

**ASSESSING THE IMPACT OF
STANDARDS AND TECHNICAL REGULATIONS ON THE
EXPORT OF INDONESIAN FISH AND FISH PRODUCTS**

THESIS

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**UNIVERSITY OF INDONESIA
FACULTY OF ECONOMICS
MASTER OF PLANNING AND PUBLIC POLICY
DEPOK
DECEMBER 2008**

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**Submitted in partial fulfillment of the requirements
For the degree of Master of Economics**

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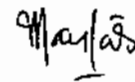
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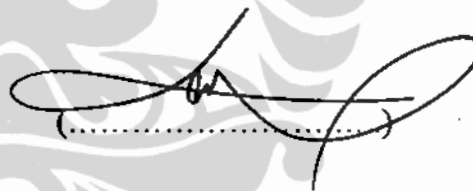
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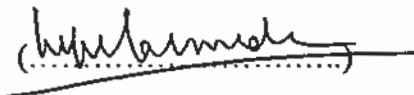
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Last but not least, I believe that this research is way beyond perfect. That's why critics and suggestions are welcome to enhance this thesis.

Depok, December 2008

Maulida Lestari

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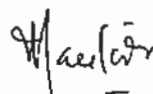
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ABSTRACT

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There has been a rising use of standards and technical regulations as instruments of trade policy in unilateral, regional, and global trade contexts. The proliferation and increased stringency of food safety and health standards is a source of concern among many developing countries. These standards are perceived as a barrier to the continued success of their exports. This study analyzes the impact of standard and technical regulation for fishery product which are imposed by the trading partner on Indonesia export performance. Moreover, this study analyzes the other factors which influence the Indonesia's export of fishery product to the trading partner. Econometric result shows that the increasing number of standard and technical regulation in the importing countries was reducing the Indonesia export performance. In addition, the Indonesia export performance was positively influenced by the importing countries' GDP, population, exchange rate and negatively influenced by the tariff.

Keywords: Standard, Technical Regulation, Panel Data.

ABSTRAKSI

Nama : Maulida Lestari
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Judul : Pengaruh Standar dan Regulasi Terhadap Ekspor Ikan dan Produk Ikan Indonesia

Penggunaan standar dan regulasi sebagai instrumen dari kebijakan perdagangan dalam tingkat unilateral, regional dan global telah meningkat. Semakin ketatnya standar keamanan dan kesehatan produk makanan merupakan salah satu sumber yang menjadi pusat perhatian beberapa negara berkembang. Standar yang diberlakukan oleh negara pengimpor bisa menjadi hambatan untuk peningkatan ekspor mereka. Studi ini menganalisa bagaimana dampak standar dan regulasi yang diterapkan oleh negara pengimpor terhadap kinerja ekspor Indonesia. Selain itu, studi ini juga menganalisa faktor lain yang secara signifikan mempengaruhi nilai ekspor ikan dan produk ikan Indonesia. Hasil ekonometri dengan menggunakan data panel menunjukkan bahwa kenaikan jumlah standar dan regulasi di negara pengimpor akan menurunkan nilai ekspor Indonesia. Hasil ekonometri juga menunjukkan bahwa PDB, populasi dan nilai tukar mempunyai pengaruh positif terhadap nilai ekspor produk ikan Indonesia, sementara tarif berpengaruh negatif.

Kata kunci: Standar, Regulasi, Data Panel

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CHAPTER I

INTRODUCTION

1.1. Background of the Study

Successive rounds of multilateral trade negotiations at the World Trade Organization and the negotiation of numerous bilateral and regional trade arrangements have led to a substantial reduction in global tariffs. As tariffs have decreased, there has been increased focus on ensuring Non-Tariff Barriers (NTBs) or policies, including standard and technical regulation. In the WTO agreement, standard and technical regulation is regulated in Technical Barrier to Trade Agreement (TBT) and Sanitary and Phytosanitary Agreement (SPS). In addition, article XX of the GATT (General Agreement on Tariff and Trade) 1947 allows governments to set their own standards and regulations on trade in order to protect human, animal, or plant life or life.

Governments use technical regulations and standards to achieve a range of policy goals, such as ensuring the health and safety of their citizens, protection of the environment, national security and consumer protection. While the vast majority of technical regulations and standards are designed to achieve non-trade related objectives, they can also have the unintended effect of restricting or distorting trade. Furthermore, as the use of tariffs as a trade-policy tool has diminished, there can, at times, be an increased incentive for governments to use regulations and standards as an alternative, and less transparent means of restricting the entry of foreign products.

Technical regulations and standards can sometimes work as unreasonable barriers to trade, for example, the standard are set too high compared to the need or technical specification are prepared in a biased way so as to favor unduly the products of domestic origin or of some specific foreign origin.

The impact of the need to comply with different foreign technical regulations and standards to the international trade will involve significant costs and time for producers and exporters. The costs could be increase because the translation of foreign regulations, hiring of technical experts to explain foreign regulations, and adjustment of production facilities to comply with the requirements. Moreover, it will takes time to meets the foreign regulations. It will create new transaction cost or increase exist transaction cost beside the production cost. Maskus et.al (2001, p.2) stated that mandatory regulations are imposed by governments at the borders thus can produce serious distortions in the commercial market.

The landscape for standards is such that developed economies countries typically have more stringent standards than developing countries. This will have the effect of favoring intra developed country trade since producers from these economies will have more experience in meeting the standards. In the other side, producers from developing countries will be at disadvantages.

In the case of agriculture and fishery product, the frequency ratio of technical barriers in most countries is as high close to 100 percent (Bora, 2005, p.25). Fish and fish products are among the most traded food commodities today and this trade is likely to increase to meet the ever increasing-demand for fish and fish product. Yet, one of the most serious difficulties facing exporters is the different quality and safety standards and policies imposed by importers.

As early as 1980, there was an international drive towards reforming fish inspection systems to move away from end-product sampling and inspection into preventative Hazard Analysis Critical Control Point (HACCP)-based safety and quality systems. The general principles of HACCP have been adopted by the *Codex Alimentarius* Commission (CAC) in 1997, 1999 and 2003 (FAO, 2003). Beside International level, every country has domestic laws and regulations related to the standard. The European Unions (EU) and United States standards systems lead the world in the development of standards and wield significant influence over the standards setting processes in both the International

Organization for Standardization (ISO) and the International Electro-Technical Commission (IEC).

Increasing concern in the standards has restricting the Indonesia's export for fish and fish product. Indonesia faced problems in meet the requirement of standard and technical regulation from the importers. For example, based on Indonesian Marine and Fisheries Department, in year 2006, 37 companies from Indonesia were prohibited to export fish and fish product to the European Unions and decreased until only 16 companies in the mid of 2007. Mostly, they were banned to export the product because based on the EU Commission inspection, the product was contaminated by mercury, histamine and the existence of unauthorized substances.

Based on the report from the U.S Marine Fisheries Inspector in the mid of July 2001 about the action of Indonesian fisherman which had not obey the mandatory regulation to use *Turtle Excluder Device* (TED) in their ships for catching shrimps, the US government delays import shrimps from Indonesia for two months.

Beside United States and the European Unions, standards and technical regulations for fish and fish product has rising in Japan. For example, since 1st January 2004, the Japan government has increasingly tight the import of fishery product from Indonesia. In order that protected their consumers from the contamination of antibiotics, the Japan government has decreased the standard of limit contain of *oxytetracycline* and *chlortetracycline* antibiotics in the fish and fish product from 0,05 ppm to 0,01 ppm.

The problem to meet the requirements of standards and technical regulations of fish and fish product which has imposed by the trading partner has made Indonesia lost potential income from the export of those products. Nevertheless, in the other side, meeting the standards and technical regulations from trading partner is important relating with the good expectation from the consumers about

the quality of the product. If Indonesian exporters can fulfill the standards and technical regulations, the demand for the product will increase. It shows that the impact of standards and technical regulations was ambiguous. Therefore, this study tried to see the impact of technical barrier to trade to the Indonesia's export, especially for fish and fish product.

1.2. Problem Statement

- How are the impacts of standard and technical regulation on the Indonesia's export of fish and fish product to the international market?
- What are other factors significant influenced the value of export Indonesian fish and fish products to the trading partner?

1.3. Objective of the Study

- to measure and analyze the impact of standard and technical regulation on the Indonesia's export of fish and fish product to the international market.
- to determine and analyze the factors which influence the Indonesia's export of fish and fish product to the trading partner.

1.4. Scope of the Study

The study covers the Indonesia's export performance on fish and fish product. The Indonesia's export performance is determined by the consumer's demand from the partner country in bilateral activities. It can be seen from the value of export of Indonesian fish and fish product to the partner country.

Due to the limitation of data, the study was not analyze the impact of standard and technical regulation overall welfare, such producer and consumer surplus. Moreover, the study also was not analyze the impact of the standard and technical regulation to the revenue and cost of export (transaction and production cost).

These studies assess the impact of standards and technical regulations which are imposed by the partner countries to the value of Indonesia's export for fish and fish product. Standards and technical regulations as a proxy of trade restriction are measured by the number of standards on the fish and fish product that should be fulfilled by the exporters. The standards and technical regulations that are considered in this study are those had been notified by the trading partner to the WTO through Committee Technical Barrier to Trade and Committee Sanitary and Phytosanitary.

Moenius (2004, p.14), in his study explain that one unit of measurement is a count of the number of documents, since generally each standard is published in one separate documents. These documents were sorted into separate bins for each country, industry and year. Referring to Swann et.al (1996, p.1301), the measure of strength in standards obliges them to assume that all standards have equal weight, while in practice a standards count is likely to be quite a 'mixed bag'.

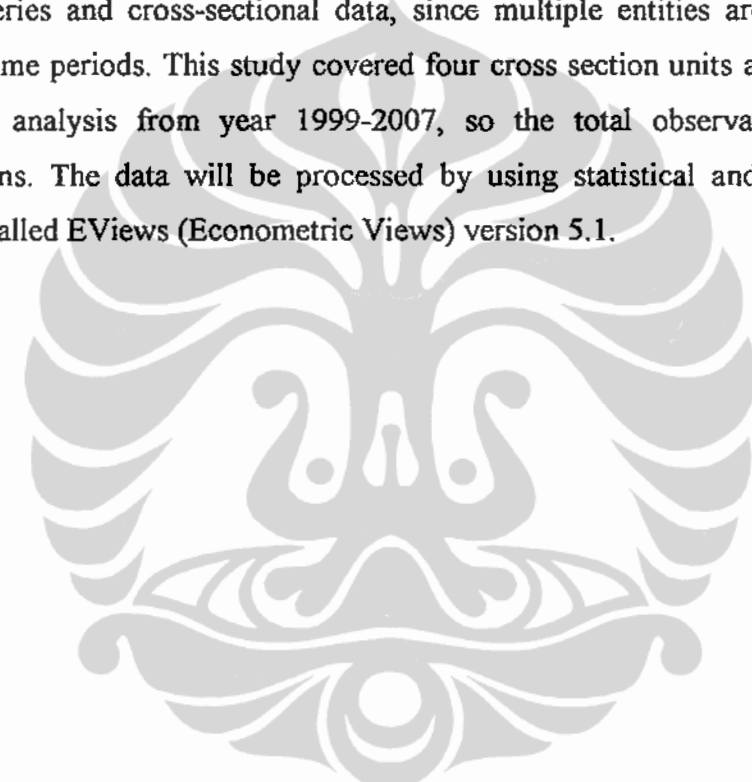
Fish and fish product that is used here are two digits Harmonized System (HS) for the period of 1999-2007 which cover several areas of regulatory scope. The bilateral trade activities in those products are selected based on the biggest potential market of fishery product for Indonesia includes United States, Japan, Belgium and United Kingdom. United States, Japan and EU market has becoming the biggest export destination for Indonesian fish and fish product for the last ten years.

1.5. Methodology

In order to achieve the objective of the study, the study will use two methodologies include study literature and econometric approach. The study literature will be done to have information about the previous study and other related data and information. The major data and information were collected from

Trade Data Centre, Trade Research and Development, Ministry of Trade Republic of Indonesia and from the internet (IFS-IMF, WTO, UN-Comtrade).

In this study, the export performance will be analyzed with the econometric approach. Econometrics deals with three types of data: cross-sectional data, time series data, and panel data. In order that overcomes the limitation of data observations, the study use panel data. Panel data can be viewed as a combination of time series and cross-sectional data, since multiple entities are observed at multiple time periods. This study covered four cross section units and nine years period of analysis from year 1999-2007, so the total observation only 36 observations. The data will be processed by using statistical and econometric software called EViews (Econometric Views) version 5.1.



CHAPTER II

THE IMPACT OF STANDARDS AND TECHNICAL REGULATIONS TO INTERNATIONAL TRADE

2.1. The Nature of Standards and Technical Regulations

Successive rounds of multilateral trade negotiations at the World Trade Organization (WTO) and the negotiation of numerous bilateral and regional trade arrangements have led to a substantial reduction in global tariffs. As tariffs have decreased, there has been increased focus on ensuring non-tariff measures or policies, including standards and technical regulation.

In recent years, the number of standards and technical regulations adopted by countries has grown significantly. Increased regulatory policy can be seen as the result of higher standards of living worldwide, which have boosted consumers' demand for safe and high-quality products, and of growing problems of water, air and soil pollution which have encouraged modern societies to explore environmentally-friendly products.

The difference between a standards and technical regulations lies in compliance. While conformity with standards is voluntary, technical regulations are by nature mandatory. They have different implications for international trade. If an imported product does not fulfill the requirements of a technical regulation, it will not be allowed to be put on sale. In case of standards, non-complying imported products will be allowed on the market, but then their market share may be affected if consumers' prefer products that meet local standards such as quality.

Technical regulation is a document, which lays down product characteristics or their related process and production methods, including administrative provisions. While standard is a document approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for products and their related processes or production methods. Both may also cover terminology,

symbols, packaging, marking or labeling requirements as they apply to a product, process or production method.

The WTO defines a standard as follows:

(...) standards set out specific characteristics of a product — such as its size, shape, design, functions and performance, or the way it is labeled or packaged before it is put on sale. In certain cases, the way a product is produced can affect these characteristics, and it may then prove more appropriate to draft (...) standards in terms of a product's process and production methods rather than its characteristics *per se*. (...)

Swann et.al (1996, p.1298) defined standard is one or more three things. First it may allow products to work together - *a compatibility standard*. Secondly, it may define a certain level of quality - *a minimum quality standard*. Thirdly, it may reduce the number of variants in a product range - *a variety reduction standard*. Baldwin (2000, p.239) distinguishes between two aspects of these standards (both of which create a barrier): i) content of the standard and ii) testing procedures necessary to demonstrate that a product complies with a given standard.

Following Moenius (2004, p. 4), standard are product and process specification intended to harmonize the treatment of intermediates in the production process or the attribute of final goods. Three types of standards can be distinguished in terms of their origin. If standards evolve out of the market process, they are generally referred to as *de facto* standards. Standards imposed by law are called *de jure* standards. The largest number of standards, however, results from coordination in committees and standardization institutions like the International Organization for Standardization (ISO), the American National Standardization Institute (ANSI) and the German DIN-Institute. These are generally referred to as *institutional* standards. This study focuses on institutional standards. In contrast to *de jure* standards, the adoption of institutional standards is voluntary. In contrast to *de facto* standards, institutional standards are well-documented.

Roberts et al. (1999, p.8) provide a useful classification scheme for technical trade barriers associated with agricultural and food products, dividing potential policy instruments into three categories, namely: (i) full or partial import bans; (ii) technical specifications, including product and process standards; and (iii) information remedies, including packaging and labeling requirements and controls on voluntary (health and other) claims.

Full or partial bans are the most trade-restricting measures. Total bans are typically used when there are great risks associated with certain plant and animal health problems and where no cost-effective eradication/mitigation measures are available. Partial bans may permit trade only in certain seasons or to/from certain countries or regions. These bans may apply only to imports or may also apply to inter-provincial/inter-state commerce. Both technical specifications and informational remedies will normally apply both to imports and domestic supplies. Their effects on trade will derive from the relative abilities of different suppliers to comply with these measures, the varied incidence of compliance costs and how each affects the relative competitiveness of different suppliers.

2.2. The Need for Standards and Technical Regulations

Referring to Ryder et.al (2005, p.2), globalization of food trade, coupled with technological developments in food production, handling, processing and distribution, and the increasing awareness and demand of consumers for safe and high quality food have put food safety and quality assurance high in public awareness and a priority for many governments. This is exacerbated by the series of food safety scares in the 1990s (e.g. bovine spongiform encephalopathy (BSE) and dioxins) and by concerns over technological innovations from biotechnology (genetically modified organisms). Consequently, many countries have tightened food safety controls, imposing on imports additional costs and requirements that are not always technically or scientifically supportable.

Sanitary and hygienic regulations have come to play an increasingly important role during recent years due to negative public perceptions that have grown in major importing markets (Ahmed, 2006, p.13). Developing countries have often complained that they are penalized by the complexity of sanitary and quality regulations of major importing countries. In the past, it has been suggested that these regulations have been used as non-tariff barriers. There is no doubt that the implementation of the regulations and the lack of consistent and harmonized criteria have inhibited trade.

Based on the WTO agreement, there are several main objectives of the standard and technical regulations which are imposed by the country, include protection of human safety or health, protection of animal and plant life or health, protection of environment and protection of deceptive practice.

The largest number of technical regulations and standards are adopted to aim at protecting human safety or health. Regulations that protect animal and plant life or health are very common. They include regulations intended to ensure that animal or plant species endangered by water, air and soil pollution do not become extinct. Some countries, for example require that endangered species of fish reach a certain length before they can be caught. Increased environmental concerns among consumers, due to rising levels of air, water and soil pollution, have led many governments to adopt regulations aimed at protecting the environment. Regulations of this type cover for example, the re-cycling of paper and plastic products, and levels of motor vehicle emissions. In prevent the deceptive practice, most of these regulations aim to protect consumers through information, mainly in the form of labeling requirements. Other regulations include classification and definition, packaging requirements, and measurements (size, weight etc.), so as to avoid deceptive practices.

There are various reasons why food safety and agricultural health standards, commonly referred to as sanitary and phytosanitary (SPS) measures within the context of the WTO, differ between countries (Henson, 2004, p.3). First, there are

significant differences in tastes, diets, income levels and perceptions that influence the tolerance of populations toward these risks. Differences in climate and in the available technology (from refrigeration through to irradiation) affect the incidence of different food safety and agricultural health hazards. Standards reflect the feasibility of implementation, which itself is influenced by legal and industry structures as well as available technical, scientific, administrative and financial resources. Some food safety risks, for example, tend to be greater in developing countries due to weaknesses in physical infrastructure (for example standards of sanitation and access to potable water) and the higher incidence of certain infectious diseases. Further, tropical or sub-tropical climatic conditions may be more conducive to the spread of certain pests and diseases that pose risks to human, animal and/or plant health.

Referring to Maskus et.al (2001, p.17), standards arise for numerous reasons. In principle, they are designed to facilitate production and exchange, reduce transactions costs, guarantee quality, and achieve the provision of public goods. They may also operate, by design or by circumstance, to restrain competition. The essential point of standards is to support market development and facilitate transactions. They may also promote integration with global markets. The impacts may be both static and dynamic in nature. Adopting standards can improve resource allocation and help diffuse technical information embodied in products and processes. Indeed, standards themselves may embody considerable information about technical knowledge. Adherence to recognized standards provides incentives for firms to upgrade the quality and reliability of their products to required levels.

There are three situations where standards are necessary (Baller, 2007, p.5). These are (1) where compatibility a) of inputs or b) among final products needs to be assured; (2) where there is asymmetric information between producers and consumers about product quality; and (3) in situations where goods are produced or consumed under negative externalities. But in some case, government intervention will be necessary.

2.3. The Impact of Standards and Technical Regulations to International Trade

According to Deardoff and Stern (1998, p.3), Non Tariff Barriers (NTB) has various characteristics: first, they reduce the quantity of import and increase the price of import. Second, they could change the elasticity of demand for import. Third, the effectiveness of NTBs could vary over time according to the change in the market condition. Fourth, the uncertainty in implementation of NTBs, especially such as anti dumping and countervailing measures, could restrict potential trade. Fifth, they bring about welfare costs as well as resources costs such as administrative cost or rent seeking relative to costs. These non-transparent and obscure features of NTBs make them difficult to control and monitor. At the same time, such uncertainty characteristics of NTBs have attracted governments and domestic industries lobbying for protection.

Baldwin (2000, p.243) explained that standards and technical regulations can affect fixed costs as well as variable costs, so even a minimalist model requires imperfect competition and increasing returns. With these elements, however, almost anything can happen theoretically. As Elhanan Helpman and Paul Krugman show, quotas can lower prices, export subsidies can improve welfare, and small countries can have positive optimal tariffs. Clearly then, one should not be surprised that, theoretically, standards and technical regulations has an ambiguous impact on trade flows and welfare.

Despite the fact that standards are important in achieving efficiency, their presence can turn out to be an obstacle to trade. Regulations and standards have an important role in protecting human health, security or the environment. However, when they are more restrictive than necessary, lack transparency, or arbitrarily discriminate against products from particular countries, they can act as de facto trading obstacles or technical barriers to trade.

The proliferation and enhanced stringency of food safety and agricultural health standards is a source of concern among many developing countries and those promoting the increased integration of these countries into the world trading system. Reflecting wider changes in the trade regime for various agricultural and food products, there is a presumption that food safety and agricultural health measures can (and will) be used as a protectionist tool, providing 'scientific' justifications for prohibiting imports of certain products altogether, or discriminating against imports by applying higher standards and/or more rigorous regulatory oversight than on domestic suppliers. Even if standards are not intentionally used to discriminate against imports, there is concern that their growing complexity and lack of harmonization between countries could still impede the trading efforts of developing countries (Henson et.al, 2004, p.1).

It is recognized that the application of food safety and agricultural health control measures by governments and related standards by the private sector can significantly affect the levels and patterns of international trade in agricultural and food products. While most of such standards are designed in pursuit of the legitimate goals of maintaining and/or enhancing human, plant and animal health, they can also serve as technical barriers to trade.

Maskus and Wilson (2001, p.3) argued that mandatory regulations imposed by governments at the border can produce serious distortions in commercial markets. For example, domestic regulatory systems may restrain trade and limit market entry through environmental, health, or safety mandates not based on international norms. These requirements may also be discriminatory within the context of WTO disciplines, including commitments undertaken by WTO members in the Agreement on Technical Barriers to Trade (TBT) or the Agreement on the Application of Sanitary and Phytosanitary Standards (SPS).

Referring to Swann et.al (1996, p.1299), government recognized that the development of national standards systems can increase perceptions of quality, and so improve trade performance. In fact standards of any type can generate a

trading advantage either through raising quality or by creating opportunities for economies of scale. A version of the "*competitive disadvantage*" argument claims that a large number of country-specific process standards raises the costs of local firms and therefore lowers their cost competitiveness. This in turn should promote imports and reduce the exports of these highly regulated local firms. On the other hand, the argument does not provide a prediction for the aggregate effect of shared standards on the volume of trade.

There are two major findings about the existing theoretical literature: first, only a very small part of the economics literature on standardization is concerned with trade issues. Therefore, one has to additionally rely on the literature on non-tariff barriers to trade, non-price competitiveness and economic integration as a framework for analyzing the effect of harmonizing standards. Second, the predictions of the various branches of this literature span the entire set of possible outcomes. For each type of standard (country-specific standards of importers and exporters as well as shared standards), there is at least one theory that predicts a positive effect and another one that predicts a negative effect. The net effect, from a theoretical point of view, is ambiguous.

2.3.1. The Empirical Studies

- **Caswell and Anders (2007)**

The US government has imposed mandatory HACCP for seafood products in the U.S. in 1997. Caswell and Anders have measured the impact of HACCP implementation on the U.S. seafood imports. From the point of view of the U.S. and other developed countries, regulatory standards such as this are intended to reduce potential risks. However, they can also create non-tariff trade barriers and significant trade redirections.

The following model is the benchmark specification of the gravity equation. It controls for the impact of mandatory HACCP requirements for seafood on trade flows into the United States. Other included variables are a time trend (Time), the "mass" of the importing country (GDP), the size of the exporting country's

seafood sector (Size), exchange rate (Exchange), and the geographical distance (Distance). Addition variables, Geo_1 and Geo_2 are used as an alternative specification of country-group specific effects on seafood trade previously represented by the regional trade agreement variables. Geo_1 includes Latin American fishery product exporters, Geo_2 is the Asian-Pacific country group, and Geo_3 is Northern European fishery exporters.

$$\ln(\text{Import}_{it}^x) = \alpha_0 + \alpha_1(\text{Time}) + \alpha_2(\text{HACCP}) + \alpha_3 \ln(\text{GDP}_t) + \alpha_4 \ln(\text{export}_{it}) + \alpha_5(\text{Exchange}_{it}) + \alpha_6 \ln(\text{distance}) + \alpha_7(\text{Geo}_1) + \alpha_8(\text{Geo}_2) + \epsilon_i$$

This research showed the impact of specific mandatory standard, namely HACCP. Nevertheless, the importing country has a set of amount of standard and technical regulation which affected the trade performance. In order to measure the impact of standards, this model used dummy for the standard. They measured the impact of HACCP by compared the trade performance before and after the implementation.

They apply panel-data on seafood imports to the U.S. by the 33 largest exporting countries between 1990 and 2004. Twenty-five of these countries are developing, while 8 are developed. The results of extended gravity models indicate a significantly negative impact of the HACCP standard on U.S. seafood imports across all 33 exporting countries.

The results are robust in terms of product values and trade volumes. Comparison of trade effects for developing versus developed countries at an aggregate level supports the “standards-as-barriers” hypothesis. While developing countries as a group suffered significant trade reductions under HACCP, developed countries, again as a group, gained under HACCP.

- **Moenius (2004)**

One of the most direct attempts to measure the trade impact of Technical Barrier to Trade using gravity-based analysis of bilateral trade volumes is Moenius. In his study, he focuses on the trade impact of standards and technical regulations.

Moenius included only counts of product standards and technical regulations in his estimation, making it impossible to distinguish between standards and technical regulations impacts (voluntary and mandatory norms). Nevertheless, this makes it possible to estimate the impact of a one percent increase in the number of standards and technical regulations which imposed by importing country on bilateral trade volume. He used following gravity equation:

$$\ln(M_{ij}^k) = b_0 + b_1 \ln(GDP_i) + b_2 \ln(POP_i) + b_3 \ln(GDP_j) + b_4 \ln(POP_j) + b_5 \ln(Dist_{ij}) + b_6 RTA_{ij} + b_7 \ln(ST_i^k) + b_8 \ln(ST_j^k) + b_9 \ln(ST_{ij}^k) + b_{10} \ln(TB_i^k) + b_{11} \ln(TB_j^k)$$

Here, subscripts i and j refer to exporting country and importing country, respectively, while superscript k indicates sector of activity. RTA denotes a dummy for bilateral membership in a regional trade agreement and is taken here as a prototype variable for trade-expansion factors. The variable ST refers to standards, which, as in his studied may be exporter-specific, importer-specific, or shared between the nations. The variable TB refers to technical regulations on trade in manufactures and sanitary standards in foods. The conception here is that these standards and regulations may be identified at the sectoral level, though national measures might be used as well. Note that sector-specific impacts of standards on trade may be captured by individual sectoral regressions or by sectoral fixed effects in a pooled regression. The gravity equations would be estimated in a cross-section of countries and industries for a particular year.

Moenius finds that a shared standard has a large trade-promoting effect among the nations sharing the standard. He also finds that a 1 percent increase in the number of bilaterally shared standards results in a one-third percent increase in bilateral trade volume. He shows that both of exporting and importing countries get impact from the standard and technical regulation as can be seen from the table 2.

Table 2. The Impact of Standard and Technical Regulation

Theory	Shares standard	Country-specific Standard Importer	Country-specific Standard Exporter
Non Tariff Barrier			
Competitive Advantage		+	-
Standardization Trap	+	-	-
Competitive Advantage		-	+
Loss of Variety	-	+	+

Source: Moenius, 2004, p.27

This argument also focuses on country-specific product standards instead: in industries where there are large buyers who demand tailored products defined by a large number of standards, local producers will have a barrier to overcome should they wish to export these specialized products. They are in a *standardization-trap*.

An alternative branch of the literature is based on a signaling argument: standards increase the perception of product quality and this increased perception of product-quality improves the *competitive advantage* of firms applying them. In the oligopoly frameworks used for the analysis, a larger number of standards promote exports. There is no clear prediction for the shared standards or country-specific standards of importers.

Finally, standardization may reduce the number of varieties available to consumers. Although this must be balanced against scale economies, this *loss of variety* may actually reduce trade. The effect of reduced differentiation may outweigh the effect of reduced barriers.

From the explanations above, the impact of standards and technical regulations was ambiguous. The empirical study showed that besides having potential to reduce the volume of international trade; it also can improve the volume of international trade.

2.4. Standard and Technical Regulation under The WTO Agreement

The importance of trade barriers in the trade debate has generally been assessed in terms of their potential as barrier. Standard and technical regulations are growing important because of the continuous demand for higher standards. The potential new standards will be created all the time, as new products or processed introduced there are new regulatory measures or standards. Therefore, the WTO agreement especially on the Technical Barrier to Trade (TBT) Agreement and Sanitary and Phytosanitary (SPS) Agreement has managed the rules and the roles of standards and technical regulations.

2.4.1. Agreement on Technical Barrier to Trade

The TBT Agreement, which is part of Annex 1A of the WTO agreement, came into force on 1st January 1995 and sets out the parameters for WTO Members who are involved in the preparation, adoption and application of technical regulations, standards and conformity assessment procedures, along with their obligations under the Agreement. The TBT Agreement is intended to ensure that regulations, technical standards and testing and certification procedures do not create unnecessary obstacles to trade.

Every country has rights to adopt the regulations and standards which are they consider important to manage and the agreement recognizes about it. Moreover, members are not prevented from taking measures necessary to ensure their standards are met. But that is counterbalanced with disciplines. A myriad of regulations can be a nightmare for manufacturers and exporters. Life can be simpler if governments apply international standards, and the agreement encourages them to do so. In any case, whatever regulations they use should not discriminate.

Technical regulations and standards in the TBT Agreement set out specific characteristics of a product such as its size, performance, process in produce the

product or labeling, marking and packaging requirement. The objectives of the technical regulations and standards in article 2.2 are protection of human safety and health, animal and plant life, environment, prevention of deceptive practice, increase the quality of product, technical harmonization and others.

The Agreement sets out a code of good practice for the preparation, adoption and application of standards by central government bodies. It also includes provisions describing how local government and non-governmental bodies should apply their own regulations, normally they should use the same principles as apply to central governments. The Agreement says the procedures used to decide whether a product conforms with national standards have to be fair and equitable. It discourages any methods that would give domestically produced goods an unfair advantage.

The TBT Agreement can cover three broad areas of policy. First, mandatory technical regulations are produced by government or a regulatory agency that must be satisfied for a product to be sold. Such regulations can create barriers to trade even when they are nondiscriminatory or are facially non-discriminatory but have discriminatory effects.

Second, voluntary standard which its terminology often confused in the whole TBT area, with standards used to describe both mandatory provisions as well as voluntary standards. Voluntary standards are produced by either quasi-public national standards bodies, such as those that are common in Europe or by purely private associations or individual companies. Although voluntary such standards are often used to show compliance with regulations. If consumers have come to expect products to carry the mark of the national or international standards body, they may also opt for these products. So, voluntary standards are seen as a potential barrier to market access.

Third, conformity assessment which is in the terminology of the WTO includes testing or certification and accreditation of the laboratories that do the testing.

Discrimination in how products are tested can equally represent a barrier to trade. If regulators in an importing country are not willing to accredit a test lab in the exporting country, or only under certain conditions, this can equally be seen as impeding trade.

2.4.2. Agreement on Sanitary and Phytosanitary

During the Uruguay Round of multilateral trade negotiations, agricultural exporters voiced concerns that SPS measures were sometimes being used to restrict foreign competition to domestic producers and that such protectionist measures would likely increase as more traditional trade barriers (such as tariffs and quotas) declined. The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) was negotiated in order to provide a set of multilateral rules that would both recognize the legitimate need of countries to adopt SPS measures and create a framework to reduce their trade distorting effects.

The SPS Agreement built upon the Standards Code, introduced in the 1947 General Agreement on Tariffs and Trade (GATT). It permitted measures that were 'necessary to protect human, animal or plant life and health', yet required regulators to: (1) base measures on a scientific risk assessment; (2) recognize that different measures can achieve equivalent safety outcomes; and (3) allow imports from distinct regions in an exporting country when presented with evidence of the absence or low incidence of pests or diseases. Importantly, the Agreement protects the right of a country to choose its own 'appropriate level of protection', yet guides members to 'take into account the objective of minimizing negative trade effects' (Henson et.al 2004, p. 4).

The SPS Agreement thus sets out broad ground rules for the legitimate application of food safety and agricultural health measures, many of which could affect international trade. Yet, the Agreement gives countries fairly broad latitude in setting and applying such measures. Scientific justification is called for wherever

standards are deemed to not be based on established international standards. Yet, complications are inevitable given the wide range of areas for which no agreed international standards exist and given broad (and emerging) areas for which the state of scientific knowledge is incomplete. Hence, many of the controversies which have occurred surround the legitimacy and appropriateness of measures in the context of scientific uncertainty. Important underlying objectives of the SPS Agreement are the minimization of the protectionist and unjustified discriminatory use of standards and promotion of greater transparency and harmonization.

2.4.3. The Key of Rights and Obligation under the TBT and SPS Agreement

The TBT and SPS Agreement define the rights and obligations of countries in their trading in terms of the use of technical regulations and standards.

- *Non discrimination principles*

The non discriminatory principles of the Most Favored Nation (MFN) and National Treatment provision of the TBT and SPS agreement provides the equal treatment of products in term of technical regulations and standards. Technical regulations should not discriminate between products on the basis of their country of origin and should allow for equality of competitive opportunities between like products and services from all trading partners. This principle should be applied through all the different stages of preparing, adopting and applying technical regulations and conformity assessment procedures in order to ensure equal treatment of products in terms of technical regulations and standards.

- *The necessity principle*

The necessity principle implies that governments should be able to justify their interventions. It also attempts to address those instances where countries create domestic standards and technical regulations that could discriminate against possible imports. Unnecessary obstacles to trade can result when a regulation is more restrictive than necessary to achieve a given policy objective, or when it does not fulfill a legitimate objective. The agreement

would sanction such regulations if they were considered necessary for the efficient attainment of legitimate domestic policy goals with regard to safety, health, environmental control and consumer protection. The ultimate test for necessity should be that alternative options would not be able to fulfill the objective. The risk of non-fulfillment should be assessed against factors such as available scientific and technical information, processing technology and end uses of products.

- *Prevention of Trade Restrictive*

The agreement would prevent standards and technical regulations to become unnecessary technical barrier to trade. Legislators should to choose technical regulations that cause the least distortion to trade for meeting the prevention of trade restrictive principle. Technical regulation should be focus on the core problem.

- *The Proportionality Principle*

This principle implies that government only intervenes when it is necessary, that remedies should be appropriate to risk and that cost should be identified and minimized. Cost would refer to both the regulator and regulated and should be in proportion to the benefit that the regulation is expected to bring. It also implies that domestic standards and technical regulations should not be more burdensome to foreign investors and exporters and those sanctions in the event of noncompliance should be proportionate to the benefit.

- *Harmonization*

Harmonization is important for the connection and compatibility of parts of product (i.e electronics or automotive products) or for uniform standards and specification in product. The agreement encourages the use of internationally harmonized technical regulations to improve production efficiency, facilitate free trade and minimize any negative effects of domestic technical regulations on trade. Appropriate internationally harmonized measures furthermore imply the use of essential parts of international standards in performance based technical regulations.

Until today, technical experts who are come from the international organization such us the International Standardization Organization (ISO), the International Telecommunication Union (ITU), the International Electrotechnical Commission (IEC) have working for the harmonization of the standards. The agreement encourages Members to participate, play a full part, within the limits of their resources, in the work of international bodies for the preparation of standards and recommendations for conformity assessment procedures.

Special and differential treatment is applied in implementing the harmonization of international standards related to developing countries. In their particular technological and socio-economic conditions, full application of the international standard for the developing country would not compatible with their development, financial and trade need. Therefore, they should not be expected to use international standards as a basis for their technical regulations or standards. They may request international standardizing bodies to examine the possibility of, and if practicable, prepare international standards for products of special trade interest to them. Moreover, they can request technical assistance from other Members or from the WTO Secretariat, on terms and conditions to be agreed by the Members concerned.

▪ *Mutual Recognition of Equivalent Regulatory Measures*

The process in adopt and implement the international standard will need more significant time and cost. Therefore, in the agreement is known “equivalent” as a complementary approach to standards and technical harmonization. Regulatory objectives of trading partners are often equivalent although their standard and technical regulations may differ. Trade opportunities could be expanded through mutual recognition of the equivalence of each other’s technical requirements for products or services and of each other’s conformity assessment procedures. The agreement recognized that prior consultations may be necessary in order to arrive at a mutually satisfactory understanding regarding; in particular partner should be confident that their different but

equivalent regulations adequately fulfill the same objectives and conformity procedures of other countries offer an equivalent assurance of conformity with the applicable regulation.

- *Transparency*

Transparency is an essential element of almost all provisions on agreement but there can be considerable differences in the scope for transparency provisions. The agreement includes the provisions about notification and enquiry point. If the technical regulations and standards may have a significant effect on trade of other members or whenever a relevant international standard or guide or recommendation does not exist, or the technical content of a proposed or adopted technical regulation or procedure is not in accordance with the technical content of relevant international standards or guides of recommendations, member must notify. This principle implies that the technical regulatory processes and the technical regulatory system should be open, accessible, simple and user friendly.

The agreement requires that countries should publish technical regulations prior to their entry into force and that a reasonable time should be allowed for comment and for consideration of those comments prior to the adoption of a final technical regulation. This will promote trade certainty and also make it possible for competitors to adapt their products and methods of production.

As a complement to the obligation to notify, each Member must set up a national enquiry point. Through this point, other WTO members may obtain information on that country's technical regulations, standards and testing procedures. The enquiry point also covers that Member's standards-related agreements and involvement in regional standardizing bodies and conformity systems.

CHAPTER III
BARRIERS TO TRADE FACING INDONESIAN EXPORTER
OF FISH AND FISH PRODUCTS

3.1. Production

Fishing is one of the oldest human activities. Since time immemorial, the coasts and the seas were 'hunting' grounds in which humans caught fish. Thus, it is not a coincidence that human settlements flourished on coastlines around the world oceans (UN, 2005). Fishing began as a simple form of production in which small quantities of fish were caught using rudimentary gears. But as human population grew, it became necessary to switch from catching single fish to catching fish in modern ways.

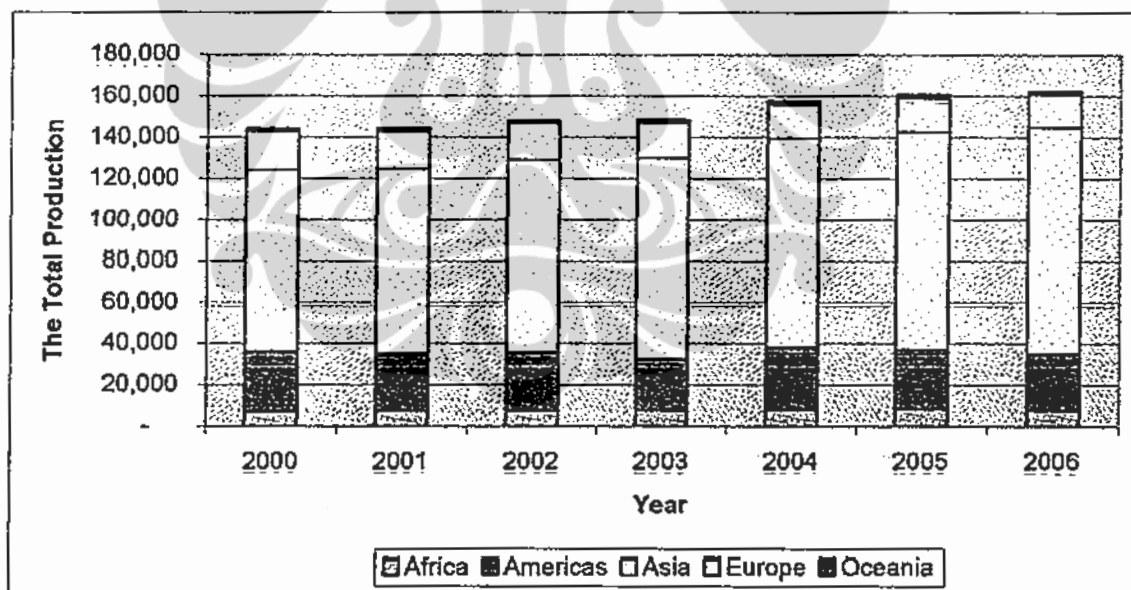


Figure 3.1. The Total Production of Fish and Fish Product by Region (In Thousand Tones)

Source: FAOSTATS, March 2008, processed

To undertake trade, adequate production is an important first requirement. More than sixty per cent from the total production of fish and fish production came from Asia. The share of production from china was around fifty per cent from the total

production of fish and fish product from Asia and around thirty per cent from the total production of fish and fish product from the world.

Indonesia as an archipelago country, the share of production from Indonesia for the five years was around six per cent from the total production of fish and fish product from Asia.

3.2. International Trade on Fish and Fish Product

Over the last three decades, technological advances in capture fisheries and aquaculture, globalization trends, and market and consumer demands have resulted in the continued growth in the production and trading of fish and fish products. Fish is one of the most highly traded food products in the world market related to the growth of economic and population in the world.

3.2.1. Export

Driven by rising consumption worldwide, the international trade in fish products grew by nearly 7% in 2007 (FAO, 2008). For the last five years the total value of international export fish and fish product has increase. In year 2002 the total value of export is around USD 41.9 billion and increase until around USD 60.4 billion or increase around 44.20%. While the growth average of the total export value in period 2002-2006 is around 9.59%.

Norway, China, United States and Canada have becoming the biggest exporter countries for the last several years. The total export value of Vietnam has increase significantly from year 2002 around USD 1.93 billion to around USD 2.95 billion or increase 52.75% for five years. Vietnam becomes the major competitor for Indonesia in the ASEAN member. The total value of Indonesian export to the world was only in the position twelve in year 2006 with amount USD 1.64 billion or only 2.70% from the total export value of the world.

Table 3.1.
The Biggest Exporter Countries of Fish and Fish Product
(In Million USD)

No	Countries	2002	2003	2004	2005	2006
1	Norway	3,279	3,386	4,056	4,684	5,257
2	China	2,873	3,335	3,895	4,350	4,745
3	United States	2,774	2,928	3,307	3,669	3,840
4	Canada	2,721	2,886	3,040	3,119	3,146
5	Vietnam	1,935	2,075	2,198	2,438	2,955
12	Indonesia	1,392	1,437	1,460	1,643	1,643
	Other countries	26,909	30,395	33,643	35,930	38,813
	Total	41,884	46,442	51,600	55,833	60,399

Sources: Comtrade, processed

3.2.2. Import

Almost the same with the amount of total export value, the total import value of fish and fish product increase from USD 47.68 billion in year 2002 to USD 68.54 in year 2006 or increase around 43,76%.

Table 3.2.
The Biggest Importer Countries of Fish and Fish Product
(In Million USD)

No	Countries	2002	2003	2004	2005	2006
1	Japan	10,972	10,584	11,525	11,538	10,856
2	United States	8,416	9,228	9,308	9,929	10,852
3	Spain	3,765	4,699	4,941	5,243	5,846
4	France	2,439	2,902	3,232	3,581	4,024
5	Italy	2,302	2,820	3,156	3,395	3,785
62	Indonesia	27	30	83	29	36
	Other countries	19,757	22,189	25,274	29,015	33,145
	Total	47,678	52,450	57,519	62,730	68,545

Sources: Comtrade, processed

Unlike fish exports, which are more broadly distributed between countries, fish imports are highly concentrated. For the last several years, three big developed

country markets, Japan, United States and the European Union are the largest importer of fish and fish product in the world. Allain (2007) explained that the big three collective garner almost 75% of all imports. The remaining developed countries take another 13%, leaving all developing countries with the relatively small 12% share of the value of overall imports.

In year 2006 the total import value of Japan and United States almost the same, around USD 10.85 billion or around 15% from the total value of the world for each of them. Spain, France and Italy are the biggest market in the EU member.

3.3. Indonesian Trade on Fish and Fish Product

3.3.1. Export

The total export value of Indonesian fish and fish product has increased from year 2002 with amount USD 1.39 billion to USD 1.73 billion in year 2007 or increased around 23,76%.

Table 3.3.
Indonesian Export of Fish and Fish Product by Country of Destination
(In Thousand USD)

No	Country	2002	2003	2004	2005	2006	2007
1	USA	291,437	316,529	403,247	440,852	496,981	563,836
2	Japan	696,906	617,296	549,393	532,575	578,657	519,265
3	Hongkong	45,401	41,218	49,522	58,992	67,007	87,840
4	Belgium	31,321	51,994	56,447	62,352	77,336	73,689
5	Singapore	63,599	55,014	67,142	74,676	66,506	68,110
6	United Kingdom	40,520	40,263	36,390	50,139	62,071	51,634
	Other Countries	223,084	315,104	298,285	302,933	294,362	358,648
	Total	1,392,267	1,437,417	1,460,426	1,522,519	1,642,919	1,723,022

source: Comtrade, processed

In term of the export value of Indonesian fish and fish product such as presented in table 3.3, for the last ten years, United States and Japan has becoming the biggest export destination countries for Indonesian Fish and Fish product. While

the trend of export to the United States has increased, the trend of export to Japan has decreased for period 2002-2007. For year 2007, the share of export to USA was 32,72%, its increased if compared to the share in year 2002 that only 20,93%. Meanwhile, the share of Japan in year 2007 was 30,13% or decreased significantly compared to the share in year 2002 that around 50,05%.

3.3.2. Import

The share of the total import value Indonesia for fish and fish product only 0,05% from the total import value of the world with amount USD 35,99 million in year 2006. The growth average of total import Indonesia for period 2002-2007 was around 34,61%.

Table 3.4.
Indonesian Import of Fish and Fish Product by Country of Destination
(In Thousand USD)

No	Country	2002	2003	2004	2005	2006	2007
1	Malaysia	2,496	3,887	5,449	2,014	1,764	6,367
2	China	5,606	3,444	35,339	3,511	9,347	6,269
3	Pakistan	8	273	792	336	473	6,100
4	Japan	1,880	2,475	3,550	3,450	4,350	4,373
5	USA	1,410	1,136	2,296	2,177	2,194	4,045
	Other Countries	15,746	18,918	35,993	17,445	17,864	18,243
	Total	27,147	30,132	83,419	28,933	35,992	45,396

source: Comtrade, processed

For year 2007, around 28% from the total Indonesia's import value of fish and fish product came from Malaysia and China. The import value of fish and fish product from Malaysia was increased 155% from year 2002 with amount USD 2.49 million to USD 6.37 million in year 2007. While the import value from China was increased, but only 11.8% in the same periods.

The total import value from Japan and USA also increased. For year 2007 Indonesia has spent money around USD 4.37 million and USD 4.05 million for

exporter from Japan and USA. It was increased 133% and 186% compared to the import value in year 2002 that only USD 1.88 million and 1.41 million.

3.4. Tariff Barriers Entering the Market

Traditional barriers are generally lower for fish trade than for trade in agricultural products. Tariffs are lower and import quotas more liberal. International trade in fish products is lively; fish is probably the most widely traded of all commodities.

Under the WTO's currently suspended Doha Development Round negotiations, tariffs on fish and fish products are to be significantly reduced and perhaps even eliminated. The stated rationale for this undertaking is that trade in fish is both important to developing countries and that they would benefit from further liberalization (Allain, 2007).

Table 3.5.
MFN Average Weighted Tariff Import of Fish and Fish Product
Selected Years (in percent)

Year	USA	Japan	EU
1996	0.81	5.67	14.80
1998	0.58	4.79	8.75
2000	0.38	4.29	5.63
2002	0.55	4.18	5.51
2005	0.53	4.35	17.38
2006	0.53	4.35	10.98
2007	0.76	4.32	10.98

Source: UNCTAD, processed

Since 1996, the MFN average weighted tariff import of fish and fish product which is imposed by United States already close to zero percent. Decreasing trend of the MFN average weighted tariff import was applied by Japan since 1996, in year 2007 the tariff was decrease until 4.32%. Compared to USA and Japan, EU as a single market applied high tariff for fishery product. However, the EU - by far the world's largest single market for fish - has a simple average MFN tariff line

for fish more than twice the developed country average. Mostly, the tariff which is applied by the EU is above 5%.

3.5. Standards and Technical Regulations Facing by Indonesian Exporter

In many markets non-tariff barriers continue to present obstacles to imports and are often linked to standards and technical regulations. The number of standards and technical regulations on agriculture and fishery product has increased for the last decade. Concern over the health and safety of food and food products has led governments and private companies selling food products to mandate that products meet certain quality and safety requirements.

In the international market of fish and fishery products, one of the most serious difficulties faced by exporters is that different standards and regimes are being imposed by importing countries on producing countries to ensure that products meet the requirements of the target market.

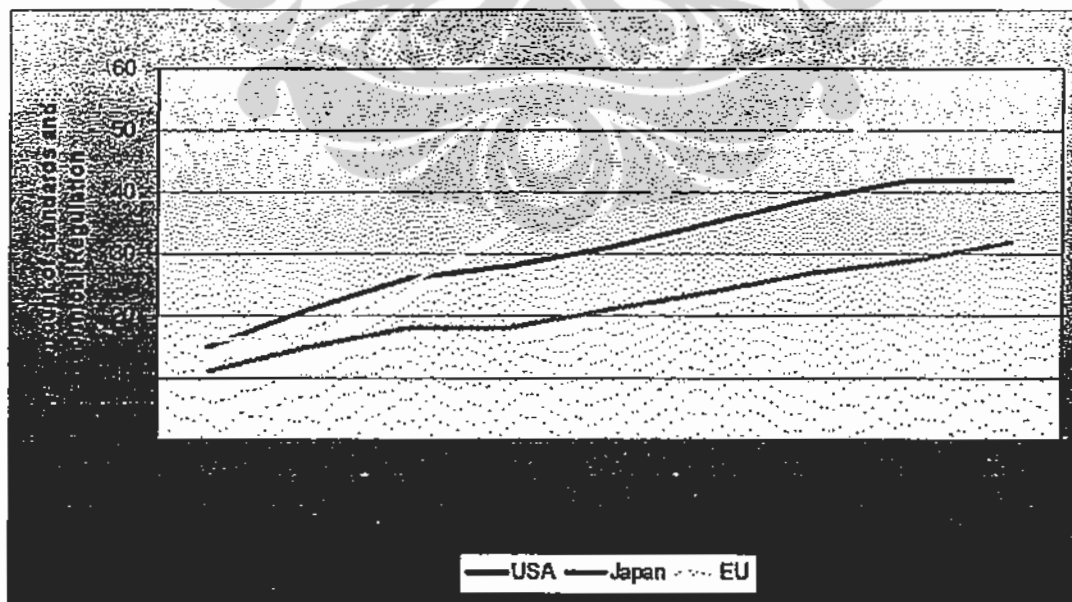


Figure 3.2. The Stock of Standard and Technical Regulation

Source: www.wto.org, processed

The United States, Japan and EU as the biggest market of fish and fish product has required a set of standards and technical regulations that should be fulfilled to entering their market.

3.5.1. Standards and Technical Regulations in the United States

The majority of United States Federal regulatory authority and activity for seafood regulation is vested with the Food and Drug Administration (FDA) within the Department of Health and Human Service. The FDA's mission is to enforce laws enacted by the United States of America Congress and regulations promulgated by the Agency to protect the consumer's health, safety, and pocketbook. Among the principal laws associated with seafood safety there is the Federal Food, Drug and Cosmetic Act (the Act) of 1938, as amended (21 USC.301-392).

A Federally Mandated Seafood Rule (FDA, 1995) promulgated in 1995 constitutes the basis for the sanitary procedures for processing and importing fish and fishery products into the United States of America, including Good Hygienic Practices and HACCP.

Some of the areas of safety concern in seafood are:

- pathogens – *Salmonella* spp., *Clostridium botulinum*, *Vibrio* spp., *Staphylococcus aureus*, enterotoxigenic *Escherichia coli*;
- parasites – nematodes, cestodes, trematodes;
- marine toxins – paralytic shellfish poisoning, neurotoxic shellfish poisoning, diarrhetic shellfish poisoning, amnesic shellfish poisoning and ciguatera fish poisoning;
- decomposition – histamine, putrecine, cadaverine;
- environmental Contaminants and Pesticides – including methyl mercury and radionuclides;
- aquaculture drugs – unapproved drugs or unapproved applications;
- food and Colour Additives – unapproved or improperly declared;
- foreign objects – metal fragments.

3.5.1.1. Mandatory Turtle Excluder Devised (TED)

The Turtle Excluder Device (TED) was created to lessen the impact of shrimp fishing on vulnerable sea turtle populations. The TED is a metal grid of bars that attaches to a shrimp trawling net. It has an opening at either the top or the bottom which creates a hatch to allow larger animals such as sea turtles, sharks, and larger fish to escape while keeping shrimp inside. When a heavy object hits the device, the hatch opens, providing an escape route.

Since the turtle excluder device was first introduced to the U.S. shrimp fishery in the late 1980's, research and development to improve TED performance has continued. In 1987, the United States implemented regulations that require all U.S. shrimpers to use TEDs on their trawlers. According to the United Nations, the U.S. shrimp fleet caught over 47,000 sea turtles each year before fishing for shrimp without TEDs became illegal. In 1989, the United States passed a law known as the "shrimp-turtle law," requiring that all countries that export shrimp to U.S. markets also use TEDs.

3.5.1.2. Mandatory Country of Origin Labeling (COOL)

The Country of Origin Labeling (COOL) provisions in the 2002 Farm Bill require, beginning September 30, 2004, that *retail* sellers of certain food commodities inform consumers of a product's country of origin. As required by the statute, the United State Department of Agriculture (USDA) promulgated guidelines in the fall of 2002 designed to assist retailers and their suppliers in facilitating voluntary labeling. By September 30, 2004, however, the USDA is to have in place regulations implementing mandatory COOL.

Covered commodities are defined by the statute as beef, pork and lamb in the form of whole muscle cuts and ground meat, fish and shellfish, peanuts, fruits and vegetables. In addition, fish and shellfish must be identified as either wild or farm-raised. Retailers may use a label, stamp, mark, placard, or other clear and visible

sign on the covered commodity, or on the package, display, holding unit, or bin containing the commodity at the final point of sale. Retailers need to indicate the specific country of origin for imported covered commodities.

To claim a product is entirely of U.S. origin, these criteria must be met: for beef, lamb, and pork, and for farm-raised fish and shellfish, the product must be derived exclusively from animals born (for fish and shellfish, hatched), raised, and slaughtered (processed) in the United States; wild fish and shellfish must be derived exclusively from those either harvested in U.S. waters or by a U.S. flagged vessel, and processed in the United States or on a U.S. vessel (wild and farm-raised seafood must be differentiated); fresh and frozen fruits and vegetables and peanuts must be exclusively from products grown, packed, and if applicable, processed in the United States.

Mandatory labeling would provide comprehensive standards to ensure all food is labeled consistently, in a way that is easy for the consumer to identify. Voluntary labeling programs do not work. A voluntary program does not guarantee consistent, universal labeling information. Moreover, based on the notification letter to the WTO (G/TBT/N/USA/83), 8th October 2004, the objective and rationale of this law is preventing the deceptive practices from the exporters.

3.5.1.3. The Bioterrorism Act

The events of September 11, 2001, reinforced the need to enhance the security of the United States. Congress responded by passing the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (the Bioterrorism Act), which President Bush signed into law June 12, 2002.

The U.S. Department of Health and Human Services (DHHS) is joining with the U.S. Department of Homeland Security (DHS) announced the issuance of a final rule implementing the food facilities registration provision of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (the

Bioterrorism Act). The final rule confirms the interim final rule on food facility registration that DHHS and DHS issued in October 2003. The rule requires domestic and foreign facilities that manufacture, process, pack, or hold food for consumption in the United States to register with the U.S. Food and Drug Administration (FDA) by December 12, 2003. The registration is mandatory.

Information provided to FDA under this final rule will help the Agency identify and locate promptly food processors and other establishments, in the event of deliberate or accidental contamination of the food supply. Except for specific exemptions, the registration requirements apply to all facilities that manufacture, process, pack, or hold food, including animal feed, dietary supplements, infant formula, beverages (including alcoholic beverages and bottled water), and food additives.

3.5.2. Standards and Technical Regulations in Japan

3.5.2.1. Food Sanitation Law

The Japanese Government enforced Food Sanitation Law (Law No. 233) since 24 December 1947 with last amendment on 26 July 2005. The purpose of this law is to prevent the occurrence of health hazard arising from human consumption of food so as to contribute to the protection of people by conducting regulations and measures deemed necessary, from the view point of public health, for securing food safety.

This law is regulates the role of the government and local authorities. The government shall improve such system as to collect, sort out, analyze and provide information on food safety, study on food safety, and inspect imported food, additive, apparatus, and container, and packages used for such food.

Under this law, the Minister of the Health, Labor and Welfare may introduce the procedures for development and publication of monitoring and guidance programs

for imported food, thus enabling the minister to timely issue orders, at his judgment, to inspect imported food if such food is highly suspected of violating the relevant laws. The Minister was authorized to suspend or ban such importers from doing business.

The law has been revised to provide for the responsibility of food-related businesses that such businesses shall make efforts to take as many as possible measures at their responsibility to secure safety for food intended for sale. For example, such businesses are required to conduct voluntary inspections of food for sale, recording and maintaining information on supply sources, collecting the latest technical information on food, mastering knowledge and techniques of food sanitation, checking and securing safety for materials for food.

In sum, generally the objective of this law is food safety and health. This law regulates food and food additives, apparatus and container/packages, labeling and advertising, principle and plan of inspection and guidance, product examinations, import notification, food sanitation examination laboratories and food sanitation inspector, and registered laboratories.

3.5.2.2. The Quarantine Law

The objective of this law is to prevent pathogen causing infectious diseases nonexistent in Japan from entering the country through vessels or aircraft, and to take measures necessary for prevention of other infectious diseases borne through vessels or aircraft.

Regarding vessels or aircraft having left or visited a foreign country, or encountered and embarked persons or material from a foreign country, their entry into Japan, by land or by sea, will be forbidden unless such vessel or aircraft receives a Free Pratique, or Provisory Free Pratique, except for cases where enter into designated areas such as quarantine area, or persons or materials on board have already been confirmed by the Chief of the Quarantine Station to the effect

that they are not contaminated by pathogenic microorganism causing quarantine infectious diseases.

Quarantine infectious diseases refers to "category I infectious diseases" (Ebola haemorrhagic fever, Crimean-Congo haemorrhagic fever, severe acute respiratory syndrome (limited to those with SARS Coronavirus as pathogen), smallpox, plague, Marburg disease and Lassa fever) prescribed by the Law Concerning the Prevention of Infectious Disease and Medical Care for Patients of infections, and cholera, yellow fever, and infectious diseases nonexistent in Japan but which require inspection to confirm whether those pathogens exist or not for the purpose of prevention from entering the country.

3.5.2.3. Japan Agriculture Standards Law (JAS Law)

The Japanese Government enforced Japan Agriculture Standards Law (Law No. 175) since 1950. The JAS system is built on two cornerstones based on the Law Concerning Standardization and Proper Labeling of Agricultural and Forest Products (so-called JAS Law) in an attempt to promote improvement of quality, rationalization of production, fair and simplified trade, and reasonable use or consumption of agricultural and forest products. In addition, its law helps consumers select products by providing proper labeling on the quality of the agricultural and forestry products (include marine products), thereby contributing to promoting the public welfare.

JAS system consists from following two systems:

- **JAS Standards System**

JAS Standards System wherein Japanese Agricultural Standards (hereinafter referred to as the "JAS Standards") were elaborated and the products accepted through inspection under JAS Standards are permitted to display the JAS symbol once the products have passed the inspection conducted under the provisions of the relevant JAS Standards established by the Minister of Agriculture, Forestry and Fisheries.

JAS Standards consist from extent of application, definition, standards and measuring method. The revision has been made to have JAS Standards comply with the need of society and remove unnecessary standards after the revision.

- **Standardized Quality Labeling System**

Standardized Quality Labeling System obligates all producers, manufacturers and distributors to label their products in accordance with the quality labeling standards established by the Minister to enable consumers to select products more easily and confidently. Moreover, they have to display quality labeling irrespective of the affixation of the JAS Marks.

Processed food in containers or packages are obligated to display the name, raw material name, content, the best before date, preservation method, the name of manufacturer. This label is required to collectively display on an easily visible place on containers or packages.

Labeling on marine products among perishable foods was obligated to display the defrost and culture in addition to the requirement based on the perishable quality labeling standards. Labeling on perishable foods is required to show their name and the country of origin.

3.5.3. Standards and Technical Regulations in European Union

The EU is the world's biggest market for fish, importing US\$23 billion worth of fish and fisheries products from non-EU suppliers in 2007, an increase of 11% over the previous year.

The principle behind assuring the safety of imported fish and seafood to the European Union is that of certifying Competent Control Authorities in the third countries exporting to the European Union. The European Union (EU) delegates the control of food safety to a Competent Authority in each country, who in turn

ensures that exporting farms, vessels and processors are producing safe food under a system equivalent to that in the European Union – the principle of equivalence. National laws are “harmonized” with those in place within the European Union.

When the laws of any third country are harmonized and systems to monitor and control food (fish) processing establishments and vessels are deemed equivalent, the exporting country is approved for export to the European Union. Individual companies are checked by the Competent Authority and, if deemed appropriate, are listed as approved in a national register, with a certification number. This register is passed to the European Commission (EC) who makes the information public via its website and other public documents. These are the so-called List I countries. Other countries that are in the process of gaining approval but are deemed to be producing safe foods are shown in List II. Shipments from List II countries are, however, subject to 100 percent border checks. Indonesia includes in List I countries.

In addition to the certification requirements from exporting countries, the European Union operates a border inspection system to verify regularly that the European Union requirements are effectively implemented in the exporting country.

During recent years, the European Union has completed a recast of the legislation governing food hygiene and laying down specific hygiene rules for food of animal origin. EC Regulation 178/2002 is of very broad scope; it establishes the general principles and requirements of food law, lays down procedures on matters of food safety, and establishes the structure and role of European Food Safety Authority (EFSA). It also covers the basic concepts of equivalence and traceability.

The Regulation applies to all stages of production, processing and distribution of food and animal feed, setting the basic principle of “the farm to table” approach. It lays down the general principles of food law including risk analysis, the

precautionary principle and protection of consumers' interests plus the general obligations of the different bodies in the food chain and their consequent liabilities. It also lays down the requirement for transparency rules (for public access to information), systems for data analysis, the rapid alert system and establishment of an organizational framework including the audit and control systems applicable to the EFSA.

Another regulation, EC/853/2004, lays down the food hygiene requirements for product of animal origin, including HACCP systems and procedures. New hygiene rules have been introduced that would adapt the concept of "farm to table" to hygiene policies and would, for the first time, create a single, transparent hygiene policy applying to all food operators including agreed steps to protect food safety. This legislation replaced the patchwork of rules for specific sectors and types of product, which have gaps notably at the farm and primary production levels. The legislation gives food producers primary responsibility for the safety of food through self-checking and modern hazard control techniques.

3.5.3.1. Border Control

Council Directive 97/78/EC of 18 December 1997 lays down the principles governing the organization of veterinary checks on products entering the European Union from third countries. Under the recent overhauls of controls by the EC, these rules remains in place since they are very specifically designed for the organization of the official controls on feed and food of animal origin. This Directive requires that all products of animal origin imported into the European Union from third countries must be checked at an approved Border Inspection Post (BIP) to verify their compliance with European Union legislation.

3.5.3.2. Checks at border inspection posts

At the BIPs, there are three main types of veterinary check on all consignments: documentary, identity and physical. A documentary check is carried out on all

consignments. This involves checking that the appropriate veterinary documentation (including the health certificate) exists and has been completed properly.

In principle, a physical check is required on all consignments. However for the majority of products where import rules are fully harmonized a physical check is carried out on a percentage of consignments. The percentage varies according to the product and country of origin. A physical check involves an inspection of the contents of the consignment to ensure that it presents no animal or public health risk or quality defect. It may also involve the taking of samples for laboratory tests. Physical checks on products of animal origin are categorized by the animal product being imported and the level of sampling required.

As a result of the above checks, consignments may be sent for further testing. The professional judgment of the inspectors will identify the tests to be carried out, for instance, histamine and heavy metals for tunas, various specific bacteria for a variety of at-risk products, or malachite green for farmed fish. Non-statutory tests for residues are also carried out periodically for chemicals such as veterinary drugs. There is also a general rule of 1–5 percent random sampling. These tend to be sent for analysis for indicator organisms such as *E. coli* and *faecal coliforms* rather than the more specific tests already mentioned.

Once a problem consignment has been identified at the border, the member state has an obligation to notify all other member states of the cause of the border case. This is now done via the Rapid Alert System of the European Union.

3.5.3.3. The Rapid Alert System for Food and Feed (RASFF)

The Rapid Alert System for Food and Feed (RASFF) was established originally under Article 8 of Directive 92/59/EEC (superseded by Directive 2001/95), the directive on general product safety. Products in this case cover “any product, including in the context of providing a service, which is intended for

consumers....”, so the Directive is much broader than food and feed. This Directive provides for a procedure to inform the European Union Member States when a product presents a serious risk for the health and safety of consumers.

Basically, the purpose of the RASFF is to provide the European Union control authorities with an effective tool for exchange of timely information on measures taken to ensure food safety.

The RASFF is effectively a network of the relevant European Union member states authorities, but also includes other countries such as the EFTA/EEA states. Whenever a member of the network has any information relating to the existence of a serious direct or indirect risk to human health, this information is immediately notified to the Commission under the RASFF. The Commission immediately transmits this information to the members of the network.

These latter notifications are called *Information Notifications*. Information notifications concern a food or feed for which a risk has been identified, but for which the other members of the network do not have to take immediate action, because the product has not reached their market. These notifications mostly concern food and feed consignments that have been tested and rejected at the external borders of the European Union. Products subject to an information notification have not reached the market or all necessary measures have already been taken.

The RASFF also issues *Alert Notifications*. These are sent when the food or feed presenting the risk is already on the market and when immediate action is required. Alerts are triggered by the Member State that detects the problem and that has initiated the relevant measures, such as withdrawal/recall. As of 26 May 2003 the European Union began posting a weekly internet report with information on all notifications from the Rapid Alert System.

3.6. Is Standard Becomes Barrier?

Related to the standard and technical regulation which is applied by the importing countries, their government should be fulfilled the provision on the SPS and TBT agreement. The necessity principle, non discrimination principle and transparency should be fulfilled.

Based on the notification letter of the standard and technical regulation to the SPS and TBT Committee from those countries, the objective and rationale for the standards mostly was similar. Their objectives to impose the standards are for food safety, animal health, environmental control, protect human from the animal/plant pest or disease, consumer protection or to prevent consumer deception. But the problem comes when the standard is more restrictive than necessary to achieve a given policy objective, it can creates unnecessary obstacles to trade.

Notification from the countries is one way to fulfill the transparency principle. Beside the objective and rationale of the standard, the notification letter is clearly describes the content of standard, products covered and national enquiry point. The standard and technical regulatory should be open, accessible, simple and user friendly.

Nevertheless, some empirical studies (Caswell, Anders, 2007, p. 20; Otsuki, 2000, p.17) indicates that standard and technical regulation are a major factor influencing the ability of developing countries (including Indonesia) to exploit export opportunities for agriculture and food products in developed country's market. According to study done by Henson (1999, p.10), to a large extent this reflects poor access to compliance resources, including scientific and technical expertise, information and finance.

CHAPTER IV METHODOLOGY OF THE STUDY

4.1. Model Specification

This study adopts the modification model developed by Moenius (2004) and Anders and Caswell (2007). In their research, they employ the econometric model to analyze the impact of standards and technical regulation. While Anders and Caswell used dummy of standards, Moenius used the number of standards and technical regulations in the importing country as a proxy to measure the impact of standards. Both of the studies did not incorporate tariff as variable independent which was significant in affect the bilateral trade performance. In the modification model for this study employs tariff as independent variables. Although tariff has lost the importance as a protection rather than non tariff barriers, but it still gives significant impact to the trade performance.

The final model specification to assess the impact of standard and technical regulation which is imposed by trading partner to the bilateral trade flow between Indonesia and partner becomes:

$$\ln X_{jt} = \alpha_1 + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln POP_{jt} + \alpha_4 \ln ER_{jt} + \alpha_5 \text{Tariff}_{jt} + \alpha_6 \ln STD_{jt} + \epsilon_{ijt}$$

Denote that variables specifications are:

- j refer to importing country and t is the period of series analysis.
- X_{jt} is variable for export from Indonesia to country j in time t .
- GDP_{jt} is variable for the total nominal Gross Domestic Product of country j in time t .
- POP_{jt} is variable for population in the country j in time t .
- ER_{jt} is nominal exchange rate in time t . The exchange rate here is using definition that foreign currency in term of domestic currency.
- Tariff_{jt} is simple average tariff which is applied by importing countries in time t .

- STD_{jt} is the stocks of standard and technical regulation imposed by the importing country in time t .
- ε_{jt} is error term and is assumed to be normal distributed with mean zero.

4.2. The Characteristics of the Data

4.2.1. Export (X)

In this study, the export value is dependent variable which describes the Indonesia's export performance on fish and fish product. The export value of fish and fish product from Indonesia to the trading partner (USA, Japan, Belgium and United Kingdom) is annual data for year 1999-2007 in million US Dollar. Fish and fish product is categorized based on the Harmonized System (HS) two digit (HS 03). The data was obtained from Data Centre, Ministry of Trade based on Comtrade database.

4.2.2. Gross Domestic Product of trading partner (GDP)

The total nominal Gross Domestic Product of the trading partner (USA, Japan, Belgium and United Kingdom) is independent variable which assumed that affect the Indonesia's export performance. The value of nominal GDP was expressed in billion US Dollar for annual data from 1999-2007. It was obtained from International Financial Statistic (IFS)-IMF database.

4.2.3. Population of trading partner (POP)

The data of population was obtained from International Financial Statistic (IFS), International Monetary Fund (IMF) database. It was expressed in million people units for year 1999-2007.

4.2.4. Nominal Exchange Rate (ER)

The definition of exchange rate in this study is foreign currency in term of domestic currency. For example the annual average exchange rate value for 1 US

Dollar is 9,169 Rupiah. The value of nominal exchange rate was expressed in unit Rupiah. The data was obtained from International Financial Statistic (IFS), International Monetary Fund (IMF) database from year 1999-2007.

4.2.5. Tariff

The tariff which applied by the trading partner is annual simple average tariff in percentage for HS 03. The tariff covered in this study is Most Favoured Nation (MFN) tariff. It was collected from Data Centre, Ministry of Trade based on UNCTAD database for year 1999-2007.

4.2.6. Standards and Technical Regulation (STD)

Standards and technical Regulations are the stocks of standard and technical regulations imposed by the importing country without regarding the types of the standards (voluntary or mandatory). The stocks of standards and technical regulation available in each country represent the frequency of standards applied to entrance the market. In order to avoid the country which has no standards and technical regulations, the standards is transformed into $STD = (STD + 1)$.

The data was obtained from the World Trade Organization database through the website (www.wto.org). All the standards and technical regulations which covered by this study were had been notified in the Sanitary and Phytosanitary Committee (SPS Committee) and Technical Barrier to Trade Committee (TBT Committee) from year 1999-2007.

CHAPTER V
DETERMINANT FACTORS OF INDONESIA'S FISH AND FISH
PRODUCTS EXPORT

5.1. The Statistical Hypotheses Tests

In the first regression by using Fixed Effect No Weight, the result is far from the expected. Under the t-test, there were only two explanatory variable statistically significance in 5% and 10% level, the nominal Gross Domestic Product of country j and the population in country j. While others explanatory variables are not significant to affect the Indonesia's export. In addition, the result show that the sign for GDP, population, exchange rate and tariff are corrects. The sign for standards and technical regulations are negative. It means that more higher the number of stocks of standard and technical regulation imposed by the trading partner, the export value to that country will decrease. But the signs can be changes when the result using another model regression.

Table 5.1. The Result of the Fixed Effect Model Regression

Variables	Coefficient	Std. Error	Expected sign	Significant in level		
				1%	5%	10%
C	-43.50770	21.16960	+/-	-	✓	✓
LOG(GDP?)	0.96670	0.49629	+	-	-	✓
LOG(POP?)	9.63167	4.95801	+	-	-	✓
LOG(ER?)	1.02457	0.74278	+	-	-	-
TARIFF?	-0.01609	0.01180	-	-	-	-
LOG(STD?)	-0.33335	0.22573	+/-	-	-	-
R-squared	0.97595					
Adjusted R-squared	0.96883					
Sum squared resid	1.40608					
Durbin-Watson stat	1.05592					

The overall regression seems to fit the assumptions, indicated by the high value of coefficient determinations R-squared and Adjusted R-Squared of 0.975 and 0.968, respectively. It means, the Indonesia's export is explained by the model as much

as 97.5 per cent, while the additional explanatory variables will not increase the R-squared.

If compared with Pooled Least Squares Estimation, which assumes that all coefficients constant across time and individuals, the fixed effect model gives the better efficiency. The value of coefficient determinations R-squared and Adjusted R-Squared are lower than Fixed Effect Model (0.940 and 0.930). Although almost all parameter (except the standard and technical regulation) are significant in error level 1%, 5% and 10%, but the sign of the coefficient parameter are not as expected. The expected sign for exchange rate and population in the trading partner is positive, but the result shows the negative sign.

Table 5.2. The Result of the Pooled Least Squared Regression

Variables	Coefficient	Std. Error	Expected sign	Significant in level		
				1%	5%	10%
C	4.656029	1.22855	+/-	✓	✓	✓
LOG(GDP?)	2.752587	0.51444	+	✓	✓	✓
LOG(POP?)	-2.481573	0.56893	+	✓	✓	✓
LOG(ER?)	-0.291962	0.03330	+	✓	✓	✓
TARIFF?	-0.045193	0.01306	-	✓	✓	✓
LOG(STD?)	-0.28307	0.23041	+/-	-	-	-
R-squared		0.94035				
Adjusted R-squared		0.93040				
Sum squared resid		3.48801				
Durbin-Watson stat		0.88387				

5.2. Analysis on the Export Model

The last result of model estimation, after white cross section shows that the value of export for fish and fish product from Indonesia to the trading partner are changing (increase/decrease) depends on the total nominal value of GDP, population of the trading partner, the nominal exchange rate, the tariff and the stock of standard and technical regulation which were applied by the trading partner.

Table 5.3.
The Result of Fixed Effect Model Regression
With White Cross Section

Variables	Coefficient	Std. Error	Expected sign	Significant in level		
				1%	5%	10%
C	-43.5077	5.422155	+/-	✓	✓	✓
LOG(GDP?)	0.9667	0.353006	+	-	✓	✓
LOG(POP?)	9.631667	1.832175	+	✓	✓	✓
LOG(ER?)	1.024573	0.221943	+	✓	✓	✓
TARIFF?	-0.016092	0.006521	-	-	✓	✓
LOG(STD?)	-0.333348	0.081588	+/-	✓	✓	✓
R-squared		0.97595				
Adjusted R-squared		0.96883				
Sum squared resid		1.40608				
Durbin-Watson stat		1.05592				

The model is highly significant in explain the factor which are affected the value of export from Indonesia. It was indicated by the high value of R-squared. The model is significant to explain the factor affected the value of export 97.59% in the significance level 1%, 5% and 10%. While there is an additional variable, the R-squared will decrease to 96.88%.

5.2.1. The Total Nominal Value of GDP

The value of export for fish and fish product from Indonesia to the trading partner increases around 0.97 per cent whenever there is an increase of 1 per cent in the total nominal value of GDP of the trading partner. The value of the nominal GDP of the trading partner shows the ability of the country to import commodity. When the income of the trading partner is increasing, the quantity demand for the product will increase. If the production in the domestic can not fulfill the demand, the countries will increase the import of the product. Indonesia as an exporter will get advantage from the increasing import of the partner. Indonesia's export will improve. This parameter was significant in affecting the Indonesia's export in the level 1%, 5% and 10%.

The increasing of GDP not spontaneously increases the demand on consumption of fish and fish product. But the data from UN Comtrade showed that demand for fish and fish product from those countries has increased for the last five years. The inelastic coefficient of the value of the trading partners' GDP to the Indonesia's export also showed that Indonesia can not fulfill the increasing demand from the partner.

More than sixty per cent of Indonesia's export fish and fish product came from shrimp product (HS 0306). For the last five years, the share of Indonesia's export for shrimps to the USA, Japan, Belgium and United Kingdom were decline while the demand for shrimp was increase. In addition, the share of Indonesia's export of fish and fish product (HS 03) compared to the total export all countries to those four countries also decline, except USA. The share of Indonesia in USA was increased because the U.S. Department of Commerce imposed anti-dumping duties for fish and fish product from Thailand, Vietnam, and India.

Although the value of export was increase, but the share of Indonesia's export of fish and fish product was decrease. Vietnam and Thailand becomes the strongest competitors from the ASEAN countries. The production and the export of fish and fish product from both of countries have increased for the last five years.

5.2.2. The Population

The population in importing country measures the market size for the product. They are becomes potential consumers for Indonesia's product. The total population in the trading partner is significant in affecting the value of export from Indonesia in the level 1%, 5% and 10%. The value of export from Indonesia will increase around 9.63 per cent when the amount of population in the partner countries increases 1 per cent. It indicates that market size is one of major factor that able to boost Indonesia's export.

5.2.3. The Nominal Exchange Rate

The nominal exchange rate is a proxy of price of the product. The appreciations of the Indonesia's currency tend to make the price of Indonesia's product more expensive in the foreign market, while the depreciations tend to make the product cheaper. The increasing 1 per cent of the nominal exchange rate will increase the value of export from Indonesia around 1.02 per cent. This parameter is significant in affecting the value of export from Indonesia in the level 1%, 5% and 10%.

When the price elasticity is greater than 1 in magnitude, we say that demand is price elastic because the percentage decline in value of demanded is greater than the percentage increase in price. In general, the price elasticity of demand for a good depends on the availability of the other goods that can be substituted for it. When there are close substitutes, a price increase will cause the consumer to buy less of the good and more of the substitutes. Beef, chicken and eggs can be categorized as the substitutions of fish and fish product.

5.2.4. Tariff

As the first assumption, the reduction in tariff will improve the value of export from Indonesia. The value of export will increase around 0.02 per cent when the tariff decreases in the level 1 per cent. It is showing that tariff elasticity is very inelastic. This inelastic condition shows that tariff reduction is not a major factor that able to boost Indonesia export to the partner.

The import tariff which is applied by United States and Japan is already close to zero percent since year 1999, while the import tariff which is applied by EU countries (Belgium and United Kingdom) is above 5 per cent. The tariff reduction does not give much effect in reducing the price of imported fish in the market.

5.3. The Impact of Standards and Technical Regulation

There is an important thing to be underline before explain the impact of standards and technical regulation. The stock of standards and technical regulations which

are covered in this study is not divided by the voluntary or mandatory standards and technical regulations. There is an equal weighted between voluntary and mandatory standards.

The standards and technical regulations which are applied by the partner are significant in affecting the value of export from Indonesia. The increasing 1 per cent of the stock of standards and technical regulations will decrease the value of export from Indonesia around 0.33 per cent.

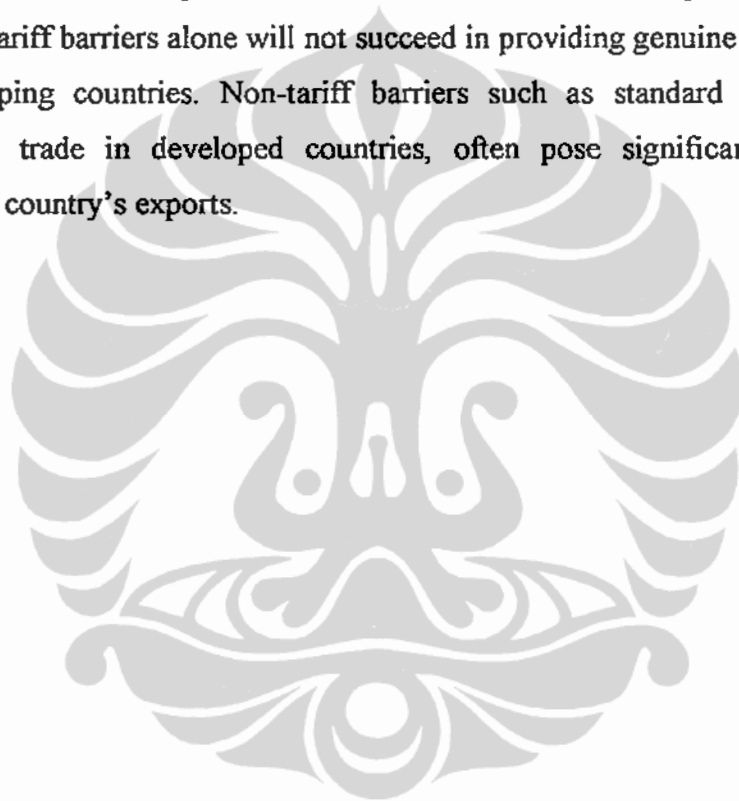
Standards and technical regulations mainly have indirect effect to international trade, which take place through the additional cost of compliance that's producers or traders face. These regulations, then, will affect production functions and consumption decisions and causing the import demand and supply curves shifted if the regulations are imposed. Other effect of standards is that they can impose cost at different points in marketing chain; the result can affect foreign and domestic price level and foreign exchange flows as well as quantities traded.

In the other side, the stock of standards and technical regulations refer to the number of quality parameters desired by the consumers on a product. The higher number of stock of standards and technical regulations in the partner countries reflect they demand products with higher quality level than consumer in the domestic. The decreasing value of Indonesia's export to the partner countries shows that the partners' are not depend on the Indonesia's product in fulfilling their consumption and have preference to substitute imports from Indonesia with products from other countries that comply with their standards.

The inelastic value of standards and technical regulation which are imposed by the partners was the interesting finding in this study. The changes (increasing) of consumer perception on minimum quality actually give significant impact to the Indonesia's export but only 0.33 per cent, because the additional cost can affect the consumers' decision to buy the product. Thus, unlike most standards that adopted to be technical regulations (mandatory standards), in the country level,

voluntary standards do not have a direct power to determine a reduction of consumption to a certain products whenever the products can not fulfill the need.

Nowadays, trade barriers from the developed countries not only come from the tariff barrier, but also non tariff barrier (which more restricted than tariff). From the result estimation showed that the impact of standard and technical regulation was larger than the impact of tariff on the Indonesia's export performance. Reducing tariff barriers alone will not succeed in providing genuine market access for developing countries. Non-tariff barriers such as standard and technical barriers to trade in developed countries, often pose significant barriers to developing country's exports.



CHAPTER VI

CONCLUSION AND RECOMMENDATION

6.1. Conclusion

- a. Standards and technical regulations mainly have indirect effect to international trade. These regulations will affect production functions and consumption decisions. The company has to pay additional cost to fulfill the new standards and regulation. By fulfilling the standards, the consumers have confidence about the quality of the product. Nevertheless, the additional cost can affect the consumers' decision to buy the product.
- b. The impact of standards and technical regulations of fishery product which were imposed by the trading partner has negative effect to the Indonesia's export performance. The increasing number of stock of standards and technical regulations in the trading partners' market has reduced the value of Indonesia's export of fishery product.
- c. The decreasing value of the Indonesia's export to the trading partner indicates that Indonesia less competitive than other exporters countries toward price competition and quality competition. Importing country prefer to substitute their import from Indonesia with product from other country that complies with their standards.
- d. Beside standards and technical regulations, Indonesia's export of fish and fish product to the trading partner also determined by factors:
 - Nominal GDP of the trading partner is positive and significant.
 - Population in the trading partner country is positive and significant.
 - Nominal exchange rate is positive and significant.
 - Tariff is negative and significant.

- e. Since tariff protection is less important, non tariff barriers get more on importance for developed countries. The impact of standards and technical regulations was larger than the impact of tariff to Indonesia's export performance of fish and fish product.

6.2. Recommendation

- a. The enhancement of the trade between Indonesia and the trading partners can be success by establishing the bilateral Mutual Recognition Arrangements (MRAs) between both of countries for standards harmonization and equivalent of fishery product. In order to promote harmonization and equivalence among seafood-trading nations, such differences need to be reduced and ultimately removed and replaced by international control systems and standards based on scientific techniques.
- b. The government needs to give more attention to the development and implementation of the national standards and regulations in order to make Indonesia's product more acceptable in the international market. Designing, implementing and enforcing national standards based on international standards.
- c. Improve the technical facilities such as laboratories include the equipments based on the international standards requirement.
- d. Enhance technical training and education to improve professionalism, knowledge and skill of human resources in Marine and Fishery sector include fisherman, traders, technical expertise and government.
- e. Tariff has significant effect to the Indonesia's export. Although the tariff mostly was decline in the importing countries, but tariff which was applied by the EU still high. In order to increase the bilateral trade, the government should negotiate strongly to reduce the tariff.

- f. The significances of the GDP of the importing countries indicates that the government has to be anticipated the declining of the economic growth in the partner countries. According to estimation report from the OECD, the economy of Japan and United States will stagnant and decline and it also affected the economy of EU. Therefore, Indonesia needs to extend the market to other market, for example, India.

6.3. Further Study

This study was not differentiating the impact between the mandatory and voluntary standards. They have the equal weight, so there could be some different result of the study with another previous study. Mandatory standards should give more significant impact rather than voluntary standards, because voluntary standards have no power to push to fulfilled the standards. In term of future research, it will be interesting to study by differencing the impact between the mandatory and voluntary standards and technical regulations.

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Annex 1. The Result of the Fixed Effect Model Regression (No Weight)

Dependent Variable: LOG(EXP?)				
Method: Pooled Least Squares				
Sample: 1999 2007				
Included observations: 9				
Cross-sections included: 4				
Total pool (balanced) observations: 36				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-43.507700	21.16960	-2.055197	0.0497
LOG(GDP?)	0.966700	0.49629	1.947846	0.0619
LOG(POP?)	9.631667	4.95801	1.942648	0.0626
LOG(ER?)	1.024573	0.74278	1.379384	0.1791
TARIFF?	-0.016092	0.01180	-1.363909	0.1839
LOG(STD?)	-0.333348	0.22573	-1.476758	0.1513
Fixed Effects (Cross)				
_USA--C	-15.56970			
_JPN--C	-1.32702			
_BLG--C	17.88510			
_UK--C	-0.98839			
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.975952	Mean dependent var		11.84126
Adjusted R-squared	0.968827	S.D. dependent var		1.292509
S.E. of regression	0.228204	Akaike info criterion		0.095161
Sum squared resid	1.406076	Schwarz criterion		0.491041
Log likelihood	7.287097	F-statistic		136.971
Durbin-Watson stat	1.055923	Prob(F-statistic)		0.00000

Annex 2. The Result of the Pooled Least Squared Regression (No Weight)

Dependent Variable: LOG(EXP?)				
Method: Pooled Least Squares				
Sample: 1999 2007				
Included observations: 9				
Cross-sections included: 4				
Total pool (balanced) observations: 36				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.656029	1.22855	3.78986	0.0007
LOG(GDP?)	2.752587	0.51444	5.35064	0.0000
LOG(POP?)	-2.481573	0.56893	-4.36182	0.0001
LOG(ER?)	-0.291962	0.03330	-8.76690	0.0000
TARIFF?	-0.045193	0.01306	-3.46049	0.0016
LOG(STD?)	-0.283070	0.23041	-1.22856	0.2288
R-squared	0.940346	Mean dependent var		11.84126
Adjusted R-squared	0.930403	S.D. dependent var		1.292509
S.E. of regression	0.340979	Akaike info criterion		0.837022
Sum squared resid	3.488006	Schwarz criterion		1.100941
Log likelihood	-9.066389	F-statistic		94.57945
Durbin-Watson stat	0.88387	Prob(F-statistic)		0.00000

**Annex 3. The Result of Fixed Effect Model Regression
With White Cross Section**

Dependent Variable: LOG(EXP?)				
Method: Pooled Least Squares				
Sample: 1999 2007				
Included observations: 9				
Cross-sections included: 4				
Total pool (balanced) observations: 36				
White cross-section standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-43.50770	5.42216	-8.02406	0.0000
LOG(NGDPJ?)	0.96670	0.35301	2.73848	0.0108
LOG(POPJ?)	9.63167	1.83218	5.25696	0.0000
LOG(NER?)	1.02457	0.22194	4.61638	0.0001
STARR?	-0.01609	0.00652	-2.46790	0.0202
LOG(STD?)	-0.33335	0.08159	-4.08572	0.0004
Fixed Effects (Cross)				
_USA--C	-15.5697			
_JPN--C	-1.3270			
_BLG--C	17.8851			
_UK--C	-0.9884			
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.975952	Mean dependent var	11.84126	
Adjusted R-squared	0.968827	S.D. dependent var	1.292509	
S.E. of regression	0.228204	Akaike info criterion	0.095161	
Sum squared resid	1.406076	Schwarz criterion	0.491041	
Log likelihood	7.287097	F-statistic	136.971	
Durbin-Watson stat	1.055923	Prob(F-statistic)	0.0000	