive effect but it was not statistically significant. In this research, GDP per capita of exporting country was GDP per capita of Indonesia which was seen from producer that could increase output produced. Indonesia's GDP per capita from 2000 to 2013 can be seen in Figure 3.

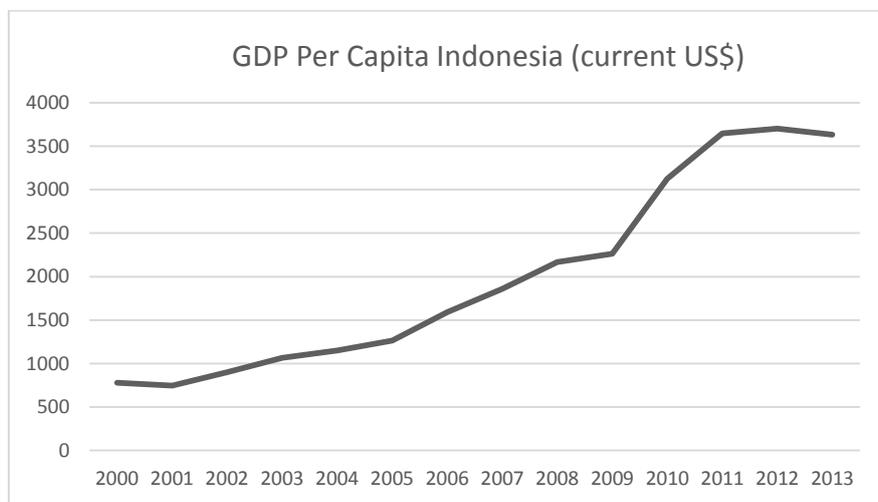


Figure 3. GDP per capita of Indonesia (World Bank, 2017)

Based on the preceding graph, it can be seen that GDP per capita of Indonesia from year to year has increased. Based on the consumer side or Indonesian fishery export destination country, if GDP per capita of a country increases it will rise the income that can improve the welfare. It will indirectly result in the consumption ability of more varied goods. GDP per capita of all countries in this study from 2000 - 2013 can be seen in Figure 4.

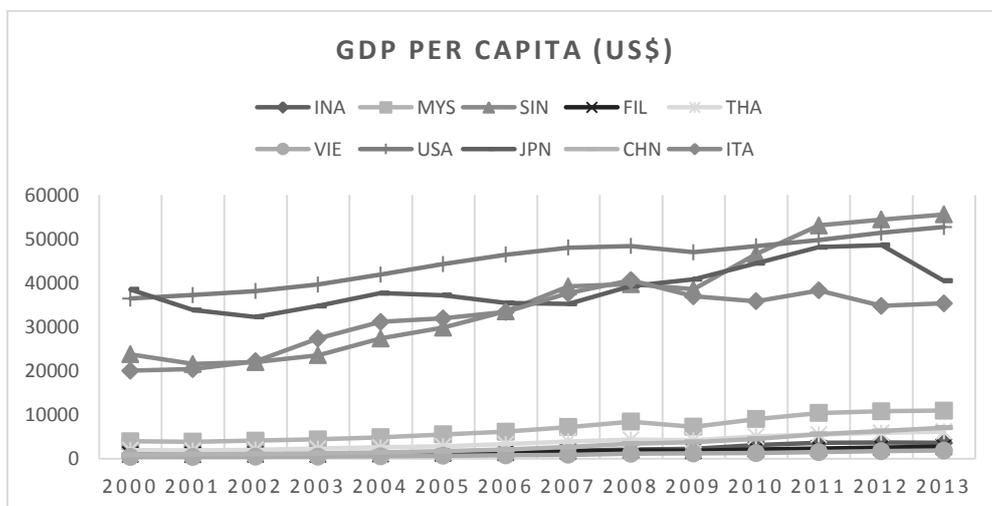


Figure 4. GDP per capita 2000 – 2013 (World Bank, 2017)

Based on the preceding graph, it could be seen that the United States was ranked first as well as the importing country of Indonesian fishery products with the highest value. Meanwhile for the ASEAN region, Vietnam as the largest importer was ranked at the lowest. It made GDP per capita of importing country had no significant effect on Indonesian fishery export.

Distance variable negatively affected the trade; the farther trade distance, the smaller the trade relations between the two countries, in this case Indonesian fishery export. In this study, there was also a relation with the regionalization of ASEAN region.

The development of this model also added other supporting factors that affected trade flows (Indonesian fishery export), they were real exchange rate and ASEAN dummy variable used to accommodate ASEAN free trade which showing statistically significant results. The results of this study also revealed that the main variables (GDP per capita and economic distance) and other supporting factors (real exchange rate, dummy ASEAN) in this model indicated a statistically substantial effect with a fairly high R square value of 91.4 %.

3.13 Effect of ASEAN Economic Integration on Indonesian Fishery Sector Export

The effect of ASEAN economic integration was identified by using ASEAN dummy variables. The variable was used to identify the different categories of qualitative variables before and after the enactment of CEPT AFTA in 2003 for ASEAN-6 and in 2006 for the Vietnam. The countries identified were Indonesia's main trading partners in the fishery sector. The trading partners were Malaysia, Singapore, Thailand, Philippines and Vietnam. Vietnam was marked in 2006 because the country just joined in AFTA in 1995.

Based on panel data estimation result, Indonesia's membership in AFTA gave positive differences and statistically significant to Indonesian fishery export with its major trading partners in ASEAN. According to Afin et al (2008), much trade liberalization came from the development of Free Trade Area such as ASEAN. The rapid growth of trade took place in the member countries of the Association of South East Asian Nations (ASEAN). Thus it could be interpreted that international trade was more prevalent in the regional areas of the countries compared with countries outside the membership. This is in line with previous research conducted by Puspita (2014), Suryanta (2012) and Sebayang (2011) which find that AFTA enactment can increase trade flows among ASEAN countries. The graph of Indonesian fishery export value to ASEAN trade partners can be seen in Figure 5.

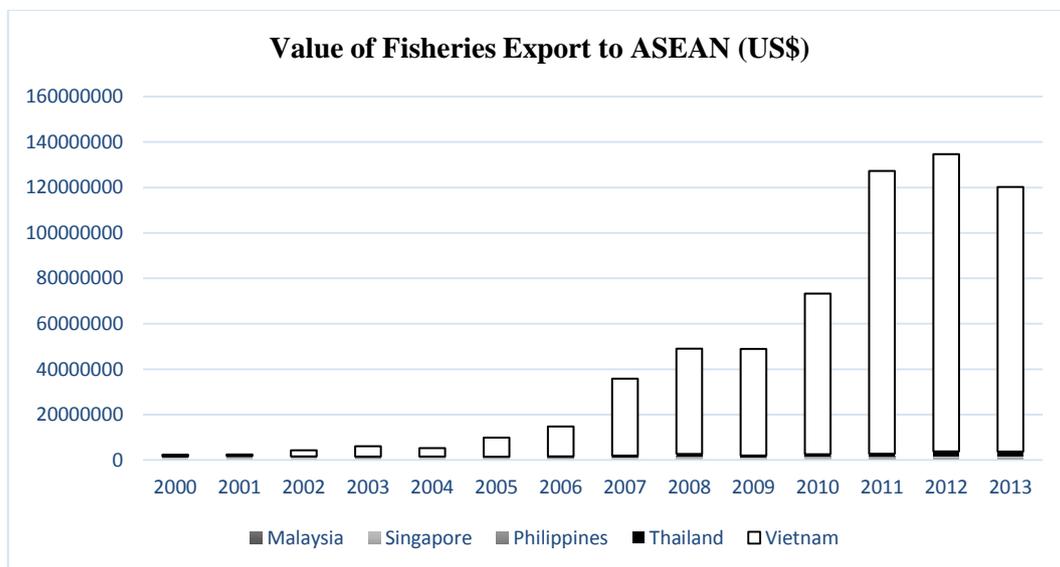


Figure 5. Export Value of Indonesian Fishery to ASEAN Trade Partners (UN Comtrade, 2017).

Based on the preceding graph, it could be seen that the largest Indonesian fishery export destination country was Vietnam followed by Thailand, Malaysia, Singapore, and the Philippines. The graph above also indicated a positive trend after the enactment of CEPT AFTA in 2003 for ASEAN-6 and 2006 for Vietnam, in which all export destination countries of Indonesia experienced a significant increase. There was a decline in export value

of destination countries in 2003 for Malaysia, Singapore and the Philippines than in the previous year and only Thailand increased compared to the value in 2002. However, the value was still higher in 2003 compared to the value in 2000 and 2001.

The graph of the growth of Indonesian fishery export to ASEAN trade partners can be seen in Figure 6.

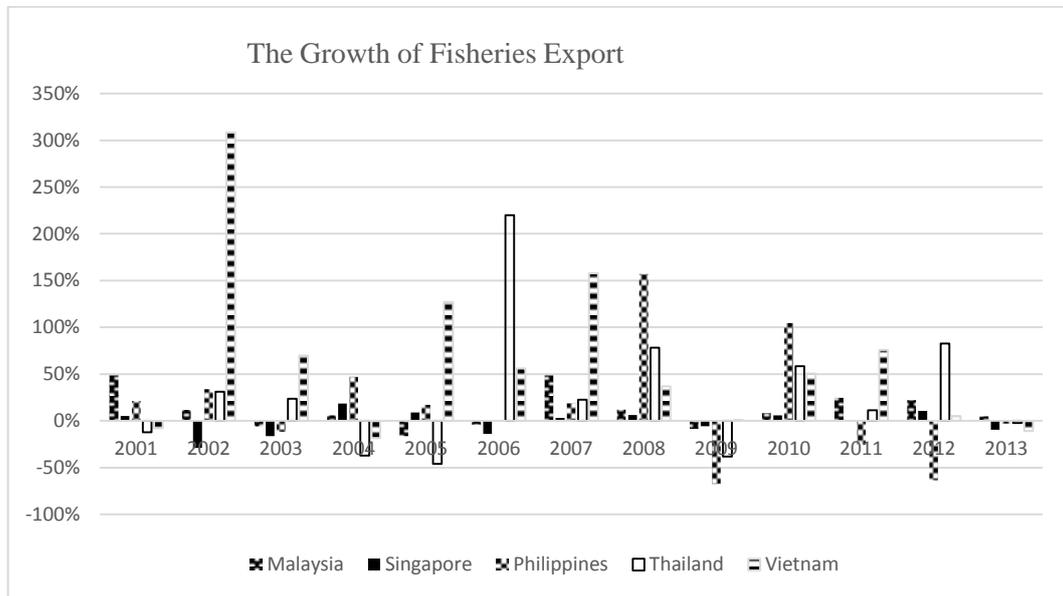


Figure6. The Growth of Indonesian Fishery Export to ASEAN Trade Partners (UN Comtrade, 2017).

Based on the preceding graph, it could be seen that Indonesian fishery export to its main trading partners in ASEAN fluctuated from year to year; overall the value increased after the implementation of CEPT AFTA. The largest export growth occurred in 2002 to Vietnam; it increased by 309%. In 2006, CEPT AFTA was implemented in Vietnam, thus there was an increase on Indonesian fishery export by 56% compared to the previous year. Meanwhile, the largest export decline occurred in 2009 to the Philippines, it decreased by 67% compared to the previous year.

IV. Implications of Research

Through this research, it is expected that the Ministry of Marine Affairs and Fisheries through the Directorate General of Marine and Fishery Products Competitiveness (PDSPKP) can attract exporters to export Indonesian fishery products with high absorption. In addition, Directorate General of PDSPKP is also expected to be able to continue to socialize the export regulations and procedures to exporters, and to continuously intensify the international certification of Marine Steward Council (MSC) in order to be accepted in EU market.

Based on these findings, it can be seen that the factors that greatly affected Indonesian fishery export based on t-test result were real exchange rate and GDP per capita of Indonesia. Maintaining the exchange rate of rupiah and improving economy that can increase GDP per capita will be able to expand Indonesian fishery export. The natural resources of Indonesia have comparative advantages compared to other ASEAN countries. In order to support these resources, improvement in terms of human resources, artificial resources, and latest technology application are needed. According to Riniwati (2011), it is estimated that fish will become the largest source of animal protein supplier. The estimation is based on fish production which is much faster than the production of other animal protein sources. In addition, people's need for fish consumption is also expected to increase along with the awareness of the importance of eating fish.

The most important of the finding in this study is the need for strengthening competitiveness from the aspects of quality and product certification, quality of human resources, and technology for catching fish, cultivation and processing. Thus the fishery products from Indonesia can be considered as high quality product and it is able to become a key player in world fishery export.

V. Conclusions And Suggestions

5.1 Conclusions

Based on the research result, there were some points that could be concluded. The conclusions were as follows:

1. General description of Indonesian fishery sector export:
 - a) Indonesia was in the 9th rank in the fishery sector export with a value of 3.13 billion US dollars. Export of Indonesian fishery sector from 2000 to 2015 fluctuated with an upward trend.
 - b) The export commodities of Indonesian fishery products were shrimp, tuna, grouper, snapper, mackerel, tilapia, cephalopoda (squid, octopus, and cuttlefish), portunidcrabmeat, crab, seaweed, sea cucumber, and lobster.
 - c) The role of fishery productsexport up to November 2015 contributed 0.23% (volume) and 2.98% (value) to the total export of non-oil and gas products.
 - d) The export value from year to year was higher than the import value and it had a significant increase; it indicates that Indonesian fishery export continues to refine and improve.
 - e) One of the export hindrances that Indonesia still faces is non-tariff barrier, namely International certification
2. Factors which affected Indonesian fishery sector export were:
 - a) Exchange rate variable, GDP per capita of exporting country, and dummy ASEAN variable had a positive and significant effect on Indonesian fishery sector export. So if the variables increase, then the export value of Indonesian fishery sector will also increase.
 - b) The variable of exportingand importingcountry distance had negative and significant effect on Indonesian fishery sector export. So if the distance is farther, it will lead to a decrease in export.
 - c) GDP per capita variable of importing country was not significant to Indonesian fishery sector export to ASEAN countries and its main trading partners. So that the value changes in GDP per capita of the importing country will not affect the export of Indonesian fishery sector.
 - d) The finding of adjusted R2 explained the dynamics of trade flows with its trading partners from ASEAN. Thus Indonesia is expected to be able to get more profit or surplus. Indonesia should focus more on directing its trade flows with five trading partners in ASEAN and four other non ASEAN partners. However, it is possible to develop a market with other non ASEAN countries.
3. The effect of ASEAN economic integration toward Indonesian fishery sector export namely CEPT AFTA policy on Indonesian fishery export trade had a positive effect on Indonesian fishery export; thus it can increase the flow of fishery export to ASEAN countries.

5.2 Suggestions

The following are several suggestions based on the research findings:

1. Due to the implementation of ASEAN economic integration in the form of CEPT AFTA which positively affected Indonesian fishery export, it is expected that the Ministry of Marine Affairs and Fisheries will continue to persuade exporters to export fish with much absorption so that the additional values become higher.
2. Ministry of Marine Affairs and Fisheries through Directorate General of PDSPKP should continue to intensify ecolabelling of MSC (Marine Steward Council). One thing that can be done to penetrate EU tuna export market is by implementing a fishing method known as pole and line. If Indonesian fishery products are certified by MSC (Marine Steward Council), export market will be more open because overseas consumers do not hesitate to consume Indonesian products considering that the source of these fishery products is clear. Thus price or export value will automatically rise.
3. It is suggested improving the standards ofquality control of fishery products that will be exported and providing careful supervision at the customs.
4. It is suggested conducting workshop and regional seminar related to research and development of marine and fishery as well as fishery sector.
5. It is suggested arranging experts, researchers, and techniques exchange with a mutually beneficial scheme agreed between ASEAN members; thus it is expected to increase the competitiveness of labor in fishery sector.
6. It is suggested implementing short-term and long-term training programs for fisheries and fisheries-related workers from ASEAN members that have related resources.

References

- [1]. [1] Afin, Rifai, HerryYulistiono, Nur AlfillailOktarani, 2008. International Trade, Foreign Investigations, and Economic Efficiency of ASEAN Countries. *Monetary and Banking Bulletins*.
- [2]. [2] Gujarati, Damodar N. 2006. Fundamentals of Econometrics. *Erlangga, Jakarta*.
- [3]. [3] Head, Keith. (2003). “*Gravity for Beginners*”. Working Paper. Faculty of Commerce University.
- [4]. [4] Khan, Z and Batra, A. 2005. *Revealed Comparative Advantage: An Analysis For India and China*. *Indian Council For Research OnInternational Economic Relations (ICRIER)*. New Delhi.
- [5]. [5] Li K, and Bender S. 2002. *The Changing Trade and Revealed Comparative Advatages of Asian and Latin American Manufacture Export*. Yale University.
- [6]. [6] Lindert, Peter H. , Charles P. Kindleberger. 1982. *International Economics*. Erlangga, Jakarta.
- [7] Ministry of Marine Affairs and Fisheries Republic of Indonesia. 2015. *Basic Data Analysis*. Information Center of Data and Statistics.
- [8]. [8] Puspita, Aprilia Diana. 2014. *Analisis Dampak Integrasi Ekonomi Asean Terhadap Ekspor Sektor Pertanian Di Indonesia*. *Jurnal Ilmiah. Fakultas Ekonomi dan Bisnis Universitas Brawijaya*. Malang
- [9]. [9] PUSDATIN (Center for Agriculture Data and Information System). 2015. *Kelautan dan Perikanan dalam Angka Tahun 2015*. <http://statistik.kkp.go.id/sidatik-dev/index.php?m=2>. Retrieved on April 11, 2017.
- [10]. [10] PUSDATIN (Center for Agriculture Data and Information System). 2016. *Informasi Kelautan dan Perikanan*. No.01/PUSDATIN/I/2016. <http://statistik.kkp.go.id/sidatik-dev/index.php?m=2>. Retrieved on April 11, 2017.
- [11]. [11] Pribadi, Toto dan Shintaloka Pradita Sicca. 2017. Rejection Export of Fish, Indonesia Rank 21 World. www.viva.co.id/. Retrieved on April 1, 2017.
- [12]. [12] Rianse, Usman , Abdi. 2012. *Social and Economic Research Methods*. Alfabeta, Bandung .
- [13]. [13] Riniwati, Harsuko. 2011. Gait of Bank Rakyat Indonesia in Supporting Micro Small Medium Enterprises of Fishery Sector. *Jurnal Keuangan dan Perbankan* Vol. 15, No.1, Januari 2011: 139–150 (in Indonesia)
- [14]. [14] Sebayang, K. Dianta A. 2011. The Impact of ASEAN Economic Integration on Indonesian Trade in the Four Wheel Vehicle Sector. *Econosains* Volume IX, No.2.
- [15]. [15] Suryanta, Barli. 2015. *Aplikasi Rejim Persamaan Model Gravitasi yang Telah Dirubah pada Kasus Dinamika Arus Perdagangan Indonesia dengan Mitra Dagang dari ASEAN*. *Buletin Ekonomi Moneter dan Perbankan*.
- [16]. [16] UNComtrade. 2017. <https://comtrade.un.org/data/>. Retrieved on April 10, 2017.
- [17]. [17] Widarjono, Agus. 2009. *Econometrics Introduction and Its Application*. Third Edition. EKONISIA: Yogyakarta.
- [18]. Wahyudi, Setyo Tri, Riyandi Saras Anggita. 2015. *The Gravity Model of Indonesian Billateral Trade*. *International Journal Science and Local Economic Governance (IJLEG)* Vol. 1, No. 2, Oktober 2015.
- [19]. World Bank. 2017. GDP (Current US\$). <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>. Retrieved on April 11, 2017.