

The Impact of Anti-Dumping Policy on the Import Volume of Shrimp Product in the United States

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This paper research investigates the impact of anti-dumping policy on the import volume of shrimp product in the United States, also analysis the trade diversion effect of the U.S anti-dumping duty in the period of time from January 1989 to December 2017. This research comes up with the results that the anti-dumping duty has the significant negative impact to the import volume of shrimp product from both subject countries and non-subject countries. There is also a trade diversion effect after the US has imposed the anti-dumping duty, resulting in increasing the export volume in shrimp product of the subject countries to the third market.

Keywords: Anti-dumping duty, Shrimp, Trade diversion.

1. Introduction

1.1 The Purpose and Contribution of Research

In the context of globalization and international economic integration today, dumping and anti-dumping instruments in international trade are the subject of many scientists and researchers, especially the economists and enterprises operating in the field of import and export. The impact of anti-dumping policy literature in developing country still relatively limited (Ganguli, 2008). Accordingly, this study explores the gap of knowledge by analyzing several impacts of this policy on aquaculture product in the United States market. The paper will focus on shrimp product due to the fact that anti-dumping in shrimp product is the newest case in aquaculture product in the United States, also because of the affection of this anti-dumping case then the U.S had to make adjustment on their method of calculating dumping margin in 2015.

The objective of this study is to estimate the impact of anti-dumping policy on the import volume of shrimp product to the United States market, and also analysis the trade diversion effect of the U.S anti-dumping duty in the period of time from January 1989 to December 2017.

1.2 The History and Origins of Dumping

The concept of "dumping" in international trade has a long history. In all cases, the customs authorities have the power to determine whether a dumping has occurred and also impose taxes to increase the price of imports to a "market" price.

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In the debates in the United States in 1791, Alexander Hamilton warned of the practices of dumping sellers in other countries in order to dominate the market. Dumping case studies by United Kingdom manufacturers in new markets of the United States have been reported, as a result, the public debate on this issue, along with many legislative efforts to deal with it, was also noted in the 19th century. In the early 20th century, the first anti-dumping law was enacted in Canada in 1904. The Anti-Dumping Act was subsequently enacted in New Zealand in 1905, Australia in 1906 and South Africa in 1914. The United States had an Antidumping Act in 1916 and following up with England in 1921.

In the elaboration of the General Agreement on Tariffs and Trade (GATT) in 1947, a special provision on anti-dumping cases was drafted. Article VI of the GATT allows the Contracting Parties to use anti-dumping duties to offset the dumping rates of imports, as well as they can provide the proof of dumping is present, or threatens to cause material injury to competing domestic industries. So far, this is still the core international law on dumping.

However, some GATT countries have noted that some countries have adopted anti-dumping legislation to erect new trading barriers, antidumping procedures, dumping calculations that have limited the damage and distortion of international trade flows. At the GATT Kennedy Round (1962 - 1967), the GATT signatories discussed the antidumping law, set out a series of procedural rules and principles for the application of anti-dumping duties to limit the procedures and taxation of governments that may harm international trade.

In the Tokyo Round of 1973, GATT signatories established a new anti-dumping law, which came into effect in 1979, replacing the 1967 anti-dumping law, there were 26 member states have signed, which is effective than all previous agreements on dumping. In the 1994 Uruguay Anti-Dumping Round, which was based on the Antidumping Act, members built the "Agreement on the Implementation of Article VI of the GATT 1994", which is closely aligned with anti-dumping rules. It is more effective for all members of the World Trade Organization (WTO) and is an enforceable agreement.

1.3 Anti-dumping in WTO Framework

1.3.1 The concept of Anti-Dumping.

In particular, dumping in international trade can be understood as occurring when a good is exported from one country to another at a price lower than the selling price of that good at the domestic market of the exporting country. Specifically, if a product of country A sold in country market A at price X but exported to country B at price Y ($Y < X$), the product is considered to be dumping from country A to country B. In the WTO, this is considered "unfair competition behavior" by foreign producers and exporters to the domestic industry of the importing country. As a result, "anti-dumping lawsuits" and subsequent anti-dumping measures (the result of lawsuits) are a form of limiting this behavior.

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The definition of dumping and the WTO's dumping determination are set out in Article 6 of the GATT: "Dumping is the act whereby a country's product is sold in another country at a level below the normal value, and damage or threaten to materially injure another industry of the country or delay the establishment of an industry in another country."

The two important concepts of this rule are normal value and material loss. A country is deemed to have sold its products in another country at a level below its normal value if:

1. That price is lower than the ordinary price in normal commercial conditions for the like product in the exporting country.
2. If it is impossible to determine the domestic price, then:
 - That price is lower than the highest relative price that is exported to a third country under normal trade conditions.
 - That price is less than the cost of production in the exporting country plus a reasonable percentage of cost and profit margin.

Proceedings are usually initiated in the form of a complaint or petition filed by or on behalf of a domestic industry, presenting evidence of dumping, injury to the domestic industry, and the causal relationship between the dumping and the damage. Investigations are conducted by government agencies (WTO authorities). Whether the investigation determines whether the dumping occurred or not is based on whether the export price is lower than the market value (typically the price of the like product in the domestic market). In case domestic sales prices are not available, the normal value may be based on the selling price to third countries or a definitive value including production costs plus profits.

It is also determined whether the dumped exports cause or threaten to cause material injury to the domestic industry that produces the same product. If the determination of dumping and injury is confirmed, the final decision is to impose anti-dumping duties on future imports. In some countries (such as the United States), the tax is assessed on the basis of retroactive effect - the imported goods must be accompanied by estimated taxes in the form of annual tax deposits. In other countries (eg the European Union), taxes are imposed on the basis of the latter, such as collected at the importation rate determined during the investigation.

Temporary measures may be imposed during the investigation - after a preliminary determination of dumping and injury. These measures are usually the form of collateral or deposit attached to future imports. Surveys may be suspended or terminated if the exporter makes a price promise, for example, agreeing to increase prices to eliminate losses caused by dumping. There is usually a time limit for anti-dumping measures.

1.3.2 The Cause of Dumping

There are several reasons causing dumping in the world. In some cases, subsidy from the Government or foreign public agencies can affect the dumping. These subsidizing policies aim to achieve key goals like maintaining the certain levels using of inputs such

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as labor and capital in the economy, as well as supporting new industries to enter the market and promote the development of key industries of the country in order to strengthen exports. In another case, due to large trade deficit, there must still be foreign currency to compensate for this shortage. It is then possible to apply dumping measures to address the shortage of foreign currency. Furthermore, the use of dumping can solve the problem of inventory when unable to solve the normal price mechanism. Dumping is also used as a competitive tool. Once the domestic market of the importing country has been defeated, the domestic competition will be eliminated, foreign firms will find the way to manipulate the domestic market to maximize their profits.

1.3.3 The impact of dumping

i. For Exporting Countries

Dumping helps exporters expand their consumption markets, increase their foreign exchange earnings, and help them consume inventory, especially food, foodstuffs and untrendy clothing. Antidumping is also an important tool in the country's foreign trade policy to help achieve specific objectives in its socio-economic development strategy. However, consumers in the country must suffer from higher prices than previously due to the price agreement between enterprises. As dumping is aimed at gaining extra profits, several countries employ child laborers, women workers, and cheap labor. More than 250 million children aged 5-14 are engaged in economic activity worldwide, according to the latest Bureau of International Labor Standards (BIT) data.

ii. For Importing Countries

Dumping gives the consumer their opportunity to choose and consume new items which prices are easy to accept. Moreover, facing with cheaper imported goods from abroad will force domestic services to find ways to improve their goods, improving machinery, improving product quality, applying advanced technology, utilizing human resources to lower production costs in order to maintain its position in the market and gain optimal profit. On the other hand, dumping of goods causes many difficulties for importing countries, especially for developing countries with narrow markets. First of all, with the consumers of the importing country, they may have to use low quality goods and counterfeit goods. Without the guarantee of food safety and hygiene, the health of consumers will be seriously affected. Business owners will find ways to smuggle goods, having tax evasion, causing losses to the state budget. Moreover, due to the inability to compete with foreign goods, many factories in the country will be stagnated and bankrupt.

1.3.4 The purpose of Anti-dumping.

Dumping is considered as an unfair international trade behavior. Thus, in order to re-establish the competitive balance between domestic and imported products and protect the domestic market against unfair international competition, countries have the right to apply anti-dumping policy. Therefore, the objective of anti-dumping measures is to

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offset the injury suffered by the domestic industry due to dumping. Although the objective of anti-dumping measures is supposed to ensure fairness in international trade, it is not always simple in the real market. For developing countries like India, Brazil, and Argentina, the use of anti-dumping measures is to protect their own fledgling production. For developed countries, anti-dumping measures are both a tool to restrict market access from developing countries, and also a safety protection needed for themselves. The country has the freedom in establishing the procedure for determining dumping phenomenon and applying anti-dumping measures to goods imported into their country. As a result, many countries have arbitrarily abused anti-dumping measures to curb imports, rather than to achieve the limited remedies that the WTO Anti-Dumping Agreement allows.

1.4 Anti-dumping Policy of the United States

Under section 800-801, chapter 463 of the Revenue Act of 1916, the act of dumping is the act of importation, supporting the importation and sale of imported goods into the US market at substantially lower prices than the net value or wholesale price of the goods at the time of export to the US market, or in the main market of the producing country, or in a third country which also imports that goods (the net value of the above wholesale prices is exclusive of freight, taxes, and other fees necessary for importation and sale in the United States) provided that the abovementioned conduct is intended to destroy or impair a manufacturing industry in the United States or prevent the establishment of a manufacturing industry in the United States, or to exercise a monopoly position in the United States. According to the above definition, an act shall be considered as dumping if it satisfies two criteria, the goods are sold at a price lower than the normal value and the sale of goods at prices which cause damage to the US manufacturing industry.

1.4.1 Procedures for Investigating and Conducting Anti-Dumping Cases

The US Department of Commerce (DOC) is responsible for promoting economic and employment development, and also is responsible for enforcing US trade law. The import management unit consists of 9 offices. Besides, the US International Trade Commission (ITC): is responsible for investigating trade issues. The antidumping procedure is clearly stated in Handbook of Anti-dumping and Anti-dumping duty.

There are two groups of people involved in antidumping cases - those with legal representation rights (related parties) and others, who do not have that right. Related parties include manufacturers, producers or exporters abroad, importers or US business organizations and the majority of manufacturers, exporters or importers of related items; the government of the exporting and importing country; union or group of American workers involved in the manufacture or wholesale of the related products. Other objects include consumers of US industrial products.

An anti-dumping investigation in the United States is conducted in the following phases:

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Fill the lawsuit, Initiate an investigation, Preliminary investigation of the damage, Preliminary investigation of dumping, Final investigation on dumping, Final investigation of damage, Decision on the application of anti-dumping measures and Annual administrative review.

Not all investigations are going all the stages mentioned above. By law and in practice, at every stage of the case, there are possibilities to terminate the investigation. US law specifies the maximum duration for each activity during each phase of an anti-dumping investigation. In fact, these terms may vary depending on the nature and objective circumstances of each case as well as the subjective ability of the investigating authority (to the extent permitted by law).

i. Fill the Lawsuit

An anti-dumping case begins by filing a petition in the name of "US domestic industry." The US domestic industry is defined as manufacturers or dealers dealing in the same type of product are identical to the imported goods subject to investigation, the association of manufacturers or dealers of such products and union or workgroup working in that domestic industry. The petition must be supported by US producers with a minimum production of at least 25% of total domestic production, also accounts for over 50% of the total output of all US businesses claiming the "US domestic industry" (supporting or opposing the lawsuit). When filing a lawsuit, the case lawyers will first look at whether the petition content includes the necessary information and whether it is supported by the domestic industry.

ii. Initiate an investigation

The ITC and the DOC will initiate an investigation within 20 days after the plaintiff filed the lawsuit by considering whether the petition met the statutory requirements. The investigation phase of ITC and DOC are different. For the ITC is three years before the time the petition is filed and, where necessary, the ITC may require the parties to provide forwarding information for the next two years from the time the claim is lodged. While the DOC is only concerned about the information and data of the past four quarters and the most recent filing of the petition, applying to countries with market economies, or two rounds of fiscal year before and near the date of filing the most suit, which is applicable to non-market economy countries.

iii. Preliminary Investigation of the Damage

The ITC will require parties in the case to provide information and data to analyze the "reasonable signs" of serious harm or the threat of serious harm which the US domestic industry incurs due to imported goods being investigated. Manufacturers are asked to answer a questionnaire on their production and exports. Then the parties will take part in a hearing before the ITC commissioners to present their point. After the prior investigation, the ITC will make a preliminary decision concluding the injury of the US domestic industry (usually within 45 days after the petition).

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After the ITC's announcement of the Preliminary Decision concludes that the domestic industry is severely impaired or threatened with serious harm, DOC will begin its preliminary investigation by requiring exporters to participate in the lawsuit to respond to a questionnaire. DOC divides the exporters participating in the lawsuit into two main groups: the group of mandatory respondents, including exporters accounted for at least 60% of the imports investigated into the United States, this is a group that DOC investigates directly whether or not they want to participate in the lawsuit. Another group is the voluntary respondents, including exporters who volunteered to participate in a lawsuit for a separate anti-dumping tax rate calculated by the weighted average of the anti-dumping duty rates of all mandatory defendants. To determine the method of calculating the dumping margin, DOC makes a decision based on the market economy or non-market economy of the country in which the exporter is being investigated. After receiving and analyzing the responses, information and data from the exporters, DOC provides a DOC Preliminary Determination within 140 days after the DOC initiates an investigation or a maximum of 190 days in a complex case. In the preliminary determination, the DOC temporarily calculates the dumping margin of the exporter and makes a judgment on a number of different issues, such as the case of urgent import and the separate rate. After this time, the preliminary investigation phase ends and move to the final phase of investigation.

iv. Preliminary Investigation of Dumping

Due to the preliminary determination was made based on the assumption that the information and data provided by the defendant is authentic, DOC needs to conduct verification to confirm this authenticity before the final decision on dumping is announced. DOC sends technicians to the production and business establishments of the compulsory defendants in the host country for the on-the-spot verification. After that, DOC technicians make a Verification Report that identifies the information and data alleged by the defendants during the preliminary investigation phase of the DOC.

v. Final Investigation on Dumping

Based on the Verification Report, the DOC issues a final decision (usually within 215 days after the DOC initiates an investigation or a maximum of 275 days in a complex case), which determines the dumping margin of the exporters and concludes on a number of different issues, such as the case of urgent import and the separate tax rate.

vi. Final Investigation of Damage

After the prior investigation, the ITC made the final decision concluding the injury of the US domestic industry (usually within 260 days after the petition or approximately 45 days after the final decision of the DOC in a complex case).

vii. Decision on the Application of Anti-Dumping Measures

If the final determination of the ITC confirms the sign of serious injury or threatens to cause serious injury to the domestic industry of the United States, DOC will issue an anti-dumping duty order and assign the customs office to collect anti-dumping duties (typically 1-2 weeks after the final decision of the ITC). An order for imposition of anti-dumping duty will be formally introduced after the publication in the Federal Registry.

viii. Annual Administrative Review

Each year, until DOC issue anti-dumping order, related parties have the right to request DOC to review dumping margin according to administrative procedures for 5 consecutive years.

1.4.2 The US Anti-Dumping Measures

i. The Anti-Dumping Duty

In order to protect domestic production, the United States enacted an anti-dumping law that would allow the US administration to impose special import duties, this is called "anti-dumping duty" to compensate for the harm caused by the importation of goods at low prices at levels deemed "unfair". The condition of applying anti-dumping duty is that the imported goods violated the anti-dumping policy with the dumping margin not lower than 2%, the manufacture of similar products of the importing country suffers substantially or threatens to cause material injury or substantially impede the formation of the domestic industry, and there must have a causal relationship between the dumping of imports and the damage described above.

The imposition of anti-dumping duty will be determined by the DOC as follows: The anti-dumping duty shall not exceed the dumping margin determined in the final decision. The tax refund is applied if the official anti-dumping duty is determined to be lower than the provisional anti-dumping duty, the excess part must be repaid. If a formal decision is not collected anti-dumping duty, they must return payment of anti-dumping tax, deposit or any guarantee under other forms. Regarding the retrospective tax collection, if the official anti-dumping duty is higher than the provisional anti-dumping duty, no additional revenue shall be collected.

An anti-dumping duty will be set at the difference between the "normal value" and the export price to the United States. The U.S. Department of Commerce (DOC) determines the normal value of imports in one of three ways. In order of priority are: the sale price of goods in domestic market, the sale price of goods to third country market and the "calculated value" which is considered as the normal value for calculating the dumping margin when domestic sales prices or selling prices to third countries are lower than production costs.

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In addition to the calculation of dumping margins in accordance with conventional methods, the United States has adopted the method of "Zeroing" to calculate the dumping margin for imports of some countries. The dumping margin is the difference between the export price and the normal price of the imported goods. The amount of dumping equal to normal value minus the export price. Obviously, the use of 'zeroing' will almost always increase any anti-dumping duty, and will sometimes result in an unprecedented tax that generates a measure that has never been used. Therefore, this is a form of controversy in the practice of applying anti-dumping measures in the world, especially the United States, which regularly uses this method when calculating the margin of dumping. The US's "zeroing" for a long time has been opposed at least six times by the World Trade Organization and is generally contrary to US commitments at the WTO.

ii. The Temporary Measures

According to regulations, the DOC may apply temporary measures if the preliminary decision determining the existence of dumping and injury caused by dumping to a domestic industry. The temporary measures could be applied including the temporary anti-dumping duty and the provision of cash deposits, bonds or other forms of security not exceeding the margin of dumping established in the preliminary decision. According to the WTO provisions in Article 52 on "Forms of Interim Measures": "Provisional measures will take the form of a guarantee - a cash deposit or bond - not more than the estimated margin set forth in the preliminary decision notice." The duration of provisional measures in accordance with the provisions of the United States shall not exceed four months and in special cases may be extended to nine months. Meanwhile, according to the WTO rules, provisional measures will be applied for a period not to exceed 6 months.

iii. The Price Commitments

Firstly, according to DOC regulations, during a dumping investigation, a dumped exporter has proposed to DOC a commitment to change the selling price or stop exporting the dumped products. This commitment is called a "price commitment." US Commitment Price terms are defined as follows: The term "Commitment to prices" referred to in these regulations is a voluntary commitment of exporters and manufacturers to the DOC, they responded to the anti-dumping investigation by changing the sale price or stopping the export of the goods being investigated against dumping in order for DOC to approve the suspension or terminate the investigation.

Secondly, according to the United States Anti-Dumping Regulation, if exporters violate the agreements on price commitments, US investigators may continue the investigation based on the best available information, and the decision to impose provisional measures and the imposition of anti-dumping duties shall be retroactively imposed on imported products within 90 days prior to the application of provisional anti-dumping measures, provided that prior to the commitment, the imported products are not subject to retrospective retroactive taxation. This "retroactive 90-day enforcement" is basically

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in line with WTO rules. Provisional provisions on price undertakings also provide that if the final conclusive antidumping duty is officially lower than the deposit in the preliminary finding, the difference shall be refunded. This clause is consistent with the principle of reimbursement under the Anti-Dumping Agreement.

1.5 Anti-Dumping Investigation Shrimp Cases in the US

According to the Food and Agriculture Organization (FAO), the top five shrimp exporters to the international market in 2016 were India with 438,500 metric tons, Vietnam, with 425,000t, Ecuador, 372,600t, Indonesia, 220,000t, and Thailand with 209,400t. Exports from China also increased by 7% to total 205,300t. Furthermore, the top export markets included the US, the EU and Japan. U.S shrimp imports value accounted for more than 27 percent of the value of total fishery products imports. There are seven major suppliers have accounted for most of these imports, including Thailand, Ecuador, Indonesia, India, China, Vietnam, and Mexico. In 2017, India is the biggest source which is accounting for 32.23 percent of the shrimp import, followed up with Indonesia and Thailand with the market share of 11.73 percent and 11.29 percent respectively.

However, imported shrimp has frequently been the subject of anti-dumping investigations in the United States, there are 6 out of 7 major importers had been considered to have dumping problem to the US shrimp market. The lawsuit against dumping shrimp is just one of dozens of cases occurring each year. The plaintiff accused the six countries, China, Ecuador, India, Thailand and Vietnam of massively exporting the product and the US market at below production costs. Shrimp farmers in the United States have asked the government to impose import duties on shrimp from 25.76% (the lowest for Vietnam) to 349% (the highest level for Brazil). The US government has used a complex, two-tiered system to analyze dumping cases. The US Department of Commerce (DOC) has the power to decide whether dumping is actually occurring and what taxes will be imposed. International Trade Committee of America (USITC) is the final judgment, deciding whether US businesses are suffering "material damage" from imports. So far, the DOC and the USITC have made preliminary decisions in favor of shrimp farmers in the United States. Under the current law, the tax will be used to subsidize the domestic shrimp industry.

In general, the US government tends to be on the side of American industries. According to Bruce Blonigen, an economist at the University of Oregon, an anti-dumping expert, there are about 80% of the cases conclude that dumping has occurred, about 60% of the cases conclude that domestic firms are affected by imports. "The DOC has almost never concluded that there is no dumping," said Thomas Prusa, an economist at Rutgers University who specializes in commercial litigation and anti-dumping cases.

On December 31, 2003, the Southern Shrimp Alliance (SSA) officially filed a lawsuit against the US Department of Commerce (DOC) and the US International Trade Commission (ITC) for shrimp exporters to the US market of six countries (Brazil, China, Vietnam, Thailand, Ecuador, India). On January 20, 2004, the DOC began investigating

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shrimp dumping cases in the United States. All types of shrimp exported are within the scope of the survey, except for dried shrimp and shrimp powder. Shortly thereafter, the ITC conducted a parallel investigation into shrimp dumping cases in the US market. The hearings took place publicly in Washington DC with representatives from the six defendants. The preliminary conclusion of the ITC is that the import of shrimp from these countries into the US market seriously harmed the domestic industry of the United States. The final decision of ITC in January 2005 was also unchanged from this preliminary decision.

In February 2005, DOC officially imposed anti-dumping duty at the following rates:

Table 1: U.S Imported Shrimp Antidumping Duty Investigations (in 2005)

Country	Product		Initiation	Final	Duty Order	Min Margin	Max Margin
Brazil	Frozen Shrimp	Warmwater	27-Jan-04	23-Dec-04	1-Feb-05	4.97%	67.80%
Ecuador	Frozen Shrimp	Warmwater	27-Jan-04	23-Dec-04	1-Feb-05	2.48%	4.42%
India	Frozen Shrimp	Warmwater	27-Jan-04	23-Dec-04	1-Feb-05	4.94%	15.36%
Thailand	Frozen Shrimp	Warmwater	27-Jan-04	23-Dec-04	1-Feb-05	5.29%	6.82%
China	Frozen Shrimp	Warmwater	27-Jan-04	8-Dec-04	1-Feb-05	27.89%	112.81%
Vietnam	Frozen Shrimp	Warmwater	27-Jan-04	8-Dec-04	1-Feb-05	4.30%	25.76%

Source: United States Department of Commerce. International Trade Administration (ITC). Enforcement and Compliance. Antidumping and Countervailing Case Information. <http://enforcement.trade.gov/stats/iastats1.html>.

At the request of US Customs and Border Protection, in addition to the tax amount, the importer must pay a deposit equal to the tax rate applicable nationwide, the highest dumping margin. The deposit amount must be paid in one time before the importing zone docked at the US port. In addition, shrimp importers have to deposit a sum equal to the import value of shrimp within one year multiplied by the anti-dumping duty. From 2009 until now, the tariff has changed many times in favor of shrimp exporters. However, it is worth mentioning that the US continues to apply the 'zeroing' method in calculating anti-dumping duties on imported shrimp.

In 2012, the World Trade Organization (WTO) ruled that the United States violated global trade laws when calculating anti-dumping duties on imported frozen shrimp. The WTO states that the US "acted inconsistently with the terms of the Anti-Dumping Agreement and the General Agreement on Tariffs and Trade (GATT)". and pledged to consider the issue based on these two agreements. Accordingly, the WTO panel found that the US application of the zero method to calculate anti-dumping duties is a violation of WTO rules. This conclusion is consistent with the conclusions of many previous WTO

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disputes on similar issues. According to this verdict, the United States must abandon the "zero" calculation in its anti-dumping duty investigations with shrimp products.

Unfortunately, the WTO decision was made in July 2011, after the US Department of Commerce (DOC) has anti-dumping tax on shrimp in 2010, in this period DOC still apply the "zeroing" method, so shrimp product from these six countries are still subjected to anti-dumping duty. From the fifth administrative review onwards, the United States abandoned the "zeroing" calculation under the WTO rules.

2 Literature Review and Hypothesis

2.1. Anti-dumping in International Trade

The statement that 'dumping is a problem in International trade' argued by Viner (1923) has become the heart of the discussion, following up with the argument of Prusa (2001) that anti-dumping has breathtaking effects on trade. Dumping is one forms of 'price discrimination' and pricing strategy conducted by importers to gain market power according to Gifford et al, 2009. There are various methods in terms of protectionist policies can be classified as quota, impose tariff, subsidy, countervailing, safeguard and anti-dumping duty (WTO, 1994). In fact, anti-dumping policy has become the most popular protectionism tool in the world with almost 100% countries has applied the anti-dumping law (Aggarwal, 2002). As a result, the number of anti-dumping investigation has increased impressively in the recent years.

Bhala's (2002) study "Rethinking antidumping law" synthesized several arguments for groups opposing the use of anti-dumping measures. The author analyzes the economic aspects of dumping behavior, and from that point, there are many cases where the business of selling goods at low prices is not for unfair competition but primarily for solving those common situations in business. However, this study only wants to demonstrate the unnecessary of anti-dumping duty in the worldwide market because of the anti-competitive and restricting trade liberalization of this instruments. While in fact, in the case of other countries still apply anti-dumping measures, then a country should have its own suitable antidumping policy. On the other hand, Viner (1823), Deardorff (1989), and Marsh (1998) argue that anti-dumping is an effective instrument to protect domestic firms from discriminatory pricing action of foreign firms. In addition, the anti-dumping's unique rules and ease to implement have encouraged many countries to use it to elude them from 'unfair' trade (Tharakan 1995, Neufeld 2001, and Prusa 2011).

According to Ganguli (2008), the impact of anti-dumping policy literature in developing countries still relatively limited. However, Reem Raslan (2009) in the research of "Antidumping: A developing country perspective" evaluates the theoretical and practical aspects of anti-dumping policy in countries and concludes that developing countries are increasingly being treated unfairly in international trade if anti-dumping instruments become more and more popular. In addition, the study "The use of antidumping in Sweden, China, India and South Africa - Rules, trends and causes" of the Swedish National Commission of Trade (2006) study on anti-dumping policy of some developing

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countries and pointing out that the trend of using anti-dumping instruments in these countries is becoming more and more common. The main reason for this is attributed to international trade practice, which is facing a number of anti-dumping cases in export markets, therefore, they must increase the use of antidumping instruments as a means of self-defense, commercial retaliation. In addition, the study also confirmed that the strengthening of anti-dumping policy has brought many economic benefits to these developing countries.

The research "Antidumping, Exchange Rate and Strategic Price Competition by Staged Game" of Hsiang-Hsi Liu, Teng-Kun Wang (2014) explain how exchange rates influenced the government's decision to use antidumping instruments. Research has shown, in the case of importing countries currencies are strong currencies (are overvalued compared to foreign currencies), the importing country are more likely to have regular anti-dumping investigation because the strong domestic currency has boosted domestic prices and production costs. On the other hand, because the currency of the exporting country is undervalued, resulting in relatively cheaper exporting products. The study also has some recommendations to governments when using anti-dumping instruments should take into account the overall benefit as well as the social welfare.

2.2 Anti-Dumping in WTO Framework

In general, many studies on the theoretical basis of anti-dumping policy have analyzed quite comprehensively about dumping and the application of anti-dumping policy of many countries, specifically pointing out the motivation of dumping behavior on the micro perspective (Corporate behavior) and a macro perspective (Government behavior), pointing out the positive and negative aspects of the anti-dumping policy to the economy of the country applying this policy as well as the country subject to anti-dumping investigation, analyzing of the WTO legal basis with antidumping (Anti-Dumping Agreement) and evaluating the performance and benefits achieved of different economic groups with different levels of development in the WTO.

Aradhna Aggarwal's (2007) studying on "Anti-dumping agreement and Developing countries" analyzes the main content of the WTO Anti-Dumping Agreement and points out the disadvantages of developing countries in the implementation of the Agreement. The study also describes the actual use of anti-dumping policy by developing countries, and at the same time analyzing the ability of the authorities to enforce anti-dumping law. The "Antidumping" studied by Bruce A. Blonigen and Thomas J. Prusa (2001) assessed antidumping as the strongest barrier to international trade between 1975 and 2000. As evidenced, by the fact that since 1980 GATT and WTO members have submitted more antidumping claims than all other commercial lawsuits combined. In addition, antidumping cases are more than the sum of the other same types of lawsuits cases during the period of 1947-1970 all over the world. The study also pointed out that, by the mid-1980s, most of the antidumping cases in the world were from four countries and regions - the United States, the European Union, Australia and Canada. Subsequently, new anti-dumping lawsuits are being used by WTO members to protect domestic

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production, the study also points out, the motivation of antidumping cases include both economic and political motives, as well as explain the direct and indirect economic effects of anti-dumping instruments on both importing country and exporting country.

"Antidumping in International Trade" by Nguyen Tien Vinh (2007) examines the WTO rules on dumping and anti-dumping. The article affirmed that the application of anti-dumping duty on imported goods of countries are admitted by GATT and WTO. The ultimate purpose of antidumping duties is to limit and eliminate the damage caused by the dumping behavior of foreign goods, in order to maintain a balance between competition of importing and domestic products. In practice, however, there are cases where the importing countries abuse anti-dumping duties to protect the domestic industry. From that, the article recommends that the developing countries should develop and improve the law on trade defense in general and the law on anti-dumping in particular soon, in base of harmonization with the rules and practices of international trade.

2.3 The Impact of Anti-Dumping Duty on Importing

Niels (2006), Lasagni (2000) and Konings et al. (2001) find strong restricted results from anti-dumping duty on import volume. However, Brenton (2001) and Prusa (1999) do not discover any considerable restricted consequences from anti-dumping policy on import volume. In shrimp case, Jones and Harvey (2006) examined the effect of countervailing duties on U.S shrimp imports using aggregate shrimp import data from January 1995 to December 2005. They found that countervailing duties imposed by the U.S on six major shrimp exporting countries did not have the intended effect of reducing U.S shrimp import volume.

Chad P. Bown and Meredith A. Crowley (2006) research on "Policy externalities: How US antidumping affects Japanese exports to the EU" and point out that as the US uses antidumping instruments against Japanese merchandise, therefore Japan's exports to the United States dropped by 25% to 33%. However, Japan's export turnover to the EU increased, which may explain that due to the decrease in turnover in the US market, Japanese enterprises have shifted their export to the EU market.

The paper "Price dynamics in the market to import wooden bed of the United States" of Changyou Sun (2011) study on the US imported wood bed market for the period 2002-2009 with the two largest exporters, China and Vietnam. Research has shown that after the US anti-dumping investigation with imported furniture from China in 2004, China's export of this item to the US has gradually shifted to Vietnam. The study also showed that with Vietnam's export turnover of wooden beds to the United States growing rapidly, and Vietnam's export prices were also lower than those of China, and if this trend continues, Vietnam will also be subject to anti-dumping investigations similar to China.

In general, studies on anti-dumping policy of countries around the world has indicated the trend and the trade diversion in the use of anti-dumping instruments among the major economic sectors in the world in the last three to four decades, analyzing the

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characteristics of anti-dumping policy of some countries regularly using anti-dumping instruments, studying some anti-dumping lawsuits, thus clarifying the purpose of the country initiating the lawsuit, the impact of the lawsuit on the involved parties.

2.4 Research Question

1. What is the impact of US anti-dumping duty on import volume of shrimp product?
2. Who benefit from this more, the non-subject country or the domestic firms?
3. Are there any trade diversion effects from the anti-dumping policy in the US for shrimp product?

2.5 Hypothesis

Hypothesis 1: There will be a strong restricted effects from US anti-dumping policy on import volume of shrimp product.

Hypothesis 2: There will be a trade diversion effect after the US has imposed the anti-dumping duty. From the trade diversion effect we can analyze whether the restricted effect can result in increasing import volume for non-subject countries after the duty has been imposed.

3. Data & Research Methodology

This chapter present the data, source of data, and methodology that being use by this research paper. It also describes the specification model that consist definition of all variables and the measurement of all variables and the hypothesis that build the model.

3.1 Data

This research paper uses the quantitative research methods which try to find the impact of anti-dumping policy on shrimp industry by compiling numerical data that are analyzed using mathematical and statistics approaches (Aliaga and Gunderson, 2000). This chapter presents a picture about the impact of the anti-dumping policy on the import volume of shrimp product in the United States by using balanced panel data from January 1989 until December 2017 in the total of 29 years for 8 countries which become the subjects of the anti-dumping duties namely Vietnam, Thailand, Malaysia, Indonesia, India, Ecuador, China, Brazil and 72 other ‘non-subject countries’ without the anti-dumping duty exporting shrimp to the US. Most of the data such as Import volume, import value, unit price and market share for shrimp product gained from the United States Department of Agriculture. The value of Anti-dumping duty for this product collected from the United State Anti-dumping committee. While the other data such as GDP as well as exchange rate gathered from the World Bank and The International Monetary Fund. Moreover, in order to estimate the trade diversion effect on the 8 subject countries, this paper will use the same data variables and regression model applying to the Japanese shrimp industry to analysis the affection of U.S anti-dumping duty on the import volume of shrimp product exporting to the Japanese market, which is the third major shrimp importers in the world.

Table 2: Data and the Source of Data

Number	Data	Source of Data
1	Import Volume and Value of Shrimp Product	The United States Department of Agriculture The Trade Statistic of Japan
2	Unit Price	The United States Department of Agriculture The Trade Statistic of Japan
3	Anti-Dumping Duty	The US Anti-Dumping and Counter Vailing Case Information
4	Market Share	The United States Department of Agriculture The Trade Statistic of Japan
5	GDP	The World Bank & The International Monetary Fund
6	Exchange Rate	The World Bank

3.2 Research Methodology

This study employ STATA 14 software in analyzing the sample data. The regressions are run with the OLS model, the fixed-effects model (FE) and random-effects model (RE), the Breusch-Pagan Lagrange Multiplier test and the Hausman test are used to detect which model works better for analysis. The fixed effects model evaluates the net effect of independent variables on the dependent variable by removing all the effect of time-invariant factors within an entity. On the other hand, the random effects model allows the existence of time-invariant factors and assumes that the variation across entities is random and not correlated to independent variables.

The main objective in this chapter is to find the impact of the anti-dumping duty on the import volume of shrimp product for both ‘subject’ and ‘non-subject countries’. This study also aims to track out the trade diversion effect for the case of the anti-dumping policy on shrimp product exporting to the United States market. The model specification is based on the model constructed by Lee, et al. (1996) and Niels (2003) who investigated the impact of anti-dumping duty on volume and price of imports from both subject as well as ‘non-subject countries’.

The model is constructed using the panel data estimation method, the basic model that applied for both subject countries and non-subject countries are listed below:

$$\ln \text{Volume} = \alpha + \beta_1 \text{Duty} + \beta_2 \text{Dummy1} + \beta_3 \text{Dummy2} \\ + \beta_4 \ln \text{Price} + \beta_5 \ln \text{GDP} + \beta_6 \ln \text{ER} + \beta_7 \text{Marketshare}$$

This model explains as follow:

- **Import Volume**

Import Volume is the dependent variable that explains the import volume of shrimp product exporting to the United State market (in 1000 pounds) and Japanese market (in kg) from both subject and ‘non-subject countries’ in total of 80 countries at time t. Import

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is the domestic demand to foreign goods, thus the aggregate import volume constructed is expected to be the precise measure of the effectiveness of the dumping policy to restrict foreign goods especially in this case referring to shrimp product from 8 countries namely Vietnam, Thailand, Malaysia, Indonesia, India, Ecuador, China, Brazil.

- **Anti-Dumping Duty**

Duty is the size of the anti-dumping duty for the ‘subject countries’ at time t (%). This variable indicates the magnitude of the anti-dumping duty that is enforced to 8 subject countries and 129 non-subject countries of the anti-dumping policy on shrimp product exporting to the United States market, which is measured by percentage.

- **Dummy Duty 1**

Dummy1 is the dummy variable time to explain about the exact time that the US Department of Commerce applied the anti-dumping duty on the subject country, in order to figure out the impact of the anti-dumping policy on both subject country and non-subject country after the anti-dumping duty is charged to the subject countries.

- **Dummy Duty 2**

Dummy2 is the dummy variable time to explain about the period of time two years after the US Department of Commerce applied the anti-dumping duty on the subject country. Since the anti-dumping duty will take a period of time to come into effect, the use of this dummy is a way to figure out the impact of the anti-dumping policy on both subject country and non-subject country two years after the anti-dumping duty is charged to the subject countries.

- **Price**

Price is the unit price for shrimp product gathered from import value that is expressed by taking the US shrimp imports value (in \$1000 U.S. dollar) and Japanese shrimp import value (in 1000 Japanese Yen) from each country who becomes the subject of the anti-dumping on shrimp product and countries who are not the subjects of this anti-dumping policy, divided by import volume that is expressed by 1000 pounds.

- **Gross Domestic Product Per Capita**

GDP is the GDP per capita which measures of the total output of a country that takes the gross domestic product (GDP) in US dollar and divides it by the number of people in that country. The per capita GDP is especially useful when comparing one country to another, because it shows the relative performance of the countries.

- **Exchange Rate**

ER variable refers to Exchange Rate nominal, the rate at which United State currency exchanges (USD) and the Japanese currency (JPY) to the subject and non-subject countries' currencies. The exchange rate variables are included to control macroeconomic condition month by month (Niels, 2003).

- **Market Share**

Market share is variable which refers to the 'subject countries' market shares of shrimp product in the United States and Japan. The market share can be gained by the import volume of shrimp product from the 'subject countries' and 'non-subject countries' to the United State divided by the import volume of shrimp product to the US from the whole world. The importance of the 'non-named countries' market for the US domestic market can be represented by this variable (Lee et al., 2013). This variable can describe the dependency of the United State domestic market to the 'subject countries' market.

Table 3: Expected Results

No	Variable	Measurement	Expected Sign of Coefficient	Reference
1	Duty	Percentage (%)	Negative	Prusa (1996), Niels (2003), Lee et al (2013)
2	Dummy Duty	Dummy time	Negative	Prusa (1996), Niels (2003), Lee et al (2013)
3	Price	US (\$)	Positive	Niels and Kate (2006)
4	Exchange Rate	Domestic Currency/Foreign Currency	Negative	Niels (2003)
5	Market Share	Percentage (%)	Positive	Lee et al (2013)

4. Results & Discussion

4.1 Descriptive Statistics

The objective of this study is to figure out the impact of the anti-dumping policy on the import volume of shrimp product in the United State from the subject countries who become the subjects of this policy in order to capture the trade restriction effect and from the non-subject countries who become the importers of shrimp product but not the subjects of this policy to examine the trade diversion effect. The summary statistics of all variables including dependent variables and independent variables are shown in Table 4.1 for subject countries and Table 4.2 for non-subject countries respectively.

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**Table 4: Descriptive Statistics from Subject Country in the U.S market
(8 countries)**

Variable	Obs	Mean	Std. Dev.	Min	Max
Import Volume	232	8287791.00	28700000.00	0.00	162000000.00
AD Duty	232	4.17	8.82	0.00	36.39
Dummy1	232	0.32	0.47	0.00	1.00
Dummy2	232	0.26	0.44	0.00	1.00
Price	232	3.66	1.46	0.00	13.74
Exchange Rate	232	3582.46	51866.88	0.00004	789354.40
GDP per capita	232	3198.62	2894.62	97.16	13241.84
Market Share	232	9.37	8.90	0.00	36.59

Source: Author's calculation using STATA 14 Software (2018)

**Table 5: Descriptive Statistics from Non-Subject Country in the U.S market
(72 countries)**

Variable	Obs	Mean	Std. Dev.	Min	Max
Import Volume	2,088	2966.464	8693.822	0	90658
Dummy1	2,088	0.4482759	0.4974365	0	1
Dummy2	2,088	0.3793103	0.4853317	0	1
Price	2,088	3.095462	4.069904	0	96.12807
Exchange Rate	2,088	0.795472	10.2263	0.000016	354.402
GDP per capita	2,088	8114.79	17276.55	39.74	40468.8
Market Share	2,088	0.347532	1.034301	0	12.20983

Source: Author's calculation using STATA 14 Software (2018)

Since this study uses monthly-series data sets from January 1989 until December 2017, from the table of descriptive statistics above, the import volume can be interpreted as follow. During January 1989 until December 2017, the United States on average imported 8287791.00 (thousand pounds) of shrimp product from 8 subject countries such as Thailand, Ecuador, China, Indonesia, Malaysia, Brazil and Vietnam, while at the same period of time averagely imported 2966.464 (thousand pounds) from other 72 countries which are not the subject of anti-dumping duty. According to the maximum of import volume at 162,000,000 (thousand pounds) from Vietnam to the U.S market in 2014, and the largest market share at 36.59% of Thailand in 2000, it is clearly to see

that the major shrimp importers as well as the largest market share of shrimp industry importing to the US market all had been considered to have dumping problem. The statistic from non-subject countries pointed out that the maximum import volume from these countries just can reach 90,658 (thousand pounds), while the largest market shares also rate at 12.2%. These ratios indicate that the major importers have the biggest chance to become to subject of anti-dumping duty in the U.S market, rather than other importers in the shrimp industry. This can be explained possibly by the relation between these major importers and the United State domestic firms which is mentioned in the previous content.

4.2 Regression Result

In order to find out the impact of the anti-dumping duty on the import volume for shrimp product to the U.S market and the trade diversion effect with data from Japanese market, this paper use three main approaches to regression analysis with panel data to fit the model: Pooled OLS, the fixed effects model, and the random effects model. Breusch-Pagan Lagrange Multiplier test (tests for the random effects model based on the OLS residual) and Hausman test (tests whether there is a significant difference between the fixed and random effects estimators) are employed for model selection (Greene, 2012).

Table 6: Regression Result from Subject Country in the U.S Market

	OLS	FE	RE
VARIABLES	InImportVolume	InImportVolume	InImportVolume
ADDuty	-0.1108*** (-3.6114)	-0.0910*** (-3.4296)	-0.1108*** (-3.6114)
Dummy1	3.9165*** (4.7426)	2.3561*** (3.1933)	3.9165*** (4.7426)
Dummy2	-1.7369** (-2.4834)	-2.2238*** (-3.7025)	-1.7369** (-2.4834)
InPrice	3.8772*** (8.1525)	3.5898*** (8.3948)	3.8772*** (8.1525)
InER	-0.1193** (-2.3118)	0.2528** (2.4080)	-0.1193** (-2.3118)
Ingdp	-0.7207*** (-3.6147)	0.9972*** (3.0578)	-0.7207*** (-3.6147)
MS	0.0851*** (3.9200)	0.1391*** (4.9809)	0.0851*** (3.9200)
Constant	9.8754*** (6.2619)	-1.0735 (-0.4821)	9.8754*** (6.2619)
Observations	232	232	232
Number of country	8	8	8
R-squared	0.5091	0.4579	0.5091
F-test	0.0000	0.0000	0.0000

Table 7: Regression Result from Non-Subject Country in the U.S Market

VARIABLES	OLS	FE	RE
InImportVolume	InImportVolume	InImportVolume	InImportVolume
Dummy1	0.1934 (0.8104)	-0.0569 (-0.3971)	-0.0301 (-0.2082)
Dummy2	-0.7911*** (-3.2455)	-0.8117*** (-5.5947)	-0.8019*** (-5.4721)
InPrice	1.8692*** (24.3729)	0.9854*** (17.7760)	1.0246*** (18.4161)
InER	-0.1184*** (-4.9974)	-0.1793*** (-3.8777)	-0.1640*** (-3.8751)
Ingdp	-0.2022*** (-3.3955)	-0.0633 (-1.6154)	-0.0721* (-1.8272)
MS	1.6348*** (28.0982)	0.7005*** (8.7656)	0.8185*** (10.6383)
Constant	2.8809*** (7.0469)	3.0613*** (10.7070)	3.0644*** (8.3189)
Observations	2,088	2,088	2,088
Number of country	72	72	72
R-squared	0.4584	0.2245	0.4322
F-test	0.0000	0.0000	0.0000

Table 8: The Statistical Significance Levels

P value	Wording	Summary
< 0.01	Very significant	***
0.01 to 0.05	Very significant	**
0.05 to 0.1	Significant	*

According to the regression above, the best model is the fixed effects model since the estimations of this model are most significant compare to other models. Moreover, in case of the regression result from subject countries, the Breusch-Pagan Lagrange Multiplier test statistic ($p=1.00$) is not significant at the 1% significance level, thus the random effects model and the OLS model do not have specific differences. Meanwhile in case of non-subject country, the p value is significant with $p=0.0000$, then the random effect model is more efficient than the OLS model. In addition, the Hausman test statistic is significant at the 5% significance level with $p= 0.0000$ and $p=0.0412$ in case of subject country and non-subject country respectively, indicating that there are significant differences between the coefficients for the fixed effects and random effects model and fixed effects model is more efficient according to the hypothesis H0. Therefore, this paper mainly focus on interpreting results from the fixed effects model.

Table 9: Comparison Result between Subject Country and Non-Subject Country in the U.S Market

	Subject Country (FE)	Non-subject country (FE)
VARIABLES	InImportVolume	InImportVolume
ADDuty	-0.0910*** (-3.4296)	
Dummy1	2.3561*** (3.1933)	-0.0569 (-0.3971)
Dummy2	-2.2238*** (-3.7025)	-0.8117*** (-5.5947)
InPrice	3.5898*** (8.3948)	0.9854*** (17.7760)
InER	0.2528** (2.4080)	-0.1793*** (-3.8777)
Ingdp	0.9972*** (3.0578)	-0.0633 (-1.6154)
MS	0.1391*** (4.9809)	0.7005*** (8.7656)
Constant	-1.0735 (-0.4821)	3.0613*** (10.7070)
Observations	232	2,088
Number of country	8	72
R-squared	0.4579	0.2245
F-test	0.0000	0.0000

The table 4.6 describes the comparison of regression result between 8 subject countries and 72 non-subject countries, using the fixed effect regression method which controls differences across countries and figure out time-specific shocks across countries more precisely (Clark and Linzer, 2015). The first model shows the estimation result from the subject countries while in the second column it shows the regression result from the non-subject countries. The variable of the anti-dumping duty for the subject countries succeeds to decrease the import volume of shrimp product to the United State market by 9.1 percent. In the other words, the anti-dumping duty is the proper instrument to lower the import volume from the 8 subject countries including Thailand, Ecuador, Indonesia, China, Malaysia, Vietnam and Brazil.

Furthermore, the variable duty of the non-subject countries also shows the negative sign when it comes to the dummy variable explaining the period of time two years after other subject countries have been imposed the anti-dumping duty. It means that the anti-dumping duty that has been applied to the subject countries since 2005 also did not increase the import volume of shrimp product from other mainly 72 countries which are not the subjects of this policy. In both cases, the dummy2 variable all show the negative result in case of subject country and non-subject country, which means that the period of time 2 years after the anti-dumping duty were applied succeed to decrease the import volume of shrimp product to the U.S market.

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In addition, this paper also uses the same three main approaches including Pooled OLS, the fixed effects model, and the random effects model in case of subject country with the dataset of Japanese shrimp market in order to analysis whether there is a trade diversion effect after the anti-dumping duty have been applied to shrimp product in the U.S market.

Table 10: Regression Result from Subject Country in the Japanese Market

	Pooled regression	OLS	Fixed Model	Effects	Random Model	Effects
VARIABLES	InImportVolume	InImportVolume	InImportVolume	InImportVolume	InImportVolume	InImportVolume
Dummy1	3.6800*** (3.0084)	2.1733* (1.7650)			3.6800*** (3.0084)	
Dummy2	2.7115** (2.1233)	2.1857* (1.7262)			2.7115** (2.1233)	
InPrice	1.8729* (1.9317)	1.4951 (1.5377)			1.8729* (1.9317)	
InER	-0.0310 (-0.3322)	0.1984 (0.9268)			-0.0310 (-0.3322)	
Ingdp	1.2392*** (3.4671)	3.3560*** (5.1615)			1.2392*** (3.4671)	
MS	0.0932*** (5.9240)	0.0933*** (4.4869)			0.0932*** (5.9240)	
Constant	-8.2691*** (-3.1567)	-23.6744*** (-4.9921)			-8.2691*** (-3.1567)	
Observations	232	232			232	
Number of country	8	8			8	
R-squared	0.4782	0.4784			0.4782	
F-test	0.0000	0.0000			0.0000	

The table 4.7 present the regression result from the 8 subject countries including Thailand, Ecuador, Indonesia, Malaysia, India, China, Brazil and Vietnam exporting shrimp to the Japanese market in the same period of time from January 1989 to December 2017. In this regression result, the Breusch-Pagan Lagrange Multiplier test statistic ($p=1.00$) is not significant at the 1% significance level, thus the random effects model and the OLS model do not have specific differences. Besides, the Hausman test statistic is significant at the 1% significance level with $p= 0.0000$ which can be conclude that that there are significant differences between the coefficients for the fixed effects and random effects model. In this case the random effects model is more efficient according to the hypothesis H_0 , which means this paper will mainly focus on analyzing results from the random effects model in case of Japanese shrimp market.

Based on the random effects model, the variable duty of the subject countries also shows the positive sign when it comes to both of the dummy variable explaining the exact year and also two years after the anti-dumping duty have been imposed on the subject country. In other words, in the same period of time that the U.S applied the anti-dumping policy on shrimp product to 8 subject countries including Thailand, Ecuador, China, Indonesia, Malaysia, Vietnam, India and Brazil, there is a significant increasing on the export volume of shrimp product from these countries to the Japanese market.

4.3 Discussion

4.3.1 Analysis the Regression Results.

According to the first regression results, it can be interpreted that for the 8 countries which is the subject of the anti-dumping policy including Thailand, Ecuador, Indonesia, Malaysia, China, Brazil, Vietnam and India, the statistic of anti-dumping duty is very significant with p value at 0.001, and it has a negative coefficient sign to the import volume of shrimp product to the U.S market. From that result, 1 percent rise from the anti-dumping duty will lower the import volume for shrimp product by 9.1 percent each year from January 1989 to December 2017. Also the objective of this research is to find out the period of time that will have affection on lowering the import volume from the subject countries. The Dummy1 which is the dummy time variable to explain about the exact time that the US Department of Commerce applied the anti-dumping duty on the subject country, shows the positive impact at the significant level of $p = 0.002$. In other words, in the exact period of time when the US Department of Commerce applied the anti-dumping duty on the subject countries, the anti-dumping duty will have the positive impact going along with the import volume of shrimp product in to the U.S market. This regression result could be explaining by the fact that starting from the year which shrimp import volume to the US increased, leading to a large market share of shrimp in these years belong to foreign enterprises. For that reason, the DOC started to impose import tariffs to partially protect the domestic shrimp market. As mentioned above, the antidumping duty is not the exception and the US government tends to favor domestic US businesses. Thus, in the exact years when US antidumping duties began to be imposed on major shrimp import countries, the import volume of these countries has obviously tended to grow strongly already. However, anti-dumping duty takes time to have the affection on the import volume of shrimp product to the U.S market. That is the reason why the Dummy2 which is the dummy variable time to explain about the period of time two year after the US Department of Commerce applied the anti-dumping duty on the subject country has a negative significant effect on the import volume. In other words, the period of time in two years after the anti-dumping have been imposed is significant to restrict the import volume for the subject countries to the U.S for shrimp product because the anti-dumping policy takes time to come into effect. In another case of other 72 non-subject countries, the Dummy1 which is the dummy variable time to explain about the exact time that the US Department of Commerce applied the anti-dumping duty on the subject country did not show the significant impact on the import volume of shrimp product to the U.S market. However, the Dummy2 which is the dummy variable time to explain about the period of time two year after the US Department of Commerce applied the anti-dumping duty on the subject country also has a negative significant effect on the import volume, taking the similar result as the case of subject countries. It can be explained by several reasons, firstly, in the years U.S Department of Commerce applied the anti-dumping duty on the subject country, the other non-subject countries also reduce their export volume of shrimp product to the U.S market in order to avoid being consider into the subject of violating the U.S anti-dumping policy. Secondly, besides the anti-dumping duty, the U.S Department of Commerce and the US International Trade Commission (ITC) which is responsible for

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investigating trade issues, might have other actions of restricting the import quantity of shrimp product to the U.S market after the anti-dumping duty have been imposed, that is also a way to protect the United State domestic market.

The unit price has an important role to prove the impact of anti-dumping duty to the import volume of shrimp product to the U.S market. According to the estimated result, the unit price shows the significant with $p = 0.000$ and has positive coefficient with the import volume, for 1 percent rise in the unit price for product of shrimp will increase the import volume by 3.58 percent in case of subject countries and 0.98 percent in case of non-subject countries each year during January 1989 until December 2017. In this case, the anti-dumping actions have the expected trade destruction effect on the subject countries, their prices go up, volumes fall, and overall they lose market share (as measured by value) in the importing market. In this paper, the exchange rate is also an essential factor to estimate the impact of anti-dumping duty on the import volume of shrimp product to the U.S market. The estimate results imply that when the exchange rate increase will lead to an increase in the import flow from the subject countries. In specific result of subject countries, 1 percent rise in the exchange rate of U.S dollar to the exchange rate of the subject countries will increase the import volume of shrimp product by 25.28 percent. On the other hand, in case of non-subject country, the coefficient sign confirms the prior research concluding that the exchange rate will have negative relation with the import volume. Another critical element to evaluate the impact of anti-dumping duty on the import quantity is the gross domestic product per capita, which is considered to be especially useful when comparing one country to another, because it shows the relative performance of the countries. From the regression results, it shows that in case of subject countries, 1 percent increase in the GDP per capita will higher the import volume by 0.99 percent each year in that 28 years' period. Moreover, the market share is also a decisive factor to analysis the effect of antidumping duty. Based on the regression result, it may be concluded that the market share has a positive significant relationship with the import volume of shrimp product under 0.001 level of significant in both case of subject countries and non-subject countries. It can be interpreted as for 1 percent rise in the market share of the United States importing market of shrimp product will lead to the rise of import volume by 13.9 percent and 7 percent in case of subject countries and non-subject country respectively each year from January 1989 to December 2017.

Another purpose of this research is to estimate the trade diversion effect on the export volume of shrimp product after U.S levied the anti-dumping duty. According to the regression result from subject countries in the Japanese market, both Dummy1 and Dummy 2 which are the dummy variables of time to explain about the exact time and the period of two years after the US Department of Commerce applied the anti-dumping duty on the subject country, shows the positive impact at the significant level of $p = 0.003$ and $p = 0.034$ respectively. Put the matter another way, in both period of time when the U.S anti-dumping just have been applied and later when it came into effect, the anti-dumping duty all have the significant positive impact going along with the import volume of shrimp product exporting to Japanese market. Among the period of time that U.S shrimp import market plummeted due to the impact of anti-dumping duty, Japan's

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shrimp import market at the same time received the strong growth also from the exporting countries which are the subject of the anti-dumping policy.

4.3.2 Conclusion from the Regression Result

In conclusion, from both cases of subject country and non-subject country there are a strong significant negative impact of anti-dumping duty to the import volume of shrimp product to the United State market. Base on the regression result, it may be concluded that there is a restricted effect to restrain the import volume for shrimp product for countries exporting shrimp to the U.S market, whether these countries is the subject of anti-dumping policy or not. In other words, the non-subject countries also did not gain benefit from the anti-dumping policy of the U.S, in this situation, the domestic firms are the one who can take advantage of the anti-dumping duty applying on shrimp product which is imposed by the U.S Department of Commerce. It is also consistent with the purpose of the anti-dumping policy to become a useful tool to ensure fairness among countries in the WTO system if a dumping dispute arises. Moreover, according with the regression result in Japanese market, there is a significant positive impact of the anti-dumping duty to the export volume of shrimp product from 8 subject countries including Thailand, Ecuador, Indonesia, Malaysia, China, Brazil, Vietnam and India to the third market. The results show that subject countries' trade flows were oriented to other destination market when U.S started to use the anti-dumping duty on shrimp product, as well as when the anti-dumping duty come into effect after a period of time. In this case, the results imply that the application of anti-dumping on shrimp product are significantly correlated with higher exports to markets other than the United States. In other words, exporters may be less likely to export their shrimp products to the U.S. market once their products have been restricted entry by the U.S Department of Commerce.

It also indicates that the United State as the largest importer has the power in the international shrimp market and the anti-dumping policy can affect the trade flows. In general, the US anti-dumping policy on the procedures, order of conducting investigations and anti-dumping actions is quite consistent with WTO anti-dumping regulations. Anti-dumping law in the United States is very strict and detailed, requiring countries to export to this market need to be prepared, thoroughly understand the relevant laws of the country.

However, US anti-dumping policy is full of inadequacies and unreasonable. With its familiar "unfair" play, the United States has faced opposition from many countries around the world. Firstly, US law on measures antidumping has always been regarded as domestic political support for the economy in the process of trade liberalization. Consequently, it is arguable that these measures actually reinforce the US commitments to the World Trade Organization. That argument, however, ignores the controversy that US trade law is causing a great deal of conflict with foreign trading partners. On the basis of a series of lawsuits and practices that the United States is adopting, the WTO Dispute Settlement Committee have made the important decisions in which the US government had violated its international obligations.

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The United States 'zeroing' approach has been opposed at least six times in the World Trade Organization, and is generally contrary to US commitments at the WTO. With this method, when calculating the average margin of dumping over time or across products, the DOC generally ignores the "negative" margin. This is a controversial measure that sometimes makes anti-dumping law more protective of the United States. Thus, the arbitrary application of the "Zeroing" has made the US anti-dumping policy strongly condemned in international trade and directly bring the United States into the litigation round many times with countries around the world.

Secondly, US anti-dumping policy has a negative impact on the US economy itself. Anti-dumping law has long been abused by protectionists who seek an escape from the competition of imported goods. However, in recent years, the situation has started to change. The abuse of the anti-dumping law has, in part, reduced the competition of imported goods for US domestic products but has shifted these difficulties to exporters, because US exporters are becoming the main target of anti-dumping law by foreign governments. With US abuse of anti-dumping laws in international trade, other countries have also actively developed their own anti-dumping law as a counter-argument when other tariff and non-tariff barriers are gradually eliminated in accordance with WTO rules. In addition, due to unjustified US rules on anti-dumping duties, the United States has been confronted with countermeasures by states in the world to offset the damage caused by US antidumping legislation.

5. Conclusion

The purpose of this paper is to contribute to the empirical literature of anti-dumping. Specially, the objective of this study is to estimate the impact of anti-dumping policy on the import volume of shrimp product to the United States market, and also analysis the trade diversion effect of the U.S anti-dumping duty in the period of time from January 1989 to December 2017. The research compares the impact of the anti-dumping policy between two main groups, the first one is the subject countries including Thailand, Ecuador, India, Indonesia, Malaysia, Vietnam, China and Brazil, the second group is other 72 countries which are not the subject of the anti-dumping policy. This study employ STATA 14 software in analyzing the sample data. The regressions are run with the OLS model, the fixed-effects model (FE) and random-effects model (RE), the Breusch-Pagan Lagrange Multiplier test and the Hausman test are used to detect which model works better for analysis. The model is constructed using the panel data estimation method, the basic model that applied for both subject countries and non-subject countries with 7 independent variables, including the anti-dumping duty, dummy 1, dummy 2, unit price, exchange rate, gross domestic product and market share.

This research comes up with the results that the anti-dumping duty has the significant negative impact to the import volume of shrimp product from both subject countries and non-subject countries. However, the anti-dumping duty requires a period of time to take into action, in this research that resulted in the period of 2 years after the anti-dumping duty has been imposed by the U.S Department of Commerce. By way of explanation, both of subject and non-subject countries did not gain benefit from the anti-dumping

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policy of the U.S, so that in this case the domestic firms are the one who can take advantage of the anti-dumping duty. Moreover, there is a trade diversion effect after the US has imposed the anti-dumping duty, resulting in increasing the export volume in shrimp product of the subject countries to the third market.

Overall, anti-dumping law in the United States is a solid premise for the US to protect its domestic industries from being negatively affected by the dumping action of other nations. However, the United States method of calculating the dumping margin 'zeroing' had violated the international obligations and also let the United States facing trouble with the litigation round many times with other countries around the world. Furthermore, the U.S anti-dumping policy bring the disadvantage impact on the US economy itself when US exporters becoming the main target of anti-dumping law by the foreign governments.

There are some suggestions for the United States to formulate the new suitable protection instrument which can bring more benefit to the domestic shrimp industry, also considering to improve the domestic infrastructure, as well as encouraging the domestic shrimp firm to create the good quality shrimp products with competitiveness. Furthermore, the subject countries should avoid being consider to violate the anti-dumping policy. These countries are recommended to develop a reasonable price policy, as well as develop a strategy to diversify business products and diversify export products, also enhance the knowledge of the WTO antidumping law as well as the U.S anti-dumping law.

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