THE IMPACT OF FOOD SAFETY REGULATION IN EUROPEAN UNION FOR INDONESIA EXPORT: CASE OF INDONESIA SHRIMP EXPORT TO EUROPEAN UNION COUNTRIES, 1997 - 2007

THESIS

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DECEMBER, 2008

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Submitted in partial fulfillment of the requirements for
the Degree of Master of Economics

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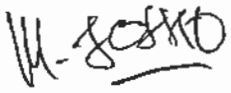

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Last but not least, I believe that this research is still imperfect. Therefore, suggestions are welcome to enhance this research.

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Mario Josko

STATEMENT OF ASSERTION

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ABSTRACT

Name : Mario Josko
Study Program : Master of Planning and Public Policy
Title : The Impact of Food Safety Regulation in European Union for Indonesia Export (Case of Indonesia Shrimp export to European Union Countries period 1997-2007)

The aim of this research is to analyze the Impact of food safety regulation in European Union for Indonesia shrimp export to European Union countries period 1997-2007 . Food safety regulation and high standard requirement which are imposed by most of developed countries could be indicated as barrier for developing countries because most of them could not meet the high requirement which is asked by developed countries. The European commission made a various regulations to regulate the requirement of food safety and requirement for food and feed product. One of the regulations is Regulation (EC) no.178 year 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. It regulation is aimed to provide high level of protection of human health and it consumer interest. The result of this research showed that regulation had a negative and significant impact on Indonesia shrimp export into several European Union countries. In addition, Gross Domestic Product of destination countries, relative price and nominal exchange rate also influence Indonesia shrimp export.

Keywords: Shrimp export, Indonesia and EU Food Safety Regulation

ABSTRAKSI

Nama : Mario Josko
Program Studi : Magister Perencanaan dan Kebijakan Publik
Judul : Pengaruh Kebijakan Keamanan Pangan di Uni Eropa Terhadap Ekspor Indonesia (Studi kasus Ekspor Udang Indonesia ke Negara Negara Uni Eropa Periode 1997-2007)

Studi ini bertujuan untuk menganalisa Pengaruh Kebijakan Keamanan Pangan di Uni Eropa Terhadap Ekspor Udang Indonesia ke Negara Negara Uni Eropa periode 1997-2007. Kebijakan keamanan pangan dan persyaratan standar yang tinggi yang diterapkan oleh negara maju dapat diindikasikan sebagai hambatan bagi negara negara berkembang karena sebagian besar negara berkembang belum dapat memenuhi persyaratan yang diberikan oleh negara maju. Komisi Uni Eropa telah membuat berbagai peraturan yang mengatur persyaratan keamanan makanan. Salah satu peraturannya adalah *Regulation (EC) No. 178/2002* tentang prinsip-prinsip umum tentang ketentuan-ketentuan hukum pangan, *authority* dan tanggung jawabnya serta prosedur dalam hal keamanan pangan untuk menjamin perlindungan yang ketat dalam hal kesehatan manusia atau konsumsi makanan secara umum pada Masyarakat Eropa. Hasil dari studi ini menunjukan bahwa regulasi ini berpengaruh negative dan signifikan terhadap ekspor udang Indonesia ke beberapa negara Uni Eropa. Di sisi lain, PDB dari negara Uni Eropa, Harga relatif dan kurs nominal juga berpengaruh terhadap ekspor udang Indonesia ke Uni Eropa

Kata Kunci: Ekspor Udang, Indonesia dan Peraturan keamanan pangan di Uni Eropa

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CHAPTER 1
INTRODUCTION

1.1 Background

Export plays an important role as one of source of Indonesian economic growth. The share of export for economic growth has increased from 46.8% in 2006 to 47.4% in 2007 (Table 1.1). Moreover, as the engine of economic growth, export has the role to create employment and to increase national income.

Table 1.1

Source of Indonesia economic growth[1]

Source of GDP	2006			2007		
	Growth	Share	Source Growth	Growth	Share	Source Growth
Private Cons.	3.2	58.3	3.2	4.7	57.2	3.6
Government Cons.	9.6	8.0	0.4	4.7	7.3	0.5
Investment	2.9	21.9	1.2	7.9	22.0	1.4
Export	9.2	46.8	2.6	8.8	47.4	3.0
Import	7.6	37.0	2.0	8.0	37.6	2.4
Total	**5.5**	**100.0**	**5.5**	**6.3**	**100.0**	**6.3**

Source : National Statistic Agency, 2008

Currently, the Ministry of Trade (MOT) is developing a road map for increasing export of 10 main commodities, 10 potential commodities and 3 services. As one of fisheries products, Shrimp commodity becomes one of main commodities which are included in the road map of Ministry of Trade. Fish and fisheries sector have given big contribution for Indonesian export. Furthermore, fish and fisheries sector have important role in the Indonesian economy. In 2005, its share was about 2,18% of total GDP and 2,46% of non oil and gas GDP[2].

Indonesia has a great potential to develop its fishery industries. Based on it's Exclusive Economic Zone, Indonesian sea areas cover 5,8 million square kilometers or 75% of total area, while the total area of its land is 1,9 million

[1] Quoted from the presentation of Hatanto Reksodiputro, lecturer at MPKP class 2007
[2] Look Table 3.1 in Chapter 3

square kilometers, which consists of 17,500 islands and long coastline of 81,000 square kilometers. Indonesia as an archipelago country is surrounded by seas and oceans possessing a large potential supply of seafood products including a variety of fish, shrimp, crab, and squid. At glance, the sub sector of Indonesian fishery products are tuna, shrimps, sea weeds, cakalang, etc. Shrimp and prawn are commodities from fishery, which have important role on food supply in the world because of its protein component. Shrimp which is considered as the main commodity in the fisheries sector in Indonesia is hoped to increase its role national income generation. This is due to the fact that shrimp which makes up a greater part of the fisheries product export has a large potential for development both from market demand overseas which still shows a trend to increase, and from the available resource in Indonesia

Shrimp and other fisheries product provide important trade and livelihood in many developing countries such as Indonesia particularly. However, market access barriers on fisheries trade continue to pose serious obstacles for developing countries to expand their participation in international trade, add value to their exports and ensure sustainable fisheries development. Although traditional barriers to trade such as tariffs and quantitative restrictions are at least partially liberalized and many developing countries are subject to preferential trading arrangements, In many markets non-tariff barriers continue to present obstacles to imports and are often linked to technical standards or procedures such as food safety standards/requirements and traceability requirements. The food safety and other technical requirements can impose a heavy burden on developing countries, reflecting the resource constraints that constrain their ability to comply.

Indonesia is well known as one of the major exporters of fish and fisheries products includes shrimp commodity products particularly. Indonesian shrimp commodity has a big market in the world. Demand on those products and its processing products are very high, especially for people who stay in US, Asia and European Union (EU). Therefore, Indonesia tries to increase shrimp export to the world market. Nevertheless, strict imposition of safety and standard requirement are now also being applied by several importing countries, including the European Union which have been one of main importer of Indonesia shrimp products.

As the biggest importer of shrimp product in the world, European Union market becomes the important market of Indonesia shrimp export. However, Indonesian shrimp product should deal with certain regulation in European Union (EU) related to standard of products and food safety regulation. Based on the data from National Statistic Agency, 2008, the trend of Indonesia shrimp export into EU countries showed the declining. The strict regulation and requirement in EU could be indicated as one of factors which influence for the declining of Indonesia shrimp export into EU countries. To enter the EU market, fish and fishery product particularly must be complied with procedure, and specific health conditions with the high standard requirement. A lot of fisheries case related the standard and food safety requirement of fish products in EU has become the evidence of the role of technical regulation in affecting export.

The European commission made a various regulations to regulate the requirement of food safety and requirement for food product. One of the regulations is Regulation (EC) no.178 year 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

The general objective of regulation (EC) 178/2002 is to provide high level of protection of human health and consumer interest and also harmonize the food laws of the EU members[3]. The articles of this regulation consist of food safety requirements, food labeling & presentation, recall & traceability, emergency measures, crisis management and Rapid Alert System for Food and Feed (RASFF).

The general obligation in the food trade in the regulation 178 year 2002 require that food and feed imported with a view to being placed on the market or exported to a third country must comply with the relevant requirements. In the other side the general requirement of food law of it regulation require that food must not be placed on the market if it is unsafe, i.e. if it is harmful to health and/or unfit for consumption, If food which is unsafe forms part of a batch, lot or consignment, the entire quantity is presumed to be unsafe.

[3] The regulation is also aimed to harmonize differences food laws among European Union member states; therefore, every member countries will adopt and impose the food law.which require in it regulation.

The regulation imposed the strict requirement for food products which is imported in to European Union countries. Moreover, it regulation provide rapid alert system for food and feed as a procedure relating to food safety. Therefore, the regulation could impact for Indonesia shrimp export into European Union because Indonesia product should comply with strict requirement and procedure of the regulation.

1.2 Research Question

Based on the research background of the analysis, there are some research questions:

1. What is the impact of food safety regulation which is represented by Regulation (EC) 178 years of 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety for Indonesian shrimp export?
2. What are the other potential factors that affect Indonesia shrimp export into European Union countries and how are the levels of significance as well as the elasticity of those factors with relation to Indonesia export as the dependent variable?

1.3 Research Objectives

The objectives of this research are:

1. To assess the impact of implementation of regulation (EC) 178 years of 2002 for Indonesian shrimp export into several European Countries
2. To investigate other potential factors (such as GDP, Exchange rate and Relative price) that affect Indonesia shrimp export into European Union countries and also to find out the significance as well as the elasticity of the intended factors (independent variables) with relation to Export as the dependent variable;

1.4 Hypothesis of the study

The following are hypothesis of the research:

The Regulation (EC) 178 year 2002 which was established by European Commission is estimated to influence negatively Indonesia shrimp export because the establishment of the regulation which consists of food safety requirements, food labeling & presentation, recall & traceability, and Rapid Alert System for Food and Feed (RASFF) require the high requirement for Indonesia export to European Union.

As independent variable, the real gross domestic product of importing country is expected to have a positive relation with the amount of export volume. Gross domestic product is reflecting the size of market and income in the importing country, the larger the market size and higher income the larger demand for export. According to Blanchard (2006), higher foreign incomes mean higher foreign demand for all goods, both foreign and domestic.

Another independent variable used in this research is nominal exchange rate, which expected to have a positive effect to export. In this thesis, the nominal exchange rate to be used is foreign currency in term of domestic currency; therefore, the appreciation of foreign currency in term of domestic currency is equal with the depreciation of domestic currency. The depreciation on exporting country (domestic) currency will made as if the product from exporting country become cheaper which in turn give importing country a possibility to purchase more and leads to the increase of exports.

The last independent variable used in this research is relative price. This variable is expected to have negative relation with export. The higher the price, will lead to the decreasing of export because our product will be less competitive.

1.5 Scope of the Study

The study covers Indonesia's trade (export) activity in shrimp product. The analysis for bilateral trade activity in this sector is derived from the main assumption that trade is determined by the consumer's demand and the level of competitiveness of product exported (price, exchange rate and Gross Domestic

Product). In this study, regulation which imposed by European Commission is determined as dummy variable.

The commodity and trading partners are selected to support the assumption for the model tested, which gives a focus on the trade activities on shrimp products between Indonesia and the several EU countries for the period 1997-2007. These periods of observation are considered sufficient to capture the impact of implementation regulation 178 / 2002 which imposed by European Commission. The countries of EU being analyzed are Belgium, Denmark, France, Germany, Netherlands, Sweden, and United Kingdom. Those countries are chosen by consideration of availability of the data of Indonesia export. Moreover, it countries are the important markets for Indonesia shrimp products.

The shrimp products used in this study is HS 030613 (Shrimp and prawn Frozen). Indonesia's shrimp export into European Union is dominated by HS 030613 (Shrimp and Prawn Frozen) with share is around 80-90% from the total of Indonesian shrimp export.

1.6 Research Methodology

1.6.1 Source of Data

The data which used in this study is panel data which combined time series and cross section data. The data consist of annual several countries of European Union economic reports and export import of shrimp product for the period of 1998-2007. Source of the Data which are used; WITS (World Integrated Trade Solution), United Nation Commodity and Trade (UN Comtrade), UN trains, National Statistic Agency (BPS), Ministry of Trade, Ministry of Marine and fisheries, International Financial Statistics (IFS), Econstats, Trademap and other sources including electronic sources.

1.6.2 Methodology of Analysis

The analysis of the thesis is using econometric with the regression of panel data which consist of time series and cross section data. The regression of panel data model is used because the observation for seven European countries is not

only in the one period but also in the certain period especially before and after the establishment of Regulation (EC) 178 year 2002. This method will create the degree of freedom greater and overcome the limited data of time series and the availability of cross section data in order to fulfill the condition of econometric model.

1.7 Organization of the Thesis

In order to facilitate the understanding of this thesis, in this part, writer gives an early brief description about the content of each chapter of the thesis.

CHAPTER 1: INTRODUCTION

This part is an introduction chapter. It will discuss about background of the problem which explain about the recent condition of research object, research question, objective of the research to answer the research question, research coverage which specifying research's object, thesis hypothesis and the organization of thesis.

CHAPTER 2: INDONESIA'S AND WORLD SHRIMP PROFILE

This chapter contain of general descriptions about the condition of Indonesia's and world shrimp production and trade. This part consists of the Indonesia shrimp production, market and Indonesia export. Moreover, this chapter describes the world shrimp production and trade. In addition, the shrimp regulation in Indonesia and European Union as destination countries also included.

CHAPTER 3: EXPORT DEMAND AND TRADE BARRIER THEORY

This chapter consists of several theories which underlie writer in completing this research. The theories used in this research include, demand theory, Export determinant and theory of trade barrier which is divided into tariff and non tariff barrier.

Moreover, this part also consists of several literature studies about the previous empirical research which related to the topics in this thesis.

CHAPTER 4: RESEARCH METHODOLOGY

This chapter will describe about how the problem being analyzed. This chapter consists of construction of the models, data source and description, and analysis method.

CHAPTER 5 : RESULTS AND ANALYSIS

In this chapter, writer not only analyze the data by using available method in Chapter 4 but also will describe and discuss both result of regression and analysis of the result in order to achieve the objective of the research.

CHAPTER 6: CONCLUSION AND RECOMMENDATION

This chapter consists of the conclusion based on the analysis on Chapter 5, policy recommendation which can be used as an input for policy makers

CHAPTER 2
INDONESIA'S AND WORLD'S SHRIMP PROFILE

2.1 Overview of Indonesia's Shrimp Profile

2.1.1 Shrimp contribution in Indonesia economic

Fishery sector has quite important role in the Indonesian economy. In 2005, its share was about 2.18% of Total GDP and 2.46% of non oil and gas GDP (see table 2.1 on appendix). Moreover, fishery sector take the the 3rd biggest earning contribution on Agricultural animal husbandry, forestry and fishery in 2005 after Food Crops and Plantation Crops. Meanwhile, the share toward agricultural cluster was about 14.92%. Fishery field activity gave 30.94 Trillion Rupiah in 2000 and increased to 45.09 Trillion Rupiah in 2003.

Shrimp and prawn are one of commodities from fishery, which have important role on food supply in the world because of its protein component. Moreover, shrimp has become the most important commodity of fisheries for Indonesia and other countries. Among the fisheries products, shrimp products take the highest contribution for Indonesia fisheries export (Table2.2).

Table 2.2
Indonesia Fisheries export
(Million US$ & Metric Tons)

Commodity	YEAR									
	2000		2001		2002		2003		2004	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Shrimp	1.002.122	116.188	939.375	128.83	839.722	124.763	850.222	137.636	887.126	142.094
Tuna, Cakalang	223.916	92.958	218.99	84.205	212.426	92.797	213.179	117.092	243.937	94.221
Pearl	25.686	9	25.257	22	11.471	6	17.128	12	5.866	2
Sea weeds	15.67	23.073	17.23	27.874	15.875	28.56	20.511	40.162	25.296	51.011
Others	407.68	287.19	431.047	246.182	490.949	319.615	542.503	562.881	618.607	615.031

Source : Marine and fisheries statistic 2005

As one of 10 main commodities for Indonesia export, shrimp is expected to give significant contribution for total Indonesia export. Based on the data from

the Ministry of Trade, the share of Indonesia's export of shrimp product to the total value of Indonesia's export decreased from 1.53% in 2003 into 0.99% in 2007 (Table 2.3). Nevertheless, Indonesia's shrimp export reached 933,73 million US$ in 2003 and smoothly increased into 1,132,27 million US$ in 2005. In the other side, the percentage òf Indonesia's import of shrimp product to the total value of Indonesian's import also experience declining from 0.04% in 2001 to 0.01% in 2005. Furthermore, Indonesia's shrimp import decrease slowly from 7,19 million US$ in 2005 into 5,72 million US$ in 2006. However, in 2007, The value of Indonesia shrimp import increase dramatically into 8,25 million US$. Meanwhile, the trade balance show increasing from 1,040.76 Million US$ in 2005 to 1,204.78 Million US$ in 2006. However, in 2007, the shrimp trade balance showed decreasing to 1,124.02 million US$. The decreasing of shrimp trade balance is caused by the decreasing of shrimp export and the increasing of shrimp import.

Table 2.3

Indonesia Shrimp Product Trade Balance (Million US$)

Description	2003	share	2004	share	2005	share	2006	share	2007	Share
Export	933.73	1.53	979.36	1.37	1,047.95	1.22	1,210.50	1.20	1,132.27	0.99
Import	11.45	0.04	56.58	0.12	7.19	0.01	5.72	0.01	8.25	0.01
Trade Balance	922.28		922.78		1,040.76		1,204.78		1,124.02	
Total Indonesia Export	61,058.20	-	71,584.60	-	85,660.00	-	100,798.62	-	114,100.87	-
Total Indonesia Import	32,550.70	-	46,524.50	-	57,700.90	-	61,065.45	-	74,473.72	-

Source : Trade Research and Development, Ministry of Trade, 2006

2.1.2 Indonesia's Shrimp Production

Source of Indonesia's shrimp production is consisting of wild catch and aquaculture production. Table 2.4 show wild catch production dominates the source of shrimp production. However, wild catch production slowly decreases in line with the increasing of aquaculture production.

Table 2.4

Indonesia Shrimp Production (Metric Tons)

Years	Indonesia Shrimp Production		
	Wild catch	Aquaculture	Total
2000	268.301	145.721	414.022
2001	282.178	151.246	433.424
2002	259.09	161.299	420.389
2003	255.791	194.033	449.824
2004	260.023	151.844	411.867

Source: Ministry of marine and fisheries, 2005

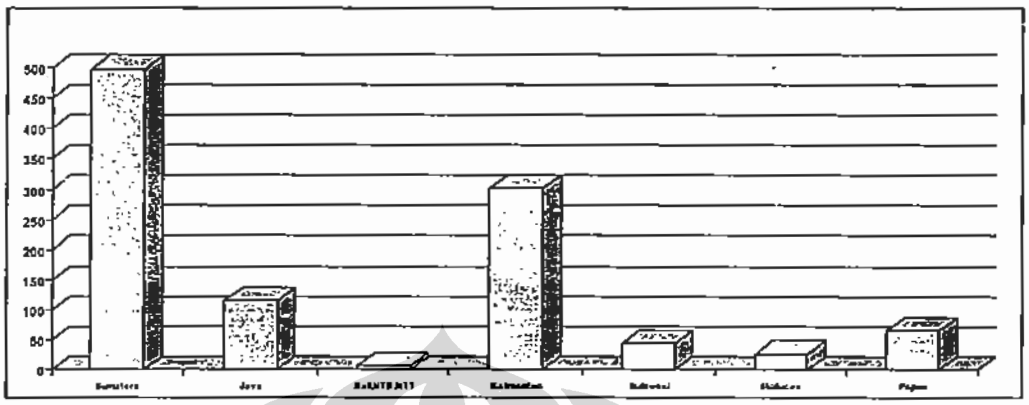
Based on the data of Ministry of Marine and Fisheries 2005, in the year of 2000, wild catch production share reached 65 percent of total production. Meanwhile, In 2002 and 2003, wild catch production showed the decreasing from 61 percent into 57 percent from the total of production.

During 2000 until 2003, Sumatra Island takes the highest position in wild catch production followed by Kalimantan, Java, Papua, Sulawesi, Mollucas and Bali, NTT, NTB (figure 2.1). In aquaculture production, Sumatra still dominates the production followed by Java, Sulawesi, Kalimantan, Bali, NTB, NTT, Mollucas and Papua (Figure 2.2).

In term of Province, wild catch productions dominate by province of Riau, North Sumatra, and South Kalimantan. During 2000-2002, Province of Riau takes the highest position in wild catch production followed by South Kalimantan and North Sumatra. However, in 2003, Province of Riau and South Kalimantan showed decreasing in their production and the highest position was replaced by North Sumatra

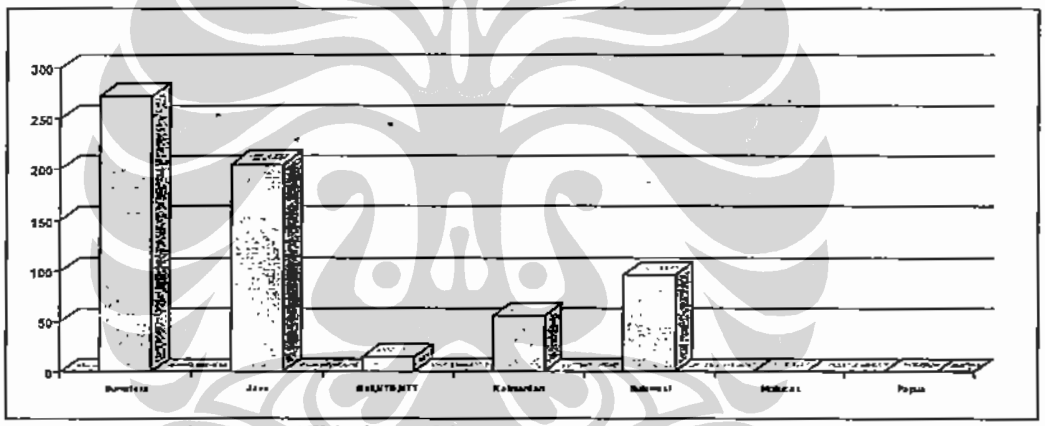
In the other side, Aquaculture productions dominated by province of Lampung, North Sumatra, Southeast Sulawesi, West Java, and East Java. The aquaculture production increase smoothly year by year. The highest position of production took by South Sulawesi in 2000, East Java in 2001, South Sumatra in

2002 and Lampung in 2003. Recently, aquaculture production increase continuously rather than wild catch production[4].



Source : Ministry of Marine and Fisheries 2005 (processed)

Figure 2.1 Total wild catch Production in term of island during 2000-2003 (MT)



Source : Ministry of Marine and Fisheries 2005 (processed)

Figure 2.2 Total Aquaculture Production in term of island during 2000-2003 (MT)

2.1.3 Indonesia Shrimp farming

Prior to shrimp aquaculture development, which began in South Sulawesi in 1964, wild catch shrimp was the only source of shrimp production in Indonesia. While wild catch shrimp production is slowly decreasing, shrimp farm production is increasing. Currently, there are three types of shrimp farming in Indonesia; traditional or extensive farming, semi-intensive farming, and intensive farming. The farms are classified by the stocking density, the level of inputs, and the degree of management.

[4] See table 2.5 and 2.6 in appendix

Indonesia as an archipelago state spread out their area production along the country. The plantation areas for fishery culture were divided into two areas —area of fish pond and area of water surface. Brackish water pond is the largest area for shrimp production. That acreage is devoted in Sulawesi, Java, Sumatera and Kalimantan province. Type of area culture was dominated in brackish water pond, followed by freshwater pond and marine culture (Table 2.7).

The development of *gross area* of brackish water was decreasing. The average growth rate decrease from 4.50% (1999-2001) into 1.88% (2002-2004). On the other hand, the area culture brackish water ponds in *net area* were slightly increasing from 3.24% (1999-2001) into 4.91% (2002-2004). Moreover, on a total scale, the average growth rate experience declining in its acreage of production.

2.1.4 Indonesia Shrimp industry

The shrimp manufacturing industry is a very important sector which is potential to growth Indonesian economic contribution. The shrimp industry, especially from commodity frozen fish and other similar product (Frozen shrimp) give the largest income to Indonesian manufacturer. During 2004, the contribution of frozen fish and similar product (include frozen shrimp) to the value of gross output was Rp 13,08 billion (Table 2.8).

Furthermore, the shrimp industry contributes for the employment creation and investment. In the shrimp industrial chain, the employment was divided into two kinds of production sector. The first sector is in the aquaculture sector —workers usually farming, maintaining, and harvesting shrimp on area production. They harvest the shrimp and prawn not only did on the gross area, but also on net area. Another sector is shrimp industry —workers usually works as an employment in shrimp manufacture. They could work as labourer, Quality Control, Manager, etc

Table 2.8
The Contribution of shrimp industries on the Gross Output, Value Added and Employment 2004.

Industrial Code (ISIC)	Commodity	Value of Gross OUTPUT (Thousand Rp)	Total Input Cost (Thousand Rp)	Value Added (Thousand Rp)	Employment
15112	Processing and Preserving Meat	1,326,306,750	969,793,410	329,003,404	5,871
15121	Canned Fish and Other Similar Products	1,881,915,266	1,225,883,138	648,133,766	18,769
15122	Salted/Dried Fish and Other Similar Product	356,514,663	240,310,477	115,227,049	7,316
15123	Smoked Fish and Other Similar Product	46,674,971	36,030,226	10,481,631	478
15124	Frozen Fish and Other Similar Product	13,083,675,301	9,653,274,710	3,406,572,566	58,614
15125	Processed Fish and Other Similar Product	256,536,089	221,574,786	33,779,953	3,551
15129	Other Manufacturing and Preserving of Fish and Its Silimiliar Product	841,493,094	632,395,976	207,080,726	7,033
TOTAL		17.793.116.134	12.979.262.723	4.750.279.095	101.632
		SHARE (%)			
15112	Processing and Preserving Meat	7.45%	7.47%	6.93%	5.78%
15121	Canned Fish and Other Similar Products	10.58%	9.44%	13.64%	18.47%
15122	Salted/Dried Fish and Other Similar Product	2.00%	1.85%	2.43%	7.20%
15123	Smoked Fish and Other Similar Product	0.26%	0.28%	0.22%	0.47%
15124	Frozen Fish and Other Similar Product	73.53%	74.37%	71.71%	57.67%
15125	Processed Fish and Other Similar Product	1.44%	1.71%	0.71%	3.49%
15129	Other Manufacturing and Preserving of Fish and Its Silimiliar Product	4.73%	4.87%	4.36%	6.92%
TOTAL		100%	100%	100%	100%

Note: Contribution on Total Cost, Value Added, and Employment for shrimp included the contribution of other classified in Industry

Source: Large and Medium Manufacturing Statistics, 2004 (analyzed by TREDA staff)

2.1.5 Indonesia Export of Shrimp Products

Indonesia is considered as one of biggest shrimp producer and exporter in the world. Based on six digit HS number, HS 030613 (Shrimp and prawn frozen) is the biggest shrimp product which is traded in the world. Moreover, based on data from Un Comtrade (WITS) 2008, In 2007, share of volume of Indonesia shrimp export for HS 030613 is reach 73.73% from total volume of Indonesia shrimp export Table (2.9) Meanwhile, in the same year, HS 160520 (shrimp and prawn prepared or preserved) take the 2nd place by giving contribution of about 15.56% from total of Indonesia shrimp export.

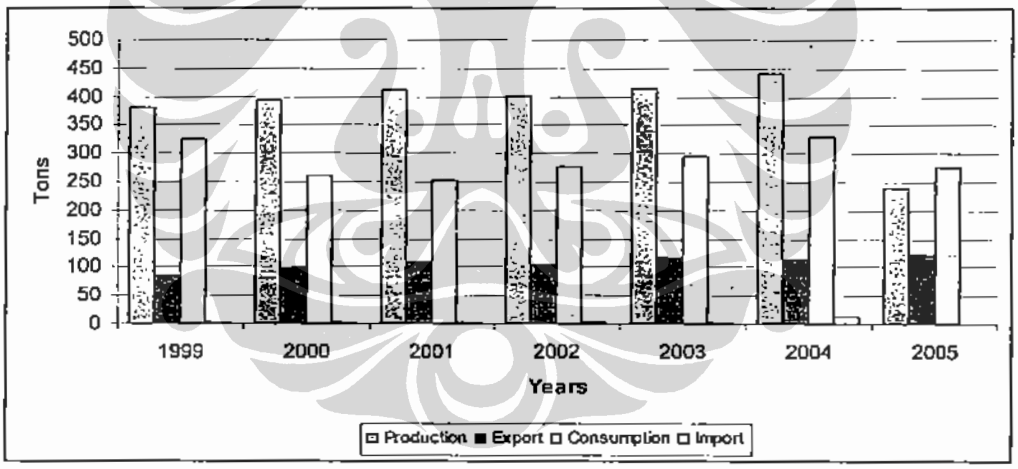
The export earning from shrimp product is reach 1.110,05 million US$ in 2006 and decline into 1.021,19 million in 2007. Moreover, the export value of shrimp and prawn frozen (HS 030613) slightly decreased from 939.71 million

US$ in 2006 into 792.38 million US$ in 2007[5]. However, Shrimp and prawn frozen still take the largest position in industrial production both of quantity and value. This implies that the shrimp industries took an important role on industrialized shrimp material which gives value added to the commodity.

2.1.6 Indonesia Shrimp Market

2.1.6.1 Domestic Market

Indonesian Shrimp production has been fluctuated during 1997 - 2005. Moreover, domestic shrimp consumption showed the fluctuation during 1997 - 2005. Domestic consumption is fulfilled by domestic production and import from the other country. Figure 2.4 showed the domestic consumption mostly fulfilled by domestic production rather than import from others. In the other side, figure 3 is also showed the domestic consumption absorb the domestic production higher than export to other country. Therefore, domestic market still becomes the larger market for Indonesia shrimp. The development of Indonesian shrimp production, consumption, export and import is described in figure 2.4.



Source: Research and development, Ministry of Trade, 2007 (processed)

Figure 2.4 Indonesia shrimp consumption 1999 -2005

2.1.6.2 Foreign Market

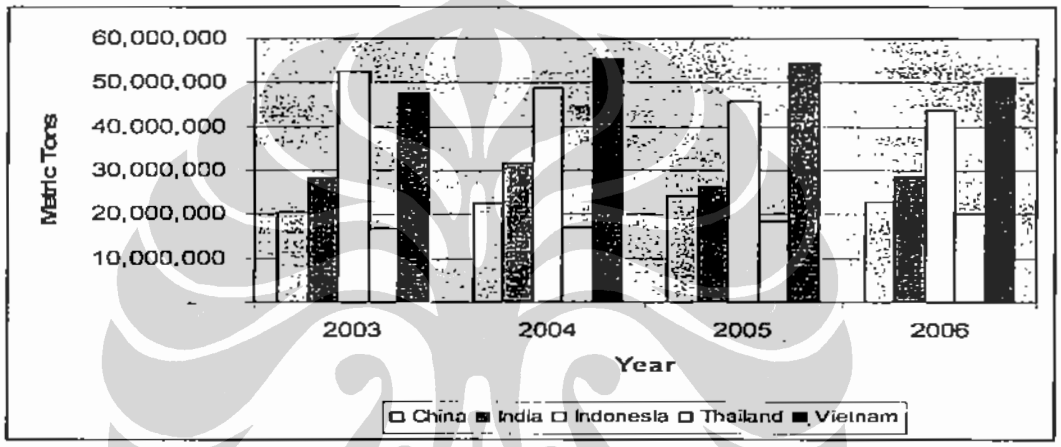
Indonesia foreign market for shrimp product mainly dominates by Asian market, United States market and European Market. A consumer trend toward healthy foods and nutritional awareness will support continued growth in

[5] See table 2.9 and 2.10 in appendix

consumption of fish and fish products in the world. Therefore the market of fish and fish products especially shrimp products is potential to be explored. This is following of three biggest shrimp market in the world.

2.1.6.2.1 Japan market

Until 2006, Japan was become the third position in biggest shrimp importer in the world after European Union and United States. As single country, Japan takes the second position as biggest shrimp importer after United States. Japan becomes the important market for shrimp exporter in the world. However, Japan shrimp import show declining in the current year.



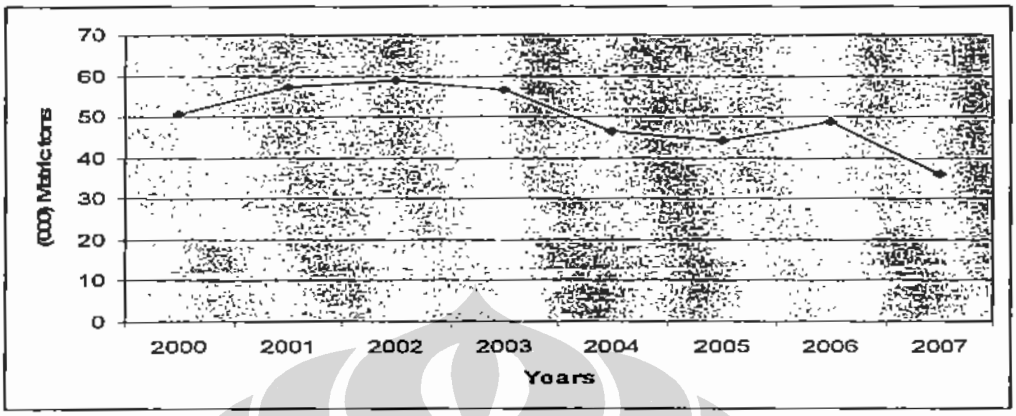
Source: WITS 2008, (processed)

Figure 2.5 Volume of Japan shrimp import from the major exporter (MT)

The major shrimp exporters into Japan market are Indonesia, Vietnam, India, Thailand and China. In the last five years, Indonesia and Vietnam take the dominant position among major exporter in the Japan market.

Asian market has become the biggest market for Indonesia shrimp product. Among Asian countries, Japan is the main destination and the biggest market for Indonesia shrimp. Indonesia shrimp export to Japan dominates by HS 030613 (shrimp and prawn frozen) and HS 160520 (shrimps and prawn prepared or preserved). Based on the data from UN Comtrade, in the year of 2000, volume of Indonesia shrimp frozen export to Japan reach 50.691 Metric tons from the 97.555 metric tons of total volume of Indonesia shrimp export to the world. It means share of Indonesia shrimp export to Japan reach more than 50 % from the total of Indonesia shrimp frozen export to the world. Japan is the biggest market

for Indonesia shrimp export. However, the trend of Indonesia shrimp export to Japan shows the decreasing in the overall (figure 2.6).



Source: WITS, UN Comtrade, 2008 (processed)

Figure 2.6 Volume of Indonesia shrimp frozen export to Japan (in 1,000 MT)

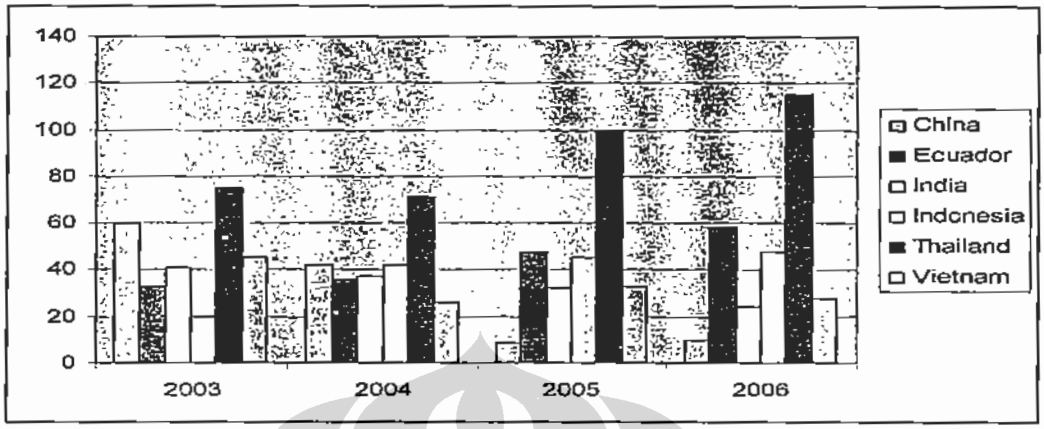
2.1.6.2 .2 United States market

As the single country, United States was the biggest of shrimp importer in the world. Base on the data from trade map organization 2006, in 2005 United States reach 33% from the total of world import of shrimp products. Therefore, the United States market becomes important for major shrimp exporter in the world.

In contrary with Japan market, United States shrimp market show significant increase of import. The major shrimp exporters into United States market are Indonesia, Vietnam, India, Thailand Ecuador and China. Thailand was the top shrimp supplier to the US market during 2003 – 2006 followed by Ecuador, Indonesia and India (figure 2.7).

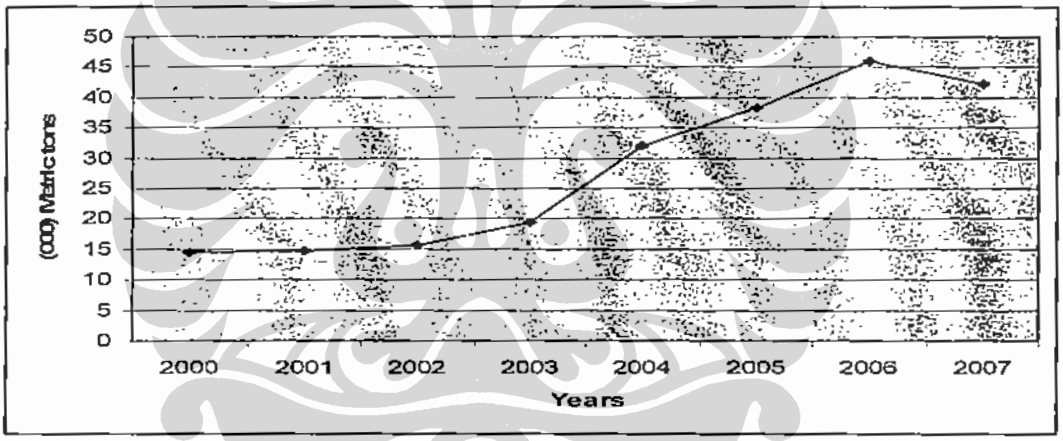
Since 1997, US shrimp imports have grown continuously, at higher or lower rates but always positively in terms of volume. As for the imported value, the behavior has been more erratic, in line with changes in international prices and the structure of imports. Although frozen shell-on shrimp (considering all its sizes), is still the most imported product, products with more value addition, such as peeled frozen shrimp, breaded frozen shrimp, and other frozen preparations (a

category that includes cooked shrimp and meals prepared with shrimp, among other products), have remarkably increased their share of imports.



Source: WITS 2008, Processed

Figure 2.7 Volume of United States Shrimp Import from Major exporter



Source: WITS 2008, Processed

Figure 2.8 Volume of Indonesia shrimp frozen export to United States

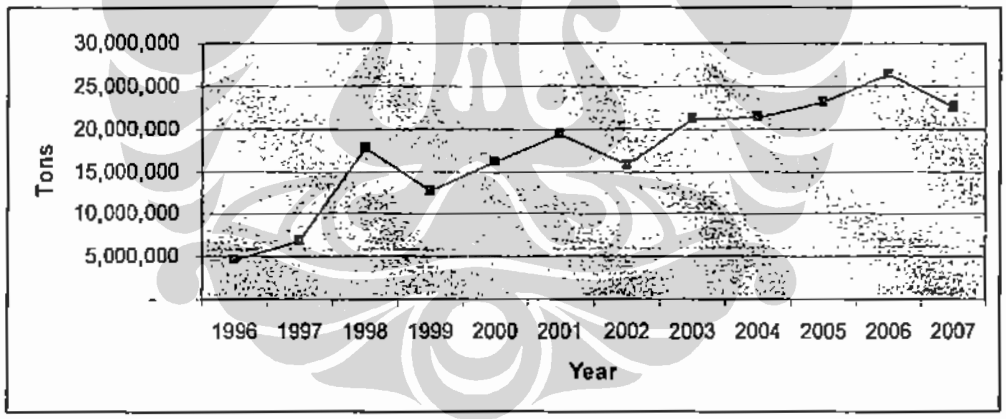
Indonesia Export into United States dominates by HS 030613 (Shrimp and prawn frozen). In 2004, several exporter countries such as China, Thailand, Vietnam, Ecuador and Brazil were confronted by antidumping claimed from the United States. Therefore, United States tend to shift their import to other exporter.

The volume of Indonesia shrimp export into United States increased sharply from 19.48 thousand (MT) in 2003 into 31.95 thousand (MT) in 2004. Moreover, the volume of Indonesia export is increased significantly from 38.39

thousand (MT) in 2005 into 46.12 thousand (MT) in 2006. In contrary, the volume of export is decline slowly into 42.21 thousand (MT) in 2007.

2.1.6.3 European Union market

European Union was the biggest shrimp importer in the world. The volume of EU import increase significantly compare than it export. As the biggest importer of shrimp product, European Union becomes the important market for shrimp product. The kind of shrimp which is traded in European market are Pink (Pandalus borealis), Pacific white (Penaeus vannamei), Black Tiger (Penaeus monodon), Chinese white (Penaeus chinensis) dan gulf (Penaeus aztecus). In the north part of Europe prefer to import sea cold shrimp. In the other side, the south part of EU prefers to import tropical shrimp. Ecuador, India, Thailand, Bangladesh are the major exporter of shrimp into Europe. Indonesia export into European Union shows the slowly increase (figure 2.9). The strict regulation in EU has make developing countries meet the obstacle to fulfill the requirement.



Source: WITS 2008, (processed)

Figure 2.9 Volume of Indonesia shrimp export into European Union

As developed country, consumers in EU seriously care with safety products. In addition, every import products should meet the requirement related to standard of products. Fish and fisheries products are sensitively meet the standard issues. Therefore, European commission has made various regulations in order to ensure the safety of the products including fish and fisheries products.

This following Procedure in exporting fish and fishery products to the EU[6]

1. The Competent Authority in the dispatching country contacts the European Commission to request approval.
2. The Commission visits the country and establishments to check hygiene standards are equivalent to those in the EU.
3. Approval is proposed, accepted or rejected. Updated list of the approved countries are published in the Official Journal of the European Community and notified to Member States electronically.
4. A Commission Decision is drawn up giving the format for health certification and a list of approved establishment.
5. The Competent Authority in country of dispatch issues and stamps the health certificate as for the Commission Decision.
6. Products of animal origin must be imported into the EU through Border Inspection Posts (BIPs)
7. The importer must notify the Border Inspection Posts of the arrival consignments: 24 hours by sea; 6 hours by air.
8. The Official Veterinary Surgeon or Official Fish Inspector (for fisheries products) carries out a: Document check, Identify check, Physical check.
9. If checks are satisfactory, a common veterinary Entry Document (CVED) is issued for that consignment of goods. It can then be imported into the EU
10. If the consignment fails the checks then it must be either re-exported or destroyed.

2.1.7 Challenge for Indonesia shrimp export

In present time, the competitiveness farmed-shrimp Industry among countries is very tight. Indonesia's shrimp export performance must be viewed in the context of both external (global) trends and internal (country) issues affecting the industries.

There are several external factors that could be an obstacle and influence competitiveness in worldwide:

[6] Alan Reilly "New EU Food Regulation relating to Fish and Fisheries products" 2006

1. Increased global production at lower prices accompanied by a higher degree of diversification into new shrimp and aquaculture products with better quality.
2. Global rise in incidences of disease outbreak and environmental pollution, increasing concerns about food safety standards, and associated rise in the application and stringency of standards and technical regulation (including genetics)
3. Rules on standard and product quality shrimp product are getting stricter (EU, Japan and US).
4. Rise in tariff and non tariff measures (e.g. antidumping and countervailing measures) against shrimp imports.
5. Negative campaign to Indonesian shrimp products such as Allegations of shrimp "Re-Exports" as an impact from illegal transshipment.
6. Economic Slow down in United States will impact indirectly for Indonesian export particularly in shrimp product because United States is one of main export destination for Indonesian shrimp.

Beside the external factors, there are several internal factors that could be an obstacle to improve Indonesian shrimp exports:

1. High cost economy and poor trade facilitation which impact for high production cost and reduced competitiveness of export products. It is caused by abuse of authority in order to issued license or certificate and low port and customs efficiency.
2. Low of investment because uncertainty and less incentives for investment.
3. Low in enforcement of existing product and process standards, technical and other regulations. It impact for import ban from other countries.
4. Higher cost of shrimp feed compare than competing countries. The cost in Indonesia is between 15% and 40 % more than in Thailand and China respectively, mainly due to the higher import content of Indonesia shrimp feed.
5. Poor in quality domestic brood stock used by domestic hatcheries to produce fry. It will impact for productivity and quality of the output.

6. Shrimp capturing process is not hygienic and not environment friendly. Antibiotics and bacteria are still greater than the standard limit from shrimp farm.
7. Equipment for antibiotics and bacterial testing has not been operated. It related with technological development.
8. Poor Management and marketing practises. Poor feeding practises and discriminate use of antibiotics are good examples of how poor farm management practises impact the sector's competitiveness.

2.2 World's Shrimp Profile

2.2.1 World's Shrimp production

Based on the data from Globefish 2001 (see table 2.11 in appendix), the world shrimp production was increase sharply from 2,877 MT in the year of 1991 into 4,168 MT in the year of 2000. It showed the world shrimp production increase almost twice in particular years. Among the bigger shrimp producer, China gives big contribution for increasing of world shrimp production. China shrimp production increase more than twice from 564 MT in 1991 into 1241 MT in 2000. Furthermore, as the biggest shrimp producer in the world, it shares from the world production increase from 18% in 1991 into 26% in 2000. In contrary, Indonesia production show slowly increase compare with other big producer in the world. In 2000, Indonesia average share from world production is around 9,7%. Based on the data, in 2000, Indonesia was the 4th biggest shrimp producer in the world. Meanwhile, the 2nd and 3rd biggest producer takes by India and Thailand respectively. Moreover, Share of India and Thailand in the world production is around 10,5% and 9.7%.

However, if considering only production from aquaculture, Thailand is the largest producer with the figure reaching 280,000 tons in 2001. Indonesia was. Differ from other countries, which is high in shrimp catch from the marine, Indonesia dominated their yield on aquaculture production. The comparison between total shrimp production and shrimp aquaculture production in Indonesian shrimp production were show the light increasing from aquaculture production compare to total shrimp production (see table 2.12 in appendix).

2.2.2 World's Shrimp Trade

In worldwide market, export and import of shrimp products was dominated by frozen shrimp and prawn HS 030613 (97.99%). The main exporters of it products are India, Vietnam, Thailand, Indonesia and Ecuador not respectively. In the other side, the main importers of it products take by United States, Europe and Japan.

2.2.2.1 World Shrimp export

Based on the data from Trade map organization, the world total export value of Shrimp product is dominated by Frozen shrimps and prawns, whether in shell or not, incl. shrimps and prawns in shell, cooked by steaming or by boiling in water (HS 030613) and Shrimps and prawns, prepared or preserved (HS 160520). In 2001, the export value of HS 030613 were US$ 8,191,833,000 and increase slowly become US$ 8,582,796,000 in 2005. Meanwhile, the export value of HS 160520 increased rapidly from US$ 2,219,964,000 in 2001 into US$ 3,199,924,000 in 2005.

Moreover, the world export of HS 030613 had the biggest share from total of all shrimp products. In 2005, it share is around 96% from total shrimp products. Based on the table 2.16 in appendix, the world export volume of HS 030613 showed increase from 1,272,752 tons in 2001 into 1,425,547 in 2005.

According the export value ('000 US$) Viet Nam was the world major exporter of frozen Shrimp (HS 030613). The share of Vietnam is around 11.06% from the world export value of it product. Meanwhile, Indonesia is the 4th world major exporter of this category with average share for the last 5 years of about 9.74%; however Indonesia experienced the negative average growth rate in the last 5 year which resulted in the slightly decreased of Indonesian export value of Frozen Shrimp category in the last 5 year. The average growth rate for the world is estimated of about 1.37% in the 5 years.

Meanwhile, in term of Volume, during 2001-2005 the biggest exporter of shrimp and prawn frozen (HS 030613) was India with share of about 10.80%. However, in case of average growth rate, it experienced the negative -3.3%.On the other hand, Viet Nam was the 4th largest exporter of shrimp and prawn frozen (HS

030613), but it experienced the highest growth rate of about 11.47%. During the same period, Indonesia was the second largest producer of shrimp and prawn frozen (HS 030613) with share of about 8.46%[7].

2.2.2.2 World shrimp import

In term of value, the world total Import in 2005 was dominated by HS 030613 and HS 160520. The market share for HS 030613 slightly decreased from 80,61% in 2001 into 74,63% in 2005. Meanwhile, the share of HS 160520 from the total world import increased from 18.61% in 2001 into 23.80% in 2005 (see Table 2.17 in appendix).

In 2005, United States become the biggest importer for HS 030613 (shrimp and prawn frozen). It share is around 32.68% of the total value of world import. Meanwhile, in the same year, Japan was on the 2nd position with share around 23.02% and followed by France in the 3rd position with share of about 5.28% from the total of world value import. In generally, in 2001 into 2005, the world average growth rate of import showed declining.

In term of volume, the world market share is still dominated by HS 030613. In 2001, the world import of HS 030613 reaches 1,333,688 tons or 97% from the total of world shrimp import. In 2005, the world import of HS 030613 reaches 1,457,017 tons or 98 % from the total of world shrimp import. Nevertheless, the other HS number such as HS 030611, HS 030619, HS 030621, and HS 030622 experienced the declining in term of volume. In generally, the total volume of import of HS 0306 and HS 1605 showed increasing from 2001 to 2003, and slowly decreased in 2005.

In line with the value, United States still takes dominant position as the largest importer of HS 030613. In 2005, US import for HS 030613 is about 395,924 tons or 27.1% from the total volume of world import. From the 2001 into 2005, Japan import showed the declining. As the 2nd largest importer, in 2005, Japan share from the total world import is around 15,95%[8].

[7] See table 2.13, 2.14 and 2.15 in appendix
[8] See table 2.18, 2.19 and 2.20 in Appendix

2.3 Shrimp Policy and Regulation

2.3.1 Domestic shrimp policy and regulation

The regulation for shrimp and other fisheries products involves several related ministries such as Ministry of Marine Affairs and Fisheries, Ministry of Agriculture, Ministry of Trade, Ministry of Industries and others. Each ministry have responsible and task regarding their competence. Ministry of trade is responsible for regulate export and import of shrimp or other fisheries products. In term of export, based on *The Ministry of Trade and Industry Decree No. 558/MPP/kep/4/1998 jo The Ministry of Trade and Industry Decree No 01/M-DAG/PER/1/2007* about General Requirement on Export, Shrimp is categorized as commodity which is free to export. Therefore, every company and or individual could export it products as long as they have company license (*SIUP, NPWP and TDP*[9]). However, some destination countries such as United States and European Union require the approval number and health certificate for Indonesian exporter. Therefore, Ministry of Marine Affair and fisheries was appointed by European Union as competent authority in order to proposed approval number for Indonesia Company.

In the other side, the import regulation of shrimp product is stricter than export regulation. Since United States imposed antidumping measure for several shrimp exporting countries, Indonesia has become the target of illegal transshipment practice. The accuses countries such as China, Thailand and others export their products into Indonesia and re export their products into United States and European Union. Therefore, Minister of Trade and Minister of Marine Affair and Fisheries makes regulation *No. 25/M-DAG/PER/6/2006* and regulation *No. SKB.01/MEN/2006 regarding* " The import Prohibition of Shrimp Product into Indonesia". It regulation is aimed to protect illegal transshipment practice.

[9] Indonesia abbreviation for *Surat Ijin Usaha Perusahaan(SIUP), Nomor Pokok Wajib Pajak(NPWP) and Tanda Daftar Perusahaan(TDP)*

Table 2.21

Indonesian Regulation on Shrimp

Basic Government Policy	Policy Material
Law no 15 Year 2002	Quarantine of Animal, Fish and Plant
Ministry of Trade decree No 23/M-DAG/PER/6/2006	Fish Price standard
Ministry of Trade decree and ministry of marine affairsand fisheries decree no 05/m/kep/xii/2004 and no skb.53/men/2004	Temporary embargo for shrimp import to Indonesia
Ministry of Trade decree and ministry of marine affairsand fisheries decree no: 25/m-dag/per/6/2006 no: skb.01/men/2006	Temporary embargo prolongation for shrimp import to Indonesia
Ministry of Agriculture decree nomor : 815/kpts/ik.120/11/90	Fisheries trade license
Ministry of Agriculture decree nomor : 492/kpts/ik.120/7/96	Simplification of fisheries trade license
Ministry of Marine affairs and fisheries decree no. 60/kpts/ik.120/2/97	License for fisheries ships import
Ministry of Marine affairs and fisheries decree no kep.06/men/2002	Requirement and methods in examination of fisheries product quality which into Indonesia territory

Source: All sources (compiled)

2.3.2 European policy and regulation

2.3.2.1. Shrimp Regulation in European Union (EU)

EU is very concern about the standard and safety of the products. In term of fisheries products, regulation in EU requires that every fisheries exporter from other countries should have approval number. European commission would publish the Approval Number after the companies meet all requirements and regulations of HACCP. European commission appointed Ministry of Marine Affairs and Fisheries (DKP) as a Competent Authority in Indonesia. The competent authority is responsible to proposed approval number and monitors the entire fisheries exporters which already have the Approval Number.

European government determine role and regulation for frozen shrimp. Other regulations resemble to fishery regulation. In Principle, those regulations established by EU to protect consumer health and protection toward environment.

Table 2.22

European Union (EU) Regulation in Fisheries Policy

Basic European Union Policy	Policy Material
Council Declaration of 30 May 1980	The Common Fisheries Policy
Council Directive 92/59/EEC of 29 June 1992	General Product Safety (Rapid Alert System for Foodstuffs)
Commission Decision No. 2001/705/EC of 27 September 2001	Concerning certain protective measures with regard to certain fishery and aqua-culture products intended for human consumption and originating in Indonesia (notified under document number C(2001) 2935)
Council Regulation (EC) No 2578/2000of 17 November 2000	Amending Regulation (EC) No 2406/96 laying down common marketing standards for certain fishery products
Council Regulation (EC) No 1298/2000 of 8 June 2000	Amending for the fifth time Regulation (EC) No 850/98for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms.

Source: Mission of Indonesia to the European Communities 2007

The European Commission concerns on labeling and packaging for fisheries products. There are several regulations in the EU. There are labeling regulation and GMO Labeling regulation.

Table 2.23

European Union (EU) Regulation in Labelling

BASIC EU POLICY	POLICY MATERIAL
a. Labelling	
Council Directive 90/496/EEC of 24 September 1990	nutrition labeling for foodstuffs
Directive 2000/13/EC of the European parliament and of the Council of 20 March 2000	approximation of the laws of the member States relating to the labeling, presentation and advertising of foodstuffs
Commission Directive 94/54/EC of 18 November 1994	concerning the compulsory indication on the labeling of certain foodstuffs of particulars other those provided for in Council Directive 79/112/EEC
Council Directive 96/21/EC of 29 March 1996	amending Commission Directives 94/54/EC concerning the compulsory indication on the labeling of certain foodstuffs of particulars other than those provided for in Directive 79/112/EEC
Commission Directive 1999/10/EC of 8 March 1999	providing for derogation's from the provisions of article 7 of Council Directive 79/112 as regards the labeling foodstuffs

BASIC EU POLICY	POLICY MATERIAL
Council Regulation (EEC) No 2081/92 of 14 July 1992	the protection of geographical indications and designations of origin for agricultural products and foodstuffs
Council Regulation (EC) No 535/97 of 17 March 1997	amending Regulation (EEC) No 2081/92 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs
Commission Regulation (EEC) No 2037 of 27 July 1993	laying down detailed rules of application of Council Regulation (EEC) no 2081/92 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs
Commission Regulation (EC) No 1107/96 of 12 June 1996	on the registration of geographical indications and designations of origin under the procedure laid down in article 17 of Council Regulation (EEC) No 2081/9
Commission Regulation (EC) No 123/97 of 23 January 1997	supplementing the Annex to Commission Regulation (EC) No 1107/96 on the registration of geographical indications and designations of origin under the procedure laid down in Article 17 of Regulation (EEC) No 2081/92
Council Regulation (EEC) No 2081/92 of 14 July 1992	on certificates of specific character for agricultural products and foodstuffs
Commission Regulation (EEC) No 1848/93 of 9 July 1993	laying down detailed rules for the application of Council Regulation (EEC) No 2082/92 on certificates of specific character for agricultural products and foodstuffs
Commission Regulation (EC) No 2515/94 of 9 September 1994	amending Regulation (EEC) NO 1848/93 laying down detailed rules for the application of Council Regulation (EEC) No 2082/92 on certificates of specific character for agricultural products and foodstuffs.
b. GMO Labelling	
Commission Regulation (EC) No 50/2000 of 10 January 2000	on the labelling of foodstuffs and food ingredients containing additives and flavorings that have been genetically modified or have been produced from genetically modified organisms.
Council Regulation (EC) No 1139/98 of 26 May 1998	compulsory indication of the labelling of certain foodstuffs produced from genetically modified organisms of particulars other than those provided for in Directive 79/112/EEC

Source: Mission of Indonesia to the European Communities 2007

2.3.2.2 Food Safety Regulation

2.3.2.2.1. Regulation (EC) no. 178 Year 2002

The European commission made a various regulations to regulate the requirement of standards and procedure for food and feed product. One of the regulations is Regulation (EC) no.178 year 2002 laying down the general

principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

The general objective of regulation (EC) 178/2002 is to provide high level of protection of human health and consumer interest and also harmonize the food laws of the EU members. It means every EU member countries should implement the uniform food law regarding the regulation. The articles of this regulation consist of food safety requirements, food labeling & presentation, recall & traceability, emergency measures, crisis management and Rapid Alert System for Food and Feed (RASFF). In general, the regulation consists of the food safety requirement, the establishment of European Food Safety Authority (EFSA) and the procedures relating to food safety through RASFF.

The regulation requires the general obligation in the food trade and general requirement of food law The regulation imposed general requirement of food law; therefore, the regulation become the legal base for other regulation such as regulation 853 year 2004 regarding food of animal origin, regulation 852 year 2004 regarding the hygiene on food and other regulation regarding the food safety requirement. Moreover, the requirements of food safety also require the traceability of the products which is imported into EU. The traceability means the ability to trace and follow a food and feed, food –producing animal or substance intended to be or expected to be incorporated into a food or feed, through all stages of production, processing and distribution.

The regulation is also mandates for the establishing of The European Food Safety Authority (EFSA). The European Food Safety Authority (EFSA) enhances the current scientific and technical support system. The EFSA will provide scientific advice and technical support in all areas impacting on food safety. Its main task is to provide assistance and independent scientific advice, and to create a network geared to close cooperation with similar bodies in the Member States. It assesses risks relating to the food chain and informs the general public accordingly.

From the procedures relating to food safety, the RASFF comes as integrated approach to food safety by providing a system for the swift exchange of information between member States and the coordination of response actions to

food safety threats. Article 50 of regulation 178/2002 establishes the rapid alert system for food and feed as a network involving the Member States, the Commission and the European Food Safety Authority (EFSA). 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[10]. The RASFF notification could be used for taking commission decision in protective import from other countries. It means if the product of one country notified by RASFF, the commission will take the protective measure for it product from it country.

There are three notifications information on RASFF.

1. News Notification

Any type of information related to the safety of food or feed which has not been communicated by a Member State as an "alert" or an "information" notification, but which is judged interesting for the food/feed control authorities in the Member States, is classified and made available as a news notification.

2. Information Notification

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 rapid 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 EU.

3. Alert Notification

Alert notifications are sent when the food or feed presenting the risk is on the market and when rapid 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. The notification aims at giving all the members of the network the information to verify whether the concerned product is on their market, so that they also can take the necessary measures.

[10] See figure 2.9 on appendix for RASFF mechanism

CHAPTER 3
EXPORT DEMAND AND TRADE BARRIER THEORY

3.1 Demand theory

Trade is happen when consumer and producer meet and doing transaction in the market. Moreover, trade is meeting of the demand and the supply. Demand means the willingness and ability of buyers to purchase different quantities of a good at different prices during a specific time period (Mankiw 2004). The amount of the demand of goods called quantity demanded. The demand of goods influenced by price of it good, price of related good, income, taste, population, expectation, income distribution and promotion. Mathematically, demand function could be determined as:

$$Dx = f(Px, Py, Y/cap, Tas, Pop\ Pp, Ydist, Prom)$$
$$+ \quad +/- \quad + \quad + \quad + \quad + \quad + \quad +$$

Where:
- Dx = Demand for good x
- Px = Price X
- Py = Price Y (Substitution or complementary goods)
- Y/cap = Income / capita
- Tas = Taste
- Pop = Population
- Pp = Expected price x next period
- Ydist = Income distribution
- Prom = promotion

3.2 The Export Determinant

Theoretically, export is influenced by demand and supply. The previous empirical studies, determined export from the demand or supply side even both of demand and supply side. The quantities of exports that are supplied and demanded are influenced by a variety of factors. In the demand side, export is influenced by foreign demand (market size, foreign income, population, preference, world export price, exchange rate) trade barriers (tariffs, quotas, regulatory constraints)

and competitiveness (input cost, productivity, exchange rate, transport cost). According Blanchard (2006), exports are the part of foreign demand that falls on domestic goods. It depends on foreign income and real exchange rate. Higher foreign incomes mean higher foreign demand for all goods, both foreign and domestic; therefore, higher foreign income leads to higher export. In the other side, the higher the price of domestic goods in terms of foreign goods, the lower foreign demand for domestic goods. In other words, the higher the real exchange rate, the lower export.

3.2.1 Gross Domestic Product

There are three approaches to define the Gross Domestic Products (GDP)[11]. Firstly, GDP is the value of final goods and services produced in the economy during a given period. Secondly, GDP is the sum of value added in the economy during a given period. Thirdly, GDP is the sum of incomes in economy during a given period. The value of GDP is divided into nominal and real GDP. Nominal GDP is the sum of the quantities of final goods produced times their current price. While, real GDP is constructed as the sum of the quantities of final goods times constant prices.

From the income side, GDP is the sum of incomes in the economy during a given period. Income is become one of determinant of export. The increasing income will lead to increasing of the demand for all goods both foreign and domestic. Moreover, GDP represent the market size of the country. The larger market size, the larger opportunities to export into those countries; therefore, the GDP is influence positive for the export.

3.2.2 Exchange Rate

The exchange rate is the price of foreign currency (Dornbusch, 2004). There are two kinds of exchange rate that are nominal exchange rate and real exchange rate. Nominal exchange rate is as the price of the foreign currency in terms of domestic currency, while the definition of real exchange rate is the price of domestic goods relative to foreign goods. The real exchange rate equals the

[11] Blanchard, "*Macroeconomics*" fourth edition, Pearson international, 2006

nominal exchange rate times the foreign price level, divided by the domestic price level. The increasing or decreasing the exchange rate called appreciation and depreciation. The appreciation of the domestic currency is an increase in the price of the domestic currency in terms of the foreign currency, which corresponds to a decrease in the exchange rate. In the other side, the depreciation of the domestic currency is a decrease in the price of the domestic currency in terms of the foreign currency, or an increase in the exchange rate.

The exchange rate has heavy relation on trade among countries and financial flow among countries. The exchange rate influences export in the both of supply and demand side. On the demand side exchange rate measure the foreign demand and competitiveness of the product. The appreciation and depreciation of exchange rate lead to increasing or decreasing of the export. The depreciation of domestic currency will affect for the increasing of export because the depreciation make the price of domestic goods will made as if the product from exporting country become cheaper and it will give importing country a possibility to purchase more and leads to the increase of exports.

3.2.3 Relative price

Some previous studies put the relative price as one of factors which influence the export. In a few previous studies, the relative price is counted by divide the price with the consumer price index (CPI) or Wholesaler Price Index (WPI). In the other side, some researcher put the real exchange rate as a proxy of relative price.

The relative price has the negative relation with the export demand. A higher price would make the product become less competitive. Moreover, the demand of the product will be decrease. Therefore, the higher price of the exporting products will lead to the decreasing of export.

3.3 Trade Barrier

International trade is in principle not different from domestic trade as the motivation and the behavior of parties involved in a trade does not change fundamentally depending on whether trade is across a border or not. The main

difference is that international trade is typically more costly than domestic trade. The reason is that a border typically imposes additional costs such as tariffs and non tariff barriers (NTBs). Except export subsidies and quotas, NTBs have become more prominent relative to tariffs.

3.3.1 Tariff

Historically, tariffs have been the principal means of protecting domestic producers from international competition. Tariff is kind of tax which is imposed for cross border trade in goods/commodity. From the origin of commodity, there are two kinds of tariff – Import tariff and export tariff. Based on counted mechanism, tariff is classify into – advalorem tariff which is imposed based on percentage of import and specific tariff which is imposed based on fixed value of import goods.

In the fisheries trade, tariff was being imposed as a barrier by some countries. The negotiations which are facilitated by the GATT[12] succeeded in reducing average tariffs for fish by 25 percent. After the Uruguay Round, the average tariff on fish produce was 4.5 percent for developed countries and below 20 percent for developing countries[13]. These initial reductions, however, were balanced by pervasive tariff peaks and tariff escalation that are predominantly applied to processed or value-added fish products in key import markets.

FAO-Globefish (2000) found that such import duties continue to hinder processing and economic development of the fishery industries in many developing countries. Countervailing duties and the proliferation of non-tariff barriers have similar effects as they often constitute demand-side constraints which limit market access. Supply-side constraints act similarly and involve institutional constraints.

3.3.2 Non- tariff barriers

Since tariff as a mean of protection has not much on importance, non tariff barrier gain more on importance for developed countries. Experience has shown

[12] GATT (General Agreement on tariff and trade) is the prior of WTO (World Trade Organization)
[13] Mahfuz Ahmad "Market Access and Trade liberalization in Fisheries" International centre for Trade and sustainable Development, 2006

that as tariffs have been reduced, the importance of NTBs has grown (OECD, 2005)[14].The definition used for non tariff barriers is any governmental device or practice other than a tariff which directly impedes the entry of imports, or exit of exports, and which discriminates against imports or exports; that is, which does not apply with equal force on domestic production or distribution[15]. Thornsbury et al. (1999) endorse this concept. Their definition includes standards of identity, measure, and quality, SPS measures, and packaging measures. Roberts (1998) and Thornbury (1998) have classified regulations by policy instrument, by scope of the barrier, by regulatory goal, by legal discipline, by type of market restriction, by product category, and by geographical region. Such a classification helps to identify differences in food safety and quality standards among counties that could have protectionist tendencies[16].

3.3.2.1 A classification of NTBs (Non Tariff Barrier)

Deardorff and Stern (1998) suggest the following taxonomy with five categories. A first broad category covers quantitative NTBs and similar restrictions. It includes import quotas and their administration methods (licensing, auctions, and other); export limitations and bans; voluntary export restraints, a limit on imports but managed by exporters; foreign exchange controls often based on licensing; prohibitions such as embargos; domestic content and mixing requirements forcing the use of local components in a final product; discriminatory preferential trading agreements and rules of origin; and counter trade, such as barter and payments in kind.

A second category covers fees other than tariffs and associated policies affecting imports. This category includes variable levies triggered once prices reach a threshold or target level; advanced deposit requirements on imports, anti-dumping and countervailing duties imposed on landing goods allegedly exported "below cost" or with the help of export subsidies provided by foreign

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[14] OECD-Organisation for Economic Co-operation and Development. 2005. *Analysis of Non-tariff Barriers of Concernto Developing Countries*. Paris, France: OECD Working Party of the Trade Committee. Trade Policy Working Paper No. 16, TD/TC/WP(2004)47/FINAL, 7 November.
[15] Jimmye S. Hilman "Nontariff Barriers : Major problem in Agricultural Trade"
[16] John C Begin, Jean C Bureau "Quantification of Sanitary, Phytosanitary and Technical Barriers to Trade for Trade Policy Analysis" working paper 2001

governments; and border tax adjustment such as value-added taxes potentially imposed asymmetrically on imported and domestic competing goods.

A third category is extensive. It collects various forms of government policies, including a wide set of macro-economic policies. This category covers direct governmental participation and restrictive practices in trade, such as state-trading and state-sponsored monopoly and monopsony; government procurement polices with domestic preferences; and industrial policy favoring domestic firms with associated subsidies and aids. In addition, the category extends to macro-economic and foreign exchange policies; competition policies; foreign direct investment policies; national taxation and social security policies; and immigration policies. Where to draw on the NTB definition is context-dependent.

Two better-targeted categories deal with customs procedure and administrative practices, and technical barriers to trade, which are central to NTBs. The former covers custom valuation methods that may depart from the actual import valuation; customs classification procedures other than the international harmonized system of classification to levy further fees; and customs clearance procedures, such as inspections and documentation creating trading cost. Technical barriers to trade (TBT) relate to health, sanitary, animal welfare, and environmental regulations; quality standards; safety and industrial standards; packaging and labeling regulations and other media/advertising regulations.

Non tariff barriers include several types of policies or practices that interfere with or distort trade: (a) measures that restrict imports; (b) measures that provide assistance to domestic production in order to substitute for imports and which, in effect, promote exports; and (c) measures that provide direct assistance to exporters.

The Non Tariff Barriers appear in various forms[17]. The following is kind of it:

a. Quantitative restrictions or quota

   Protection is not eliminated, because countries can substitute the same level of protection with tariffs. The reason is because quantitative barriers are bilateral and hence not transparent, while tariffs apply to all countries

[17] Lepi Tarmidi "Barriers to Trade" University of Indonesia 2007

without discrimination and are hence transparent and can be negotiated downwards during the subsequent rounds of trade negotiation in WTO.

b. Health and safety requirement

It is the supreme right of every country to have health standards to protect their citizens. Again, quite often the standards set by developed countries are very high so that they cannot be fulfilled by most developing countries. There are many examples: (1) *eternit* board used for ceilings in Indonesia is prohibited in developed countries, (2) shrimps may not content *salmonella* bacteria that exceeds a certain limit; (3) in July 2006 the EU also threatened to put an embargo on fish exports from Indonesia, because the fish contains heavy metal and dangerous chemicals, and out of 24 laboratories which issue health certificates, 15 are not according to international standards. As of July 2006 only 12 laboratories are not allowed to issue health certificates. (*Kompas*, 29 June 2006).

c. Administrative red tape (Krugman & Obstfeld, p 194)

In international trade certain documents are needed like letter of credit, health certificate, industrial standard, etc. However, administrative requirements could be made excessive by intention with the objective of obstructing imports.

d. Technical barrier in Industry standard

Countries have industrial standards; however, developed countries have in general higher industrial standards that it might obstruct import from developing countries. To prevent industrial standards to becoming trade barriers, the WTO has adopted the Agreement on Technical Barriers to Trade.

e. Voluntary Export Restriction

In this concept, importing countries enforce other countries to reduce their export "voluntarily". The reason is the importing products will harm domestic products and domestic economy.

f. Export Tax in Developing countries

The goal is to prevent or to limit exports of certain products. Examples from Indonesia are logs and rattan, and CPO (crude palm oil). For many

years Indonesia has an oligopolistic position in the world market for logs and raw rattan. By exporting processed wood and final wood and rattan products, Indonesia can gain value added. In case of CPO, Indonesia needs the CPO for producing cooking oil for the domestic market. Another goal of imposing an export tax is because the government wants to share the big profits of exporters in case there are windfall profits.

g. Local Content requirements (Krugman & Obstfeld, p 193-4)

The goal is to promote industrialization and to increase value added in developing countries.

h. Commercial names (by Tarmidi)

For the example was the import of scallops from Canada and Chile. The French name is "*coquilles St. Jacques*". Canada and Chile must use the name "*petoncle*", which is of lower quality. And though they also won their case in court, but they lost the market. The French argued that their action was meant to protect French consumers, because they are used to eat the "*coquilles St. Jacques*", and also to protect French culture and language, which are already ages old.

3.3.2.2 Non tariff Barriers of International Fish / Shrimp Trade

Major importing regions and countries have set stringent standards and regulations to cover trade in endangered species, labelling of origin, traceability, chain of custody, and zero tolerance for certain veterinary drug residues. Certain importers, such as the EU, are increasing the number of notifications of standards and technical regulations to the WTO. The dominant cause in the past has been microbial, but chemical risks, such as heavy metal contamination and residues of veterinary medicinal products, are becoming increasingly important in the EU and Japan. In 2002, 65 percent of the border cases for fish products with the EU were due to chemical causes, 31 percent due to microbial, and 4 percent from other causes, predominately problems with certificates. Among the various product categories, shrimp garnered the highest number of notifications, followed by finfish (Ababouch et al., 2005).

NTBs can hinder developing countries' access to export markets, making it difficult for them to take advantage of the opportunities for economic development offered by trade. Predictability of market access is vital to developing country export interests. Many developed countries also have an interest in helping smooth trade, as they are increasingly reliant on imports. As a result, both parties want to have transparent rules that facilitate trade and bridge the capacity gaps that exist.

3.3.2.2.1 Sanitary and Phitosanitary Standards (SPS)

Sanitary and phytosanitary measures cover food safety and animal and plant health measures and involve inspection, examination and certification procedures. The application and measurement criteria for SPS standards vary across major importing countries and regions.

In the fisheries area, the SPS standards usually related to the wild catch and aquaculture fishing. SPS issues associated with wild-caught fish usually revolve around storage and processing. For example, between 1997 and 1998, the EU imposed bans on seafood imports from India, Bangladesh, Kenya, Madagascar, Mozambique, Tanzania, and Uganda, citing food safety concerns in processing or contamination prior to catch (Filhol, 2000). In the other side, SPS issues associated with aquaculture include traces of chemicals such as antibiotics and fungicides that remain in the fish or shrimp, and disease outbreaks among farmed animals. In 2001, the EU decided to examine all shrimp products imported from China, Indonesia, Thailand, Vietnam and others because residual antibiotics were discovered in some products.

3.3.2.2.2 Technical Barrier to Trade

NTBs can also take the form of technical regulations, quality and composition standards, labelling, and source and origin information requirements (referred to as technical barriers to trade – TBT).

a) Certification and Labelling

The goal of eco-labelling programs is often to create market-based incentives for better management of fisheries, by creating consumer

demand for seafood products from well-managed stocks or from sustainable aquaculture. Certification schemes can either provide accreditation and allow the use of labels, or establish recommendations on best practices or codes of practice. Initially, such schemes concentrated on one area, such as 'dolphin-friendly' labels, which ensured that tuna are caught in a manner that does not harm dolphins. Their scope has subsequently become more ambitious and now covers several aspects of sustainability, production methods and traceability. There is a proliferation of schemes currently in existence with distinct (and not always transparent) criteria and assessment methods (Leadbitter, 2004)[18].

b) Traceability

Traceability (or 'product tracing') relates to the origin of materials and parts, the processing history, and the distribution and location of the product after delivery (ISO, 2000). The Codex Committee on General Principles (CCGP) refers to it as "the ability to follow the movement of a food through specified stage(s) of production and processing and distribution" (Codex Alimentarius Commission, 2004). It can be utilized in the food chain with safety (risk management), quality, bio-security or business management objectives (FAO-GlobeFish, 2004), as outlined below.

1) Safety:

Safety concerns imply that unsafe products can be withdrawn and that post market safety aspects can be distinguished. Regulatory traceability could be considered to be an SPS measure because it is not a stand-alone measure, but can be applied in the context of safety agreements.

2) Quality:

Quality aspects can be used to avoid consumer deception on quality, e.g. nutritive or medical claims and fair practices. From this perspective and

[18] Leadbitter, D. 2004. "Seafood Trade and Market Access: Threats and Opportunities." in A.G. Brown (ed.). *Fish,Aquaculture and Food Security. Sustaining Fish as a Food Supply.* Gippsland Aquaculture Industry Network, Canberra, Australia. Available online at http://www.crawfordfund.org/awareness/fish_aqua_food.pdf. Accessed on 16 July 2005.

for specific regulatory attributes, traceability may be considered a TBT measure.

3) Bio-security:

Food and fish traceability is required under the US Bioterrorism Act. Current fish and food inspection services in many countries may not have the competence to legally cover additional security aspects, such as police and military implications.

4) Business management:

Business management can be associated with traceability to maintain quality, build business partnerships, optimizes market, production and distribution, or integrate the industry horizontally and vertically. However, there are a number of practical issues associated with traceability, specifically with wild-caught fish since they are migratory and cannot be tagged.

c) Country of Origin Labeling (COOL)

The COOL rule stipulates that the label must contain information such as whether the product is "farmed," "cultivated" or "caught in the wild," the country where it was processed and the commercial name of the seafood species. This will have effects similar to those of labeling and traceability requirements discussed above. The COOL Law does not apply to processed seafood. However, very little is known about the exact costs of COOL and what it will take to comply with a mandatory program (Grier et al., 2002).

3.3.2.2.3 Antidumping Measures

Dumping is defined in the WTO Anti-Dumping Agreement as the exporting of produce at less than production cost to the material detriment of competitor industries in the importing country. Under the Anti-Dumping Agreement, WTO Members can impose anti-dumping measures (ADMs) on other Members after an investigation is carried out, if it is determined that: (i) dumping is occurring; (ii) the domestic industry producing the 'like' product in the importing country is suffering material injury; and (iii) there is a causal link

between the two. The Anti-Dumping Agreement also includes detailed procedural rules for initiating and conducting investigations and imposing ADMs.

3.3.2.2.4 Food Safety Requirement

Food safety requirements / regulations can be defined as any mandatory control of certain quality attributes of a final product based on the potential effects on human health arising from food handing, preparation, or consumption. As such these regulations may impact the microbial pathogen, physical contamination, heavy metal, pesticide residue, food additive, naturally occurring toxin, and veterinary residue contents of consumer-orientated foods (Hooker, 1997). Such controls can be implemented via input, process, or product performance standards, or information, conditions of sale, service, or use requirements.

Recent trade agreements attempt to control the degree to which specific food safety regulations interfere with free trade and thereby act as non-tariff trade barriers (NTB). For example, the GATT SPS Agreement promotes the wider adoption of scientific standards promulgated by three key international bodies: the Codex Alimentarius Commission (Codex), the International Plant Protection Convention (IPPC) and its regional affiliates (e.g. the North American Plant Protection Organization), and the International Office of Epizootics (OIE). Codex is responsible for food safety issues, the IPPC for plant health (phytosanitary), and OIE for animal health and disease (zoonoses) concerns.

The existence of trade barriers both tariff and non tariff barrier will reduce the possibility of product specialization because the inefficient countries will try to compete with the more efficient countries by securing the domestic market. Therefore it is very important to ensure the existence of technical barriers to trade is really to guarantee the safety of the domestic consumers rather than to protect the market.

3.4 Previous Empirical Research

3.4.1 Previous Research of Export determinant factor

3.4.1.1 Goldstein and Khan (1978)

One of previous study which is often used as reference is model from Goldstein and Khan (1978). Goldstein and kahn make the research for eight industrial countries such as Belgium, France, Germany, Italy, Japan, Netherlands, England and United States during 1955-1970.This study is used to analyze correlation between export and price. The models which are constructed by Goldstein and Kahn consist of equilibrium and disequilibrium model of supply and demand.

The functions of supply and demand in equilibrium and disequilibrium model are

a. Model Equilibrium

$$\log X_t^d = a_0 + a_1 \log(PX / PXW)_t + a_2 \log YW_t \quad \text{.....(3.1)}$$

$$\log X_t^s = \beta_0 + \beta_1 \log(PX / P)_t + \beta_2 Y_t^* \quad \text{.....(3.2)}$$

$$\log PX_t = b_0 + b_1 \log X_t^s + b_2 \log Y_t^* + b_3 \log P_t \quad \text{.....(3.3)}$$

Expected: $\alpha_1 < 0,\ \alpha_2 > 0,\ b_1 > 0,\ b_2 < 0,\ b_3 > 0$

b. Disequilibrium Model

$$\log X_t^d = c_0 + c_1 \log(PX / PXW)_t + c_2 \log YW_t + c_3 \log X_{t-1} \quad \text{.....(3.4)}$$

$$\log PX_t = d_0 + d_1 \log X_t^s + d_2 \log P_t + d_3 \log Y_t^* + d_4 \log PX_{t-1} \quad \text{.(3.5)}$$

Expected: $c_1 < 0,\ c_2 > 0,\ c_3 > 0,\ d_1 > 0,\ d_2 > 0,\ d_3 < 0,\ d_4 > 0$

Where:

X_t^d	:	The Quantity of Export Demand
X_t^s	:	The Quantity of Export Supply
PX_t	:	The Export Price
PXW_t	:	The Average of Export Price in Partner Country
YW_t	:	The Average of Real Income in Partner Country
P_t	:	The Price Index of Domestic
Y^*	:	The Production Capacity Index of Domestic

Estimation method which used in this model is Linear FIML (Full Information Maximum Likelihood) unless for Japan which used TSLS Model (Two Stage Least Square).

The results of their analysis are, in the equilibrium model, price of commodity variable have significance effect for quantity of export demand positively. Moreover, the elasticity of price is more than one. Therefore, the increasing of price will affect of decreasing of quantity of export. It also indicates the role of relative price to determine the demand export. Meanwhile, Real income variable and domestic price also show significant effect for export demand. In the other side, in the disequilibrium model, price of commodity variable have significance effect for quantity of export demand negatively. However, Real income variable have significance effect for quantity of export demand positively. It means the increasing of real income will affect the increasing of quantity of export.

3.4.1.2 Christian Moran (1988)

Christian Moran has make the research of The Export of Manufacture Industry Output in the Fifteen Developing Countries that were Argentine, Brazil, Chili, Cote d' Ivore, India, Indonesia, South Korea, Mexico, Peru, Portugal, Senegal, Thailand, Turkey and Yugoslavia from 1965 until 1983. The models of his research are

$$\log X_t^s = \alpha_0 + \alpha_1 \log(PX/PT)_t + \alpha_2 \log(PH/PT)_t + \alpha_3 \log Y_t^* + v_{1t} \quad \text{.....(3.6)}$$

$$\log X_t^d = \beta_0 + \beta_1 \log(PX/PX^W)_t + \beta_2 \log Y_t^W + v_{2t} \quad \text{.....(3.7)}$$

Expected: $\alpha_1 > 0$, $\alpha_2 < 0$, $\alpha_3 > 0$, $\beta_1 < 0$, $\beta_2 > 0$

Where:

X_t^s : The Export Supply of Manufacture Industry

X_t^d : The Export Demand of Manufacture Industry

PX : The Export Price Index of Manufacture Industry

PT : The Domestic Price of Tradable Goods

PH : The Price of Non-Tradable Goods

Y^* : The Domestic Production Capacity Index

PX^W : The World Price Index of Manufacture Industry

Y^W : The World Demand Index on Export Goods

The result of regression on supply function has reflected that price variable in short term or long term is not significant, however, all parameter have expectation sign. This insignificant is probably caused by imperfect of implying export data. Domestic production capacity was sharply affected export supply of manufacture industry. Proxy of domestic production capacity is trend of time that pervaded indirectly other factors.

In demand function, all parameter are affected significantly and meet expectation sign. Therefore, the result of analysis showed that relative price and world economy activities have influenced export demand.

3.4.1.3 Bela Balassa (1989)

Bela Balassa (1989) has make the research of *"The Determinant of Export Supply and Export Demand in Two Developing Countries: Greece and Korea"*, period 1960 – 1988. She estimated certain variables which influence the export of Greece and korea. Object of the study is total of export and export of manufacture industry product (SITC 5 to 9-68). The models of the research are

$$X_s = f(P_x, P_d, P_m, P_n, RER, S, Y) \quad \text{.....(3.8)}$$

$$LogX_s = a_1 \log P_X + a_2 \log P_d + a_3 \log P_m + a_4 \log P_n + a_5 \log RER + a_6 \log S + a_7 \log Y + e$$

$$X_d = f(Y_w, P_x, P_c) \quad \text{.....(3.10)}$$

$$LogX_d = b_0 + b_1 \log Y_w + b_2 \log P_x + b_3 \log P_c + ui \quad \text{.....(3.11)}$$

Where:

X_s : The Export Supply

X_d : The Export Demand

P_x : The Export Price

P_d : The Domestic Price

P_n : The Price of Non Tradable Goods

P_m : The Price of Import Substitute Goods

S : The Export Subsidy

Y : The Domestic Capacity

Y_w : The World Income

P_c : The Export Price of Competitor

RER : The Real Exchange Rate

a_i, b_i : The Elasticity Coefficient

e_i, u_i : Error Term

Function of export demand and supply is estimated in a simultaneous model within Two Stage Least Square (TSLS) Method. In this research, Balassa put the price of competitor as one of variable. The competitors are Spain, Portugal, France, Turkey and Israel. Balassa choose those countries as competitor due to that countries have the similar product and the similar destination. The finding of the research showed the price of competitor has influence negatively for the demand of korea's export.

3.4.1.4 Khumar and Dhawan (1991)

Khumar and Dhawan (1991) have made the research about the impacts of exchange rate fluctuation for Pakistan trade into United Kingdom, West Germany, Japan and Unites States period 1974 to 1985. The model of they research is

$$X_i(t) = \alpha_{i0} + \alpha_{i1} Y_i(t) + \alpha_{i2}[(PX_i(t)/PD_i(t)] + \alpha_{i3} E_i(t) + \alpha_{i4} R_i(t) + \mu_{it}(t) \ldots (3.12)$$

Where:

$X_i(t)$: The Volume of Export into Trade Partner Countries

$Y_i(t)$: The Real Income of Trade Partner Countries

$PX_i(t)$: The Export Price

$PD_i(t)$: The Domestic Price in Trade Partner Countries

$E_i(t)$: The Nominal Exchange Rate (Between Exporter Currency and Importer Currency)

$R_i(t)$: The Risk of Exchange Rate

$\mu(t)$: The Error Term

In this research, the estimation was done separately for each trade partner country, to find out the effect of exchange rate fluctuation and the other determinant export on the export demand to each trade partner countries. The results of they research are

a. Model specification is implied in log linear that is given the better result rather than linear model;
b. The fluctuation of bilateral exchange rate is influenced the export volume of Pakistan to its trade partner countries significantly except pakistan's export into United Kingdom;
c. The Fluctuation of real exchange rate was more affected sharply rather than nominal exchange rate.

3.4.1.5 Luis Catao and Elisabet Falcetti (1999)

Luis Catao and Elisabet Falcetti have made the research on Argentine Export to Brazil in period time from 1980 until 1997. In demand and supply model, they used many kinds of variable from their previous research. For instance they put Unit Labor Cost (ULC) and volatility of exchange rate into their research. The model of they research are

$$X_t^d = \gamma_0 - \gamma_1\left(1+t^*\right)PX_t^*/P_t^* + \gamma_3 Y_t^* + \mu_t \quad \text{.....(3.15)}$$

$$X_t^s = \rho_0 + \rho_1 PX_t^* - \rho_2 ULC_t + \rho_3 k_t - \rho_4 \sigma_{RERt} + v_t \quad \text{.....(3.16)}$$

Where:

X_t^d : The Quantity of Export Demand

X_t^s : The Quantity of Export Supply

PX_t : The Export Price of Argentine's

P_t : The World Export Price Index

Y^* : The Real Income of Trade Partner Countries

ULC_t : The Labor Cost per Unit

k : The Aggregate of Net Capital Stock

σ_{RERt} : The Volatility of Real Exchange Rate

In addition, Catao and Falcetti implied Vector Error Correction Model in short term, as follow:

$$\Delta X_t = \mu + \Phi_t + \Pi X_{t-1} + \Gamma \Delta X_{t-1} + \sum_{2}^{n} T_n \Delta X_{t-n} + w_t \quad \text{.....(3.17)}$$

Where:

X_t : Vector Which Consisted of All Variable I(1) Within The Model

μ : Constant Vector

Φ : Vector of Exogenous Variable I(0)

w : Vector Which Depend on Contemporary

The result of this research has presented that all coefficient sign were acceptable to theory for short term or long term except the variable of volatility which show insignificantly.

3.4.1.6 Septo Soepriyanto (2007)

Septo made the research of Competitiveness analysis and determinant factor for Indonesia shrimp export into United States period 1998-2006. The model of his research is.

$$LnX_t = b_0 + b_1 \ln Yt + b_2 \ln PX / Pw_t + b_3 \ln ER_t + b4Dummy + e \quad \text{.....(3.18)}$$

Where;

X = Volume Export

Y = GDP real of destination country

PX = Price export

PXW = Consumer Price Index of destination country

ER = Nominal Exchange Rate

Dummy = Implementation form DS 2031
(0= before implementation, 1= after implementation)

Septo put the dummy implementation form DS 2031 as the a proxy of United States regulation which require the issued of it form for Indonesia shrimp products which is export into United States. The result of his research showed that in the short term, every variable influence significant for Indonesia export into United States except relative price and dummy regulation variable. However, in the long term all variables influence significant for Indonesia export except the exchange rate variable.

3.4.2 Previous Research of Implementation of Standard

3.4.2.1 Henson and Mitullah (2000)

Henson and Mitullah make the research about food safety requirement and food export from developing countries. In this case they studied about fish export from Kenya to the European Union. They paper explored the impact of hygiene requirements on fish exports from Kenya to the EU as an illustration of the impact that food safety measures in developed countries can have on export oriented supply chains in developed countries. It demonstrates how the economic effects of restrictions on exports, which might relate to quite genuine food safety concerns, can be considerable and are manifest at both the macro- and microeconomic levels. These effects are most pronounced in export oriented sectors that are highly dependent on particular developed country markets and for which the potential for trade diversion is limited.

In the case of fish exports from Kenya to the EU, a supply chain that is highly reliant on the EU market for fresh fillets. The economic impact of prolonged prohibitions on exports has been significant. At the macroeconomic level, fish exports declined, with consequent reductions in foreign exchange earnings. At the microeconomic level, industrial fish processing companies closed and reduced capacity and employment in the sector declined. Furthermore, the

livelihoods of fisherfolk and others in local fishing communities, who have limited access to alternative economic activities, in part as a result of the progressive export-orientation of the sector, have suffered as market prices for fish have declined.

3.4.2.2 Jafee and Henson (2004)

Jaffee and Henson make the research about Standards and agro food Exports from developing countries. They argue that standards can act to impede trade flows by explicit bans but more probably through prohibitive costs of compliance, particularly for poorer countries. The inevitable investment and recurrent 'costs of compliance' to penetrate high income markets could undermine the competitive position of many developing countries or narrow the profitability of high-value food exports. However, Jaffee and Henson (2004) and the World Bank (2005) highlight potential opportunities arising from developments in standards. Certain countries may be able to use the new standards environment to their competitive advantage and increase their market shares in trade. This possibility depends on closing gaps between growing consumer and standards requirements in developed countries and the modernization of supply chain structures in export oriented industries in developing countries.

3.4.2.3 Debaere (2005)

Debaere make the research about the effect of trade policy on the global shrimp market. He investigates the impact of changing trade policies, in particular the EU zero tolerance policy for antibiotics, on the global shrimp market. The author shows empirically that the EU policy, mainly the loss of Thailand's preferential status in the EU, enforced differences in international safety standards for shrimp leading to a disruption of trade flows from Europe towards the U.S. This trade friction led to a significant decrease in U.S. shrimp prices and caused a U.S. anti-dumping case against six Asian shrimp exporting countries[19].

[19] Quoted from "Standards-as-Barriers versus Standards-as-Catalysts:Assessing the Impact of HACCP Implementation on U.S. Seafood Imports" by Sven M Anders and Julie A Caswell 2007

3.4.2.4 Sven M. Anders and Julie A Caswell (2007)

Sven M Anders and Julie Caswell make the research about the impact of Hazard Analysis Critical Control points (HACCP) on United States Seafood Imports. In 1997 The US government has imposed mandatory HACCP for seafood products in the U.S. on they research, 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 model uses a variant of the classic gravity equation to analyze the effects of the U.S. HACCP food safety standard on bilateral trade flows. Logarithms of bilateral trade flows, both in real values and quantities, are regressed on the size of each exporting country's seafood sector, introduced as a measure of "mass;" geographical distance; foreign exchange rate; and U.S. GDP as a proxy for domestic seafood demand. The trade effect of mandatory HACCP in the U.S. is introduced through a policy variable. They put the dummy time as a proxy of HACCP policy. The model also includes variables that explore the effects of regional trade agreements on seafood trade flows into the United States. 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.

Table 3.1

Previous research on export determinant factor

No	Author	Title	Analysis Method	Result
1.	Goldstein and Kahn	*The Supply and Demand for Exports: a Simultaneous Approach*	Simultaneous Model	The results of their research are • In the equilibrium model, price of commodity variable have significance effect for quantity of export demand positively. Moreover, the elasticity of price is more than one. Therefore, the increasing of price will affect of decreasing of quantity of export. It also indicates the role of relative price to determine the demand export. Meanwhile, Real income variable and domestic price also show significant effect for export demand. In the other side, • In the disequilibrium model, price of commodity variable have significance effect for quantity of export demand negatively. However, Real income variable have significance effect for quantity of export demand positively. It means the increasing of real income will affect the increasing of quantity of export.
2.	Christian Moran	*"A Structural Model for Developing Countries' Manufactured Exports"*	Simultaneous Model Panel Data	The result is stated as follow: • For the supply function the result shows that both in long term and short term, price has a significant effect to export supply and domestic production capacity also has a similar effect on supply of manufacture industry. • In the demand function all variables have a significant effect to export demand and the expectation sign were also proper. The research concluded that that demand of export are significantly affected by relative price and economic activity in global perspective.
3.	Bela Ballasa	*"The Determinant of Export Suply and Export Demand in Two Developing Countries: Greece and Korea", 1960-1988*	Simultaneous Model	Conclusion of Ballasa research • In this research, Balassa put the price of competitor as one of variable. The competitors are Spain, Portugal, France, Turkey and Israel. Balassa choose those countries as competitor due to that countries have the similar product and the similar destination. The finding of the research showed the price of competitor has influence negatively for the demand of korea's

				export.
4	Khumar and Dhawan	*"Exchange Rate Volatility and Pakistan's Export to The Developed World,* 1974-1985"		Conclusion of Khumar and Dhawan research (1991) that is: • Model specification using log linear generates better result rather than linear model. • There is significant result of the fluctuation of bilateral exchange rate which shows that fluctuation of bilateral exchange influence export volume to all partner countries except United Kingdom. • Fluctuation of real exchange rate is more significant compare to nominal exchange rate.
5	Luis Catao and Falcetti	*Determinants of Argentina External Trade,*	Simultaneous Model	Conclusion of their research are • In export demand model, all independent variables which are used such as relative price and the real income of trade partner countries are influence significantly for Argentine export into Brazil period 1980 to 1997. • In export supply model, the independent variables such as export price, labor cost and aggregate net capital stock are influence significantly for Argentine export into Brazil period 1980 to 1997. However, the variables of volatility of exchange rate show insignificantly.
6	Septo Soepriyanto	Competitiveness analysis and determinant factor for Indonesia shrimp export into United States	ECM	Septo put the dummy implementation form DS 2031 as the a proxy of United States regulation which require the issued of it form for Indonesia shrimp products which is export into United States. The result of his research showed that in the short term, the variable such as GDP real of destination country and nominal exchange rate influence significant for Indonesia export into United states except relative price and dummy regulation variable. However, in the long term the variables such as GDP real, Relative price and dummy regulation variable influence significant for Indonesia export except the exchange rate variable.

Source: Various source processed

Table 3.2

Previous research Implementation of Standard

No.	Author	Title	Analysis Method	Result
1.	Hanson and Mittullah	*Kenyan Exports of Nile Perch: The Impact of Food Safety Standards on an Export-Oriented Supply Chain."*		In the case of fish exports from Kenya to the EU, a supply chain that is highly reliant on the EU market for fresh fillets. The economic impact of prolonged prohibitions on exports has been significant. At the macroeconomic level, fish exports declined, with consequent reductions in foreign exchange earnings. At the microeconomic level, industrial fish processing companies closed and reduced capacity and employment in the sector declined. Furthermore, the livelihoods of fisherfolk and others in local fishing communities, who have limited access to alternative economic activities, in part as a result of the progressive export-orientation of the sector, have suffered as market prices for fish have declined.
2	Jafee and Hanson	*Standards an Agro food exports flow from developing countries*	OLS	The result of the research show that standards can act to impede trade flows by explicit bans but more probably through prohibitive costs of compliance, particularly for poorer countries. The inevitable investment and recurrent 'costs of compliance' to penetrate high income markets could undermine the competitive position of many developing countries or narrow the profitability of high-value food exports.
3	Debaere	*Small fish-Big Issues, The Effect of Trade policy on the Global Shrimp Market.*	Gravity model	The result of the research show that the EU policy, mainly the loss of Thailand's preferential status in the EU, enforced differences in international safety standards for shrimp leading to a disruption of trade flows from Europe towards the U.S. This trade friction led to a significant decrease in U.S. shrimp prices and caused a U.S. anti-dumping case against six Asian shrimp exporting countries.
4	Sven anders and Julie caswel	*Assessing the Impact of Hazard Analysis Critical Control points on United States Seafood Imports.*		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.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 The Construction of the Model

The previous model of export determinant factors showed that the export of goods determined by both of supply and demand factors. In the demand side, the previous empirical research by Goldstein and Kahn, Bela Ballasa, Christian Moran, Khumar and Dawan, Francis bowne and others put price as one of factor which influence export. Price variable is used to measure of competitiveness of the products compare than other competitor. In the other side, previous empirical research by Goldstein and Kahn, Khumar and Dawan and Francis X Bowne put Gross Domestic Products (GDP) as one of factor which influences export. GDP is used as a proxy of income of trade partner countries and figure out the economic size of the countries. The previous research which put exchange rate as influence factor of export is done by Ballasa and Khumar and Dawan. However, Ballasa used real exchange rate while khumar and Dawan used nominal exchange rate as variable.

In this thesis, the export demand model is used to see the impact of establishment of regulation 178 year 2002 for the demand of Indonesia products in EU countries. Generally export goods are affected by price of export, exchange rate, population and Gross Domestic Products (GDP). The model proposed in this thesis would use most significant variables that have been employed on prior studies related to determinant factors of export demand. In addition, the dummy variable of time implementation has been added to be a proxy of regulation 178 year 2002 (before 2002 the variable is 0 and after the year is 1) as one of variables which influence Indonesia shrimp export. The use of dummy variable as a proxy of regulation is caused by the unavailability of the data; moreover, the regulation could not be quantified. The use of dummy time implementation of regulation was

done by Sven M Anders and Julie A Caswell[20]. On they research, they asses the impact of HACCP implementation on U.S Seafood imports periods 1990-2004. They put the dummy variable as a proxy of implementation of HACCP[21] in 1998. In addition, the research which was done by Septo soepriyanto also put the dummy time implementation of regulation as one of factor which influence Indonesia shrimp export into United States period 1998-2006.

Based on the previous research on export demand model, the model used in this research is presented as follows:

$$EXS_{ijt} = f\left[GDPREL_{ijt}, NER_{ijt}, RPINA_{gt}, Dummyregulation_{ijt}\right] \ldots\ldots\ldots\ldots\ldots\ldots (4.1)$$

Where:

EXS = Volume of Export to partner countries (ton).

GDPREL = Real GDP partner countries (GDP nominal of Destination countries divide with GDP deflator of destination countries)

NER = Nominal Exchange Rate (Foreign Currency in term of National Currency)

RPINA = Relative Price (Price of export divide with Consumer Price Index destination country).

Dummyregulation = Dummy Variable for establishment of Regulation 178/ 2002 (0 = Before establishment of regulation) ; 1 = After establishment of regulation

The relation between dependent variable and independent variables is shown by the sign of each coefficient of the independent variables. If the coefficient has a positive sign, it means there is a positive relation between the dependent variable with the independent variable. Meanwhile, the negative sign showed the negative relation of the variable.

[20] Sven M Anders and Julie A Caswell " Standards as Barriers versus standards as Catalysts: Assessing the impact of HACCP implementation on U.S Seafood imports" University of Massachusets 2007

[21] HACCP (Hazard Analysis Critical Control points) is the regulation to measure the standard of food safety

Table 4.1

Expected coefficient sign

Independent Variable	Coefficient Sign
GDPREL	Positive (+)
NER	Positive (+)
RPINA	Negative (-)
Dummy Regulation	Negative (-)

The establishment of Regulation 178 year 2002 appears as the trade barrier in the form of technical regulation. It is considered to affect Indonesia export negatively because the requirement in the regulation is relatively not easy to comply by Indonesia exporter. The high health and safety requirement which is imposed by developed country is act as regulatory constraint. Therefore, the establishment of regulation 178/2002, hypothetically, is expected to have a negative impact on Indonesia exports.

The real gross domestic product of importing country as another variable is expected to have a positive relation with the amount of exports volume. Gross domestic product is reflecting the size of market and level of income in the importing country, the larger the market size and the higher income is the larger possibility to exports. According to Blanchard (2006), higher foreign incomes mean higher foreign demand for all goods, both foreign and domestic.

Another independent variable used in this research is nominal exchange rate, which expected to have a positive effect to exports. In this thesis, the nominal exchange rate to be used is foreign currency in term of domestic currency; therefore, the appreciation of foreign currency in term of domestic currency is equal with the depreciation of domestic currency. The depreciation on exporting country (domestic) currency will made as if the product from exporting country become cheaper which in turn give importing country a possibility to purchase more and leads to the increase of exports. An appreciation of a country currency raises the relative price of its export and lowers the relative price of its imports. Conversely, depreciation lowers the relative price of a country's exports and raises the relative price of its imports (Krugman 2007).

The last independent variable used in this research is relative price. This variable is expected to have negative relation with exports. A higher price would make the product become less competitive. Moreover, the demand of the product will be decrease. Therefore, the higher price of the exporting products will lead to the decreasing of export.

In estimating the result, this thesis employs pooled data regression methods using Eviews 4.1. In order to make estimation of the model, researcher put double logarithm on both of dependent and independent variable to find out the significance and the elasticity of each independent variable on determinant factors of Indonesia's shrimp exports. As follow this research model after imposed double logarithm:

$$\log EXS_{ijt} = \log GDPREL_{ijt} + \log NER_{ijt} - \log RPINA_{ijt} - Dummyregulation \quad .....(4.2)$$

where:

$\log EXS_{it}$ = Volume of Indonesia's Shrimp Exports (ton)

$\log GDPREL_{it}$ = Real Income of Partner Countries (Million US$)

$\log NER_{it}$ = Nominal Exchange Rate (Foreign Currency in term of National Currency)

$\log RPINA_{it}$ = Relative Price (Price of export divide with Consumer Price Index destination country) (US$).

Dummyregulation = Dummy Variable for establishment of Regulation 178/ 2002 (0 = Before establishment of regulation) ; 1 = After establishment of regulation

4.2 Operational Definition of Variables

Before estimate the result of the model, firstly, the operational definitions of those variables being included in this study are

a. Volume of export

As dependent variable, volume of export is representing the amount of Indonesia export into several European Union countries. The volume of Indonesia shrimp export is using ton as the unit of quantity.

b. Real Gross Domestic Products

The Real Gross Domestic Products (GDP) is counted by dividing nominal GDP with GDP deflator. Real GDP represent the economic market size of destination countries

$$REALGDP_{it} = \frac{GDPno\min al_{it}}{GDPdeflator_{it}} \text{ x } 100$$

c. Nominal Exchange Rate

Nominal exchange rate is counted by convert the Indonesia and destination country currency in to US$. The data from IFS only provides the US$ currency in term of each national currency. Therefore, in order to get the Indonesia currencies in term of destination countries currencies, we should convert all currencies in to US$ currency. In the final result we get the foreign currency in term of rupiah.

d. Relative Price

The relative price is counted by dividing the export price with consumer price index (CPI) destination countries. Meanwhile, the export price is counted by dividing the value of export with volume of export. The relative price could represented the competitiveness of the product

e. The establishment of Regulation 178 year 2002 (dummy regulation)

The dummy regulation is the dummy variable for time for establishment of Regulation 178 year of 2002, before 2002 the variable is 0 and after the year is 1.

4.3 Data and Data sources

The Data which are used in this research is secondary data which consist of time series data of the Annual Indonesia and European Union Economic reports

and export import of shrimp products from the year of 1996 until the year of 2007. Source of the Data which are used are: WITS (World Integrated Trade Solution), United Nation Commodity and Trade (UN Comtrade), UN trains, Bureau of Statistics (BPS), Ministry of Trade, Ministry of Marine and fisheries, International Financial Statistics (IFS), Econstats and other sources including electronic sources. The data in this research are

a. The data of Indonesia shrimp export is obtained from World Integrated Trade Solution (WITS), United Nation Commodity and trade (UN comtrade) and Indonesia Bureau of Statistics (BPS).

b. The data of Gross Domestic Product (GDP) and GDP deflator from each destination countries are obtained from Econstats (www.econstats.com)

c. The data of Exchange rate and consumer price index are obtained from International Finance Statistics (IFS) which is provided by International Monetary Fund (IMF)

d. The data of export price is obtained from World Integrated Trade Solution (WITS), United Nation Commodity and trade (UN comtrade) and Indonesia Bureau of Statistics (BPS).

4.4 The Panel Data Regression

There are three types of the data that are generally available for empirical analysis[22]. First type is time series data. In time series data we observe the values of one or more variables over a period of time (e.g., GDP for several quarter or years). Second type is cross section data. In cross-section data values of one or more variables are collected for several sample units or entities, at the same point times (e.g., Indonesian export to 10 European countries for a given years). The third type is Panel data or pooled data which combine time series and cross section data. In panel data the same cross sectional unit is surveyed over time.

The panel data regression could be used to analyzed the behavior of the cross section in several periods. Therefore, variation of different cross section in

[22] Gujarati p 636

different time could be analyzed. There are the following advantages of panel data[23]:

1. Panel data could control the heterogeneity of each individual.by allowing for individual specific variables.
2. Panel data give more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency because it combine time series and cross section data.
3. Panel data is better suited to study the dynamics of change.
4. Panel data could better detect and measure effects that simply cannot be observed in pure cross section or pure time series data.
5. Panel data enables us to study more complicated behavior models.
6. Panel data could minimize the bias of the results of broad aggregates.

In they research; the researcher has problem such as limitation of the observation/data. By using combination of time series and cross section data or called panel data, researcher could increase a number of observation and variation among individual and variation of time. Moreover, it could solve the problem which appears when we omit the variable.

There are three kinds of estimation model approach of panel data: *Pooled Least Square (PLS); Fixed Effect Model (FEM)* and *Random Effect Model (REM).*

4.4.1 Pooled Least Square (PLS)

Pooled least square method is done by compiling all of time series and cross section data and then estimating the model through ordinary least square (OLS) method. From the three kinds of estimation approach, Pooled least square (PLS) is the simple approach to be used. The total observation by doing panel data method thus would be N multiplied with T. In addition, the function of the PLS method can be written as under.

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + e_{it} \quad \text{.....(4.3)}$$

Denote: for $i = 1,2,...,$ and $t = 1,2,...,$ in which i is *cross-section identifiers* and t is *time-series identifiers.*

[23] Badi H Baltagi, *Econometrics analysis of panel Data*, John willey and sons, New York 1995

The simple approach to estimate the equation above is by ignoring the dimension of cross section and time series of data panel and estimate the data with *Ordinary Least Square* that applied in pooled form. In this method, is assumed that the intercept value of each variable is similar and the coefficient slope of two variables is identical for all cross section units. Therefore, although PLS method present easy of application but model may distort the fact of relation between Y and X among cross section units.

4.4.2 Fixed Effect Model (FEM)

The fixed effect model is measure about facing of *omitted variables* in which omitted variables is probably bring the change to *time series intercept* or *cross section intercept* and add *dummy variables* to permit the changing of those intercept. The heavy difficulties of pooled least square is appeared from the assumption of intercept and slope of the equation regression model which is reputed constant for all coefficient of across time and individual. This assumption is very strict and probably unreasonable. One of which to observe cross section or time series unit is put dummy variable into equation to allow the facing of differently value parameter for cross section or times series unit. The approach which often using is to allow the variation intercept among cross units but stay assumed that coefficient slope is fixed among cross section units. This approach is often called by *Fixed Effect Model (FEM)*. As follow, the equation of this approach will be:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + e_{it} \quad \text{.....(4.4)}$$

The presence of subscript I on intercept indicated that the intercept of cross section unit is different. This difference is caused by special tool of each cross section unit. Of course, the previous equation could use dummy variable. As follow, the equation after dummy variable applied:

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i} + \beta_1 X_{1it} + \beta_2 X_{2it} + e_{it} \quad \text{.....(4.5)}$$

where:

$D_{2i} = 1$ if observation is in the second of cross section and 0 if others;

$D_{3i} = 1$ if observation is in the third of cross section and 0 if others;

D_{4i} = 1 if observation is in the fourth of cross section and 0 if others.

Due to this fact, α_1 was presenting intercept the first unit of cross section and α_2, α_3 and also α_4 at the differential intercept coefficients; that is how big the intercept of second, third and fourth cross section units differently to the intercept of first unit. In this case, the first unit has being comparator. Due to this reason, this method is sometime called by *Least Square Dummy Variable (LSDV) Model*.

The applying of LSDV model could be used if the equation of regression has less cross section units; however, if those cross section units are much, the using of LSDV model will decrease degree of freedom and will decline the efficiency of parameter estimated lastly. Fixed effect term is originated from the fact that although intercept is probably different among individual, yet the intercept of each cross section unit has variation for long time; in other word, there was *time invariant*. If intercept is as α_{it}, it means that the intercept of each cross section unit is time variant. Furthermore, the equation of FEM assumed that the coefficient of regresses has not variation for inter time or among individual. The basic idea of FEM could begin from the equation as follow:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + e_{it} \quad \text{.....(4.6)}$$

And as follow, the value of intercept for each cross section unit:

$$\alpha_i = \alpha + u_i \qquad i = 1,2,...,N$$

Where, u_i is an unobservable individual effect. As follow, the compiling of equation:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + u_i + e_{it} \quad \text{.....(4.7)}$$

In the FEM, u_i is assumed that has correlation with regresses or in other word u_i has not random characteristic.

4.4.3 Random Effect Model (REM)

Random effect model is reform the efficiency process of least square through measure the error of time series and cross section. It was also as variation of generalized least square estimation. In fixed effect model (FEM), u_i assumed

that has correlated with regresses (X) but in random effect model (REM), u_i assumed that has not correlated with regresses or random character. As follow, the equation of REM:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + u_i + e_{it} \quad \text{.....(4.8)}$$

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + E_{it} \quad \text{.....(4.9)}$$

Error term (E_{it}) of the above equation is consist of u_i on *cross-section (random) error component*, while e_{it} on *combined error component*. Due to this fact, REM is often called by *Error Component Model (ECM)*.

There were several things that related with estimation output of REM, that are:

a. The summarizing of random effect value is zero, because component error (E_{it}) was constituted as the combination of time series and cross section error;
b. The value of R^2 is taken from regression transformation of *Generalized Least Square (GLS)*, then REM could be estimated by GLS method.

4.5 The Step of analysis

4.5.1 Examining of the model

Before estimate the model, we should choose the estimation model approach of panel data by pooled Least Square (PLS), Fixed Effect Model (FEM) or Random Effect Model (REM). There are the following steps to choose the estimation model approach

4.5.1.1 F Test and Chow Test

F test or Chow Test is used to find out the correlation of unobservable variable and to see the common or individual effect. Moreover, by doing this test we could choose the estimation method either use PLS or FEM model as the first step to get the best model. The same behavioral of each cross section has sometime inclined unreality. To find it out through *restricted F-Test* in examining the hypothesis, that is:

H_0: Model PLS (Restricted)

H_1 : Model Fixed Effect (Unrestricted)

While restricted F-Test is formulated as follow:

$$F = \frac{(R^2_{UR} - R^2_R)/m}{(1 - R^2_{UR})/df} \quad \text{.....(4.10)}$$

where:

1. Restricted R^2 is taken from the equation of PLS model;
2. Unrestricted R^2 is taken from the equation of FEM model;
3. m is a number of restriction;

The value of F Table is consisting of three kinds that are *df for numerator*, *df for denominator* and *credence rate*. If F-Account is more than F-Table, so reject H_0 and receive H_1.

Alternatively, it could apply *Chow Test*. The main of rejection on H_0 is due to in chow test apply F-Statistic. As follow, F-Statistic equation that was formulated by *Chow*:

$$CHOW = \frac{(RRSS - URSS)/(N-1)}{URSS/(NT - N - K)} \quad \text{.....(4.11)}$$

where:

RRSS = *Restricted Residual Sum Square* (constitute *Sum of Square Residual* that taken from data panel estimation with *pooled least square/common intercept*);

URSS = *Unrestricted Residual Sum Square* (constitute *Sum of Square Residual* that taken from data panel estimation with *fixed effect*);

N = a number of cross section data;

T = a number of time series data; and

K = a number of explainator variable.

Where, this exam is applied F-Statistic distribution that is F_{N-1}, NT-N-K.

If the value of the result of Chow Statistic (F-Stat) is more than F-Table, H_0 will be rejected with the result H_1 will be received or *fixed effect model* will be used.

4.5.1.2 Hausmann Test

Hausmann test is used to choose the estimation model approach rather by fixed effect or random effect model. To find out the answer whether Hausmann Test could imply through *FEM* or *REM*. Principally, this model is consist of two kinds that are:

First, back to the assumption that has been made on correlation among *cross-section error component* (u_i) and *regresses* (X). If we assumed that u_i and X are *uncorrelated*, REM is appropriate to apply in this method. However, if we assumed that u_i and X is *correlated*, FEM is appropriate to imply in this method.

Second, REM assumed that u_i can be taken as random from the most population. It is often hard to fulfill this assuming in Hausmann Test.

Hausmann has been also improved specification to decide which better model to apply in this method, FEM or REM. This specification will present estimation through applying *Chi-Square Statistics* with the result that the chosen model will be determined statistically.

This examination is done through hypothesis as follow:

H_0 : *Random Effects Model*

H_1 : *Fixed Effects Model*

Compare this result of Hausmann Test with chi-square statistics in df=k, where k is a number of coefficient variables estimated. If the result of Hausmann Test is significant, H_0 will be rejected or it means that FEM will be able to apply.

4.5.1.3 LM Test

If the estimation is using *fixed effect model (FEM)*, so *LM (Lagrange Multiplier) Test* need to be applied for estimator election of heterocedacitic and homocedastic structure. The hypothesis is found expression in:

$H_0 : \sigma_i^2 = \sigma^2$ (homocedastic structure)

$H_1 : \sigma_i^2 \neq \sigma^2$ (heteroscedasticity structure)

Here, the examination is using LM criteria through chi-square χ :

$$LM = \frac{T}{2}\sum_{i=1}^{n}\left[\frac{\sigma_i^2}{\sigma^2} - 1\right]^2 \quad \text{.....(4.12)}$$

Where:

σ_i^2 = variant residual equation at *i* (the higher restriction equation)

σ^2 = sum square equation

4.5.2 The Examination of The Classic Assumption Test of Autocorrelation, Heterocedasticity and Multicollinearinity

Autocorrelation, Heterocedasticity and Multicolinearinity are became the problem of research on economics data. Its assumption infraction was caused estimation model became inefficiency. This detection is also implied to panel data.

The first basic assumption is the correlation existence among disturbances (autocorrelation). Due to the existence of autocorrelation, the result of coefficient estimation will be appeared as consistent and not bias but in big variant or in other word the result of interpretation is inefficient. This inefficient of variant parameter estimation would caused the value of T-Account incline to small and the result of examination lean to receive H_0 or homocedastic structure will be acceptable.

The way that often used to detected autocorrelation is through applying *Durbin Watson Test (DW)*. This test is done through comparing statistic value of DW that accounted in limited value of DW. To overcome and eliminate autocorrelation is through put *autoregressive* variable into equation.

The next assumption that used in variants of each error term is constant. The impact of heterocedasticity is inefficient estimation process, meanwhile the estimation result stayed consistent and unbiased. Heteroscedasticity would cause the result of T and F Test be unused or probably mislead.

The case of heterocedasticity was often appeared on cross section data, yet rarely occurred on time series data. To exam the existence of heterocedasticity could be done through *White's General Test, The Goldfield Quandt Test* or *The Breusch Pagan Test.*

Multicollinearity is significantly linear relation among or all of independent variable within regression model. This circumstance is often appeared on time series macro model in which many variables inclined up together on the changing time. Consequently, variant estimation will be bigger rather than before and will decrease t-Account value and also the result of estimation will be unbiased and inefficient. There are some indications to detect multicolinearity that are: the value of R^2 is highest and the value of F-Test is significant. The other method to detect multicolinearity is to find out coefficient correlation matrix among independent variables.

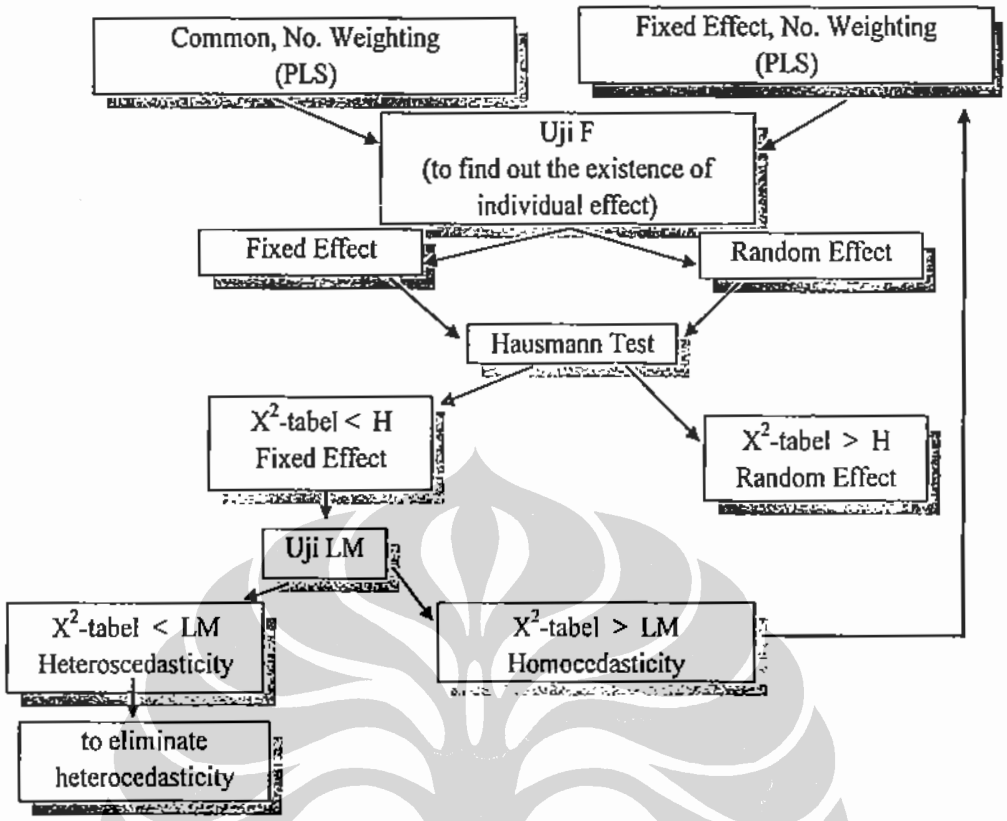

Figure 4.1. Flow Chart of Panel Data Estimation Model

CHAPTER 5
RESULT AND ANALYSIS

5.1 Model Examination

The model of this research would be estimated by panel data regression. The observation of the research is consists of seven European countries such as Belgium, Denmark, France, Germany, Netherlands, Sweden and United Kingdom in the period 1996 into 2007. The coefficient result from the estimation model is not merely applied to one observed country but also upon all observed countries as a unity.

In order to examine the model of Indonesia shrimp export into several European Union Countries, researcher will estimate the model which is constructed as equation below

$$\log EXS_{it} = \log GDPREL_{it} + \log NER_{it} - \log RPINA_{it} - DUM\text{reg} \quad \text{.....(5.1)}$$

The tools to estimate the model uses quantitative micro software called Eviews program with the version 4.1. The estimation process is started by find out the individual effect of the model through examined the Chow Test. It test is done by comparing the probability of F Stat and F table. The hypothesis of the test is *accept* H_0 If the probability of F stat is higher than F table, it means the model contain individual effect and we should use fixed or random effect model. In the opposite, if the probability of F stat is lower than F table, we *reject* H_0. It means the model does not contain individual effect and we could use pool least square. The probability of F stat is counted from a comparison Pool least square (PLS) and fixed effect model (FEM).

Table 5.1

The estimation result of PLS and FEM

Variables	Pooled Lest Square		Fixed Effect Method	
	Coefficient	Prob.	Coefficient	Prob.
t-statistic:				
C	4.043894	0.0094		
LOG (GDPREL?)	0.111987	0.4401	-0.270800	0.5409
LOG (NER?)	0.643208	0.0000***	0.116073	0.1310
LOG (RPINA?)	-1.367489	0.0116**	-1.182740	0.0001*
DUM?	-0.884303	0.002*	-0.296861	0.1322
f-statistic	22.59559	0.000	9.79	0.5409
R-squared	56 %		89 %	
Adjusted R-squared	53%		88 %	
Sum Square resid	57.29131		13.42056	

*) significance at $\alpha = 1\%$, **) significance at $\alpha = 5\%$, ***) significance at $\alpha =$ 10%

Table 5.2

The Result of Chow-Test

	SSR1 (PLS)	SSR2 (FEM)	F-Stat	F-Table α	F-Table	H_0	Conclusion
F test	57.2913	13.4205	8.296	1%	3.09	F-Stat>F-Table	Individual Effect
				5%	2.24	F-Stat>F-Table	Individual Effect
				10%	1.87	F-Stat>F-Table	Individual Effect

Based on the result of Chow test in the table 5.2, it test showed that the value of F stat is higher than F table in the level of confidence α 1%, 5% and 10%. Therefore, it indicates that there is individual effect containing within the model and the model is not estimated by pooled least square.

After we examine the Chow test and found the individual effect, the next step to be taken is to examine the Hausmann test. It test is used to choose either fixed effect model or random effect model. The hypothesis of the test is *accept* H_0

If the probability of χ^2-Hausmann is higher than χ^2-Table, it means the unobserved variable correlated with regression, and we should use Fixed Effect Model. In the opposite, H_0 is rejected if the probability of χ^2-Hausmann is lower than χ^2-Table. It means the unobserved variable correlated with error model and we should use Random Effect Model.

Table 5.3

The result of Hausmann Test

χ^2 - Hausmann (H)	χ^2-Table		H_0	Conclusion
	α	χ^2-Table		
0.130189015	1%	13.276	χ^2-Table > H	Random Effect
	5%	9.487	χ^2-Table > H	Random Effect
	10%	7.779	χ^2-Table > H	Random Effect

According the result of Hausmann test which is showed in table 5.2, the value of χ^2 - hausmann (0.13) is lower than χ^2-Table in the level of confidence α 1% (13.27), 5% (9.48) and 10% (7.77). It means the unobserved variable is correlated with error model. Hence, the estimation of the model in this research will use Random Effect Model (REM). In the REM, component of individual error does not have correlation each other and also there were no autocorrelation for cross section and time series. Therefore, the autocorrelation test is not necessary in this model.

5.2 Model Estimation Result

5.2.1 Interpretation of the model

After the examining of Chow and Hausmann test, finally we choose Random Effect Model as the appropriate method to estimate the model. Based on table 5.3, the estimation result of Random Effect Model show all independent variable has met the expected sign. However, the significance of variables are different each other in the various level of confidence 99% and 95%. The variable

of real GDP (GDPREL) have the expected sign but not significant in the level of confidence 90%, 95% and 99%.

Table 5.4

The Estimation result of Random Effect Model

Variables	Pooled Lest Square	
	Coefficient	Prob.
t-statistic:		
C	6.529367	0.0005
LOG (GDPREL?)	0.271122	0.2865
LOG (NER?)	0.158889	0.0471**
LOG (RPINA?)	-1.199979	0.0001*
DUMreg?	-0.475480	0.0083*
R-squared	87%	
Adjusted R-squared	86%	

*) significance at $\alpha = 1\%$, **) significance at $\alpha = 5\%$, ***) significance at $\alpha = 10\%$

Table 5.5

The individual effect of Random Effect Model

Random Effects	Coefficients
_BEL—C	1.407722
_DEN—C	-0.778824
_FRA—C	0.010768
_GER—C	-0.334010
_NED—C	0.333460
_SWE—C	-1.389536
_UK—C	0.750420

In addition, the value of R-squared and adjusted R-squared is 87% and 86%. The value of R squared closed to 100% means the model could explain

determinant factors of Indonesia shrimp export into several European Union countries. In the other side, due to the applied of *double log* model, the coefficient of the variable also represented the elasticity of the independent variable in term of dependent variable. The coefficient of Nominal exchange rate (NER) and dummy of regulation (DUMreg) are lower than 1, it means those variables have inelastic characteristic. In contrary, the coefficient of Relative Price (RPINA) is greater than 1, it means the variable have elastic characteristic.

5.2.2 Interpretation and Analysis of the Variables.

The estimation result of the model which uses Random Effect Model has show the sign and coefficient for each independent variable. Moreover, it shows the influence and elasticity of the independent variables in term of dependent variable.

The final equation of the regression is

$$\log EXS_{it} = 6.529 + 0.272 \log GDPREL_{it} + 0.159 \log NER_{it} - 1.199 \log RPINA_{it} - 0.475 DUMreg$$

5.2.2.1 Real GDP (GDPPREL) variable

The independent variable of real GDP (GDPREL) is counted by divide the GDP nominal of trade partner countries with the GDP deflator of the countries it self. GDP is representing the market size of the country. Moreover, GDP could show the income level of the countries in generally. The increasing of GDP showed the increasing of income and increasing of consumption. Therefore, GDP become one of variable which is influence the demand of export.

Based on the result of regression, it variable shows the positive sign and met the expected sign. It means real GDP influence positively for Indonesia shrimp export into several European Union countries. Moreover, the increasing GDP of partner countries will increase Indonesia export as much as it coefficient. However, it variable is inconsistent with the hypothesis of the study because the probability of it variable does not significant in the level of confidence 90%, 95% and 99%. The Insignificantly of GDP variable because in the period which is used in this research the increasing of GDP has not been always followed by the increasing of export. Moreover, the increasing of GDP not spontaneously

increases the demand on consumption of shrimp. In the other word, the increasing of income not directly increases the consumption of shrimp.

5.2.2.2 Nominal Exchange Ratc (NER) Variable

Based on the result of regression, the independent variable of Nominal Exchange Rate show the positive sign and met the expected sign and hypothesis of the study. It means Nominal Exchange Rate as independent variable is influence positively for volume of export as dependent variable. The appreciation of nominal exchange rate (foreign currency) will lead to increasing of export because the price of Indonesia products will be cheap. In the opposite, the depreciation of nominal exchange rate will lead to the decreasing of export.

Moreover, it probability shows significantly in the level of 95%. The value of coefficient is around 0.159.According the sign and the value of coefficient; we can interpret that variable of Nominal Exchange Rate (NER) influence positive and significant for Indonesia shrimp export into several European Union countries. Moreover, every 1% Appreciation in NER (foreign in term of domestic currency) will create an increase on export volume as much as 0.159% (*ceteris paribus*). In the other side, the coefficient value of NER is lower than 1, it means that the changing of NER is inelastic/relatively less responsive to the changing of export volume.

5.2.2.3 Relative Price (RPINA) variable

Based on the result of regression, the independent variable of Relative Price show the negative sign and met the expected sign and hypothesis of the study. It means Relative Price as independent variable is influence negatively for volume of export as dependent variable. Moreover, it probability shows significantly in the level of 99%. The value of coefficient is around 1.199.

According the sign and the value of coefficient, we can interpret that variable of Relative Price (RPINA) influence negative and significant for Indonesia shrimp export into several European Union countries. Moreover, every 1% increase in Relative price will result of decrease on export volume as much as 1.199% (*ceteris paribus*). In the other side, the coefficient value of Relative price

is greater than 1, it means that the changing of Relative price is elastic to the changing of export volume.

Price is become one indicator to measure the competitiveness of the product. The result of regression shows that variable of price influence significant for Indonesia export. Moreover, the coefficient value show the changing of price is elastic to the changing of export volume.

Since the price affected the demand elastically, the price competition among exporter becomes the important things to be concerned. To improve the competitiveness of the products against competitors, every cost in domestic production such as double and illegal tax in should be eliminated in order to give more incentive for exporter and make the cheaper price. In the other side, price also related with nominal exchange rate.

5.2.2.4 Dummy Regulation 178 Year 2002 (Dummy regulation) variable

Based on the result of regression, the independent variable of Dummy Regulation 178 Year 2002 show the negative sign and met the expected sign and hypothesis of the study. It means dummy regulation as independent variable is influence negatively for volume of export as dependent variable. Moreover, it probability shows significantly in the level of 99%. According the sign and the value of coefficient, we can interpret that variable of Dummy Regulation 178 Year 2002 (DUM) influence negative and significant for Indonesia shrimp export into several European Union countries.

The result of the regression showed that the establishment of regulation 178 in 2002 influence negatively and significant for Indonesia shrimp export into European Union. Moreover, the data showed that the trend of average growth of Indonesia export into European Union countries after the year of 2002 is lower than before the year of 2002. Even though, the nominal volume of Indonesia shrimp export after the year of 2002 showed the increasing in certain countries, but the average growth is tend to decrease.

The general objective of the regulation is to provide high level of protection of human health and consumer interest and also harmonize the food laws of the EU members. It means every EU member countries should implement

the uniform food law regarding the regulation. In general, the regulation are consists of the requirement of food safety, the establishment of EFSA and the procedures relating to food safety.

The regulation requires the general obligation in the food trade and general requirement of food law. Food and feed imported with a view to being placed on the market or exported to a third country must comply with the relevant requirements of EU food law. The regulation imposed the general requirement of food law and become the legal base for other specific regulation such as regulation 853 year 2004 regarding food of animal origin, regulation 852 year 2004 regarding the hygiene on food. Moreover, the requirements of food safety also require the traceability of the products which is imported into EU. Since the establishment, it regulation imposed the common basis for all EU member countries. The uniformity requirement in EU could affect for Indonesia because every EU member countries just imposed the same requirement each other. However, it could act as barrier if Indonesia product could not comply with the requirement of it regulation. In the other word, if the requirement of import related to the food safety being strict, therefore Indonesia will face the strict regulation in all EU member countries. In the other side, the food safety requirement such as traceability, the hygiene requirement and other requirement are not easy to comply for some developing countries.

Beside the requirement, the regulation also provides the procedures relating to food safety through Rapid Alert System for Food and Feed (RASFF). The RASFF is integrated approach to food safety by providing a system for the swift exchange of information between member States and the coordination of response actions to food safety threats. Since the RASFF established as the network which is involved member countries, any information from a member relating to the existence of a serious direct or indirect risk to human health will be immediately transmitted into other members of the network. Therefore, in this case, if one country claimed Indonesia product contains the threat, the information will be delivered for every member countries through RASFF. Therefore, other countries will alert Indonesia product in their country although it products is not sure yet contain the threat in the country it self. Moreover, Indonesia product and

exporter which was notified by RASFF[24] could be rejected and withdrawn from the market if the product could not fulfill the requirement. As the consequence, the rejected will influence Indonesia export into EU. Moreover, the image of Indonesia product will be bad and influence the consumer trust in EU. In the other side, the notification of RASFF could be used for taking commission decision in order to decide the protective measure of the import product from other countries.

Since the implementation of RASFF in 2002, many Indonesia fisheries export was notified by the RASFF. The notification related with the contamination of threat and chemical in Indonesia fisheries products. The increasing of case related with the contamination of threat in Indonesia fisheries export into EU beget the European Commission send their team to make the inspections in Indonesia. As the result from inspection, European Commission established Commission Decision (CD) 2006/236 /EC regarding "special conditions governing fishery products imported from Indonesia and intended for human consumption". The commission decision requires that every fisheries product from Indonesia should be re-checked in every port in the EU territory. As the consequence, Indonesia product faced the tight requirement and it will affect negatively for Indonesia export.

The Regulation (EC) no.178 year 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety is categorized as food safety regulation which requires the providing of safety food in European Union. It regulation is aimed to provide high level of protection of human health and consumer interest for food includes the imported food. Fish, shrimp and other fisheries product which are categorized as food products, is susceptible with the issues of food hygiene or health standard. Therefore, it products is highly related with the food safety regulation issues.

The establishment of food safety regulation could be act as barrier for developing countries. The lack of clarity about the exact nature of the standards is certainly disruptive, increases costs and creates uncertainty for the exporters. In this case, the exporter will spend additional cost for sample check if their product

[24] There are three kind of notification information; News notification, Information Notification, and alert Notifications.

contain threat and notified by RASFF. Moreover, the worst possibility is the product will be rejected and withdrawn from the market if the product could not fulfill the requirement. As the consequence, the image of the product will be bad and it will affect of consumer trust for it product.

The imposing of high requirement and standard by developed countries which is reflected by their food safety regulation could affect international trade either direct or indirectly. It will give bigger effect for developing countries particularly. Consequently, producers and exporters should prepare for additional cost. From the point of view of the EU and developed countries, regulatory standards such as this are intended to reduce potential risk. However, they can also create non tariff trade barriers and significant trade restrictions. Cato and Lima dos Santos, 2000, said that "Failure to fulfill the requirements of EU standards for safety and quality has cost countries like Bangladesh and Kenya dearly, in terms of lost export earnings".

CHAPTER 6
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Fish and fisheries export have given big contribution for Indonesia economic and Indonesia export particularly. Shrimp which is considered as the main commodity in the fisheries sector play important role in Indonesia fisherics export. Until now, the market of Indonesia shrimp export still dominates by United States, Japan and European Union. AS the biggest importer of shrimp product in the world, European Union market becomes the important market of Indonesia shrimp export. However, Indonesian shrimp product should deal with certain regulation in European Union related to standard of products and food safety regulation.

The regulation (EC) no 178 year of 2002 laying down "The general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of Food safety" which was established by European Commission is categorized as food safety policy/regulation and could give an impact for Indonesia export into European Union. The research showed the negative impact of food safety regulation in European Union for Indonesia shrimp export into European Union. Moreover, the result of regression, showed the variables which influence Indonesia shrimp export into European Union. The research has done by analyze Indonesia Shrimp export into several European Countries such as Belgium, Denmark, France, Germany Netherlands, Sweden and United Kingdom during 1997 – 2007.

In accordance with the result and analysis of regression on Indonesia's exports which is described on the previous chapter, there are several points can be conclude, which is stated as follows:

a. Based on the result of model examination, the model was estimated by Random Effect Method. The result of regression show the value of R squared is 87%. It means the model which is used in this research is considered sufficient for analyzing the impact of Food Safety Regulation on Indonesia Shrimp Export. Moreover, the result of estimation model showed

all independent variable has met the expected sign. However, the significance of variables are different each other in the various level of confidence 99% and 95%. The variable of real GDP (GDPREL) have the expected sign but not significant in the level of confidence 90%, 95% and 99%.

b. The Regulation 178 Year 2002 has the negative and significant influence for Indonesia shrimp export into European Union. The requirements such as safety food, traceability, and other standard requirement are not easy to comply. Moreover, the establishment of RASFF as a network which involves all members will make the export requirement to be tight. Since the establishment of regulation, Indonesia export faced a lot of notification related with the contamination of threat and chemical in shrimp and other fisheries product. Indonesia product and exporter which was notified by RASFF could be rejected and withdrawn from the market if the product could not fulfill the requirement. As the consequence, the rejected will influence Indonesia export into EU. Moreover, the image of Indonesia product will be bad and influence the consumer trust in EU.

c. Beside Food Safety Regulation, Indonesia export of shrimp product into several European Union countries also determined by factors :

- Gross Domestic Product (GDP) real trading partner influence positive for Indonesia shrimp export. However, it not influence significantly
- Nominal Exchange Rate influence positive and significant for Indonesia shrimp export. The appreciation of the Indonesia's currency tends to make the price of Indonesia's product seem more expensive in the market.
- Relative Price influence negative and significant for Indonesia shrimp export. The higher of price of Indonesia product, the lower volume of Indonesia export. The higher price will impact for less competitiveness.

6.2 Recommendation

The establishment of food safety regulation influences negatively for Indonesia shrimp export into several European Union countries. Therefore, to increase Indonesia export, Government should take policy and strategy to meet the requirement and fulfill the standard. There are following recommendation which could be taken to solve the problem:

1. Cooperate with EU commission to harmonize the standard between EU and Indonesia standard. It should be done to harmonize the tolerance limit of contamination of chemical in shrimp products.
2. Make the agreement for technical cooperation in order to fulfill the requirement in EU countries.
3. Improve enforcement of quality standards in order to recognize with the requirement in destination country. It should do by producer, farmer with the support from government through ministry marine and fisheries, ministry of health, and local government. It could do by Enhance training for shrimp farmers in operating shrimp farms healthy (knowledge about chemical contaminant).
4. Propose to eliminate non tariff barrier through negotiation bilaterally or multilaterally via WTO. It should do by Ministry of Trade and WTO ambassador for Indonesia.

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APPENDIX

Table 2.1

Economic contribution from Fisheries Sector (*Billion Rupiah*)

FIELD OF ACTIVITY	YEAR					
	2000	2001	2002	2003	2004(*)	2005 (**)
AGRICULTURE, ANIMAL HUSBANDRY, FORESTRY AND FISHERY	216 831.42	263 327.85	298 876.76	305 783.50	331 553.0	365 559.60
a. Food Crops	111 324.01	137 751.94	153 665.96	157 648.80	165 558.20	183 581.20
b. Plantation Crops	31 720.43	36 758.60	43 956.44	46 753.80	51 590.60	57 773.00
c. Animal Husbandry and it derivatives	25 627.32	34 284.96	41 328.90	37 354.20	40 634.70	43 123.50
d. Forestry	17 215.10	17 594.48	18 875.66	18 414.60	19 678.30	21 450.00
e. Fishery	30 944.56	36 937.87	41 049.80	45 612.10	54 091.20	59 631.90
TOTAL GROSS DOMESTICS PRODUCT	1 389 770.26	1 684 280.48	1 863 274.69	2 013 674.60	2 273 141.50	2 729 708.20
GDP NON OIL AND GAS	1 218 334.37	1 505 600.76	1 700 522.67	1 840 854.90	2 072 052.0	2 427 591.80
GDP Fishery Share (%)						
Toward Agricultural Cluster	14.27	14.03	13.73	14.92	16.31	16.31
Toward Total GDP	2.23	2.19	2.20	2.27	2.38	2.18
Toward Non Oil and Gas GDP	2.54	2.45	2.41	2.48	2.61	2.46

Source: Central Bureau Statistic (* temporary numeral, ** temporary numeral), 2006

Table 2.5

Wild catch production in term of province (Metric Tons)

No.	Province	Years			
		2000	2001	2002	2003
1	N.A.D	6,324	6,599	4,498	5,783
2	North Sumatera	31,494	32,230	38,456	39,133
3	West Sumatera	2,596	3,515	1,685	2,605
4	Riau	48,655	51,235	45,395	29,051
5	Jambi	17,608	19,123	19,333	20,029
6	South Sumatera	8,343	8,123	8,599	10,882
7	Bangka Belitung	-	1,735	1,777	1,940
8	Bengkulu	1,587	1,637	2,324	2,401
9	Lampung	8,293	5,491	5,130	5,343
10	Banten	-	1,769	1,633	1,275
11	Jakarta	1,255	344	380	6,379
12	West Java	7,555	7,007	6,163	6,688
13	Central Java	7,559	6,682	6,935	5,788
14	Yogyakarta	158	148	252	146
15	East Java	11,535	11,180	10,867	13,616
16	Bali	226	206	276	346
17	NTB	853	814	803	722
18	NTT	759	738	719	94
19	West Kalimantan	19,447	16,816	16,041	16,212
20	Central Kalimantan	6,343	7,284	7,213	5,847
21	South Kalimantan	38,439	42,827	28,229	27,078
22	East Kalimantan	14,107	18,361	19,591	18,515
23	North Sulawesi	681	928	511	578
24	Gorontalo	-	268	146	280
25	Central Sulawesi	35	161	15	22
26	South Sulawesi	6,495	7,555	6,932	9,562
27	Southeast Sulawesi	914	2,330	2,755	3,522
28	Mollucas	10,306	5,184	4,349	5,751
29	North Mollucas	-	162	195	182
30	Papua	14,734	19,726	15,888	16,018
Total		268,301	282,179	259,092	257,791

Source: Ministry of marine and fisheries, 2005

Table 2.6

Aquaculture production in term of province (Metric Tons)

No.	Province	Years			
		2000	2001	2002	2003
1	N.A.D	10,409	8,707	10,205	10,205
2	North Sumatera	19,080	19,875	21,873	21,418
3	West Sumatera	-	-	-	-
4	Riau	355	244	988	1,658
5	Jambi	639	1,550	1,074	1,588
6	South Sumatera	4,689	11,522	14,272	16,726
7	Bangka Belitung	-	88	119	124
8	Bengkulu	657	657	614	1,079
9	Lampung	17,658	18,532	19,942	35,185
10	Banten	-	-	-	-
11	Jakarta	-	-	2,667	3,898
12	West Java	18,777	16,313	20,977	21,519
13	Central Java	11,492	12,479	10,413	11,578
14	Yogyakarta	-	-	-	20
15	East Java	21,158	21,104	19,096	13,524
16	Bali	708	427	605	2,827
17	NTB	1,325	1,003	2,822	5,181
18	NTT	90	25	34	27
19	West Kalimantan	1,955	743	776	868
20	Central Kalimantan	11	117	249	878
21	South Kalimantan	2,294	2,464	2,343	2,350
22	East Kalimantan	7,551	11,136	11,304	11,311
23	North Sulawesi	36	17	129	152
24	Gorontalo	-	143	79	158
25	Central Sulawesi	395	395	584	7,375
26	South Sulawesi	21,748	17,821	18,812	19,454
27	Southeast Sulawesi	2,504	3,691	-	2,804
28	Mollucas	190	190	20	100
29	North Mollucas	-	2	-	23
30	Papua	-	-	-	-
Total		145,721	151,246	161,999	194,033

Source: Ministry of marine and fisheries, 2005

Table 2.7

Area culture by type of culture 1999, 2004

TYPE OF CULTURE		TOTAL		Marine Culture	Brackishwater pond		Freshwater pond		Cage	Floating cage net	Paddy field
		Area of fish pond (Gross Area)	Area of water surface (Net Area)		Gross Area	Net Area	Gross Area	Net Area	Net Area		Net Area
YEAR	1999	594 741	524 341	244	393 196	332 514	65 889	56 171	34	321	135 057
	2000	655 152	552 694	614	419 282	325 530	77 647	68 941	76	187	157 346
	2001	675 744	569 495	713	438 010	351 655	85 900	66 006	80	361	150 680
	2002	702 656	594 074	951	458 107	360 239	94 240	83 526	86	363	148 909
	2003	731 453	610 477	981	480 762	370 824	97 821	86 783	93	382	151 414
	2004	716 317	600 581	1 227	489 811	389 023	99 739	84 791	93	952	124 495
Average growth rate (%)	1999-2001	3.86	2.78	45.87	4.50	3.24	8.79	9.32	28.89	41.26	-1.00
	2002-2004	-2.07	-1.62	25.08	1.88	4.91	1.96	-2.30	0.00	149.21	-17.78

Source: Marine and Fishery Statistic 2005

Figure 2.3

HS number of shrimp product

030611	: Frozen rock lobster and other sea crawfish, whether in shell or not, incl. rock lobster and other sea crawfish in shell, cooked by steaming or by boiling in water
030612	: Frozen lobsters, whether in shell or not, incl. lobsters in shell, cooked by steaming or by boiling in water
030613	: Frozen shrimps and prawns, whether in shell or not, incl. shrimps and prawns in shell, cooked by steaming or by boiling in water
030619	: Frozen crustaceans, whether in shell or not, incl.crustaceans in shell, cooked by steaming or by boiling in water (excl. crawfish, lobsters, shrimps, prawns and crabs)
030621	: Rock lobster and other sea crawfish, whether in shell or not, incl. in shell, cooked by steaming or by boiling in water (excl. frozen)
030622	: Lobsters, whether in shell or not, incl. lobsters in shell, cooked by steaming or by boiling in water (excl. frozen)
030623	: Shrimps and prawns, whether in shell or not, incl.in shell, cooked by steaming or by boiling in water (excl. frozen)
030629	: Crustaceans, whether in shell or not, incl. in shell, cooked by steaming or by boiling in water (excl. frozen and crawfish, lobsters, shrimps, prawns and crabs)
160520	: Shrimps and prawns, prepared or preserved
160530	: Lobster, prepared or preserved
160540 lobster	: Crustaceans, prepared or preserved (excl. crabs, shrimps, prawns and

Source: WITS, 2008

Table 2.9:

The volume of Indonesia shrimp Export based on HS number (MT)

Type of Commodity	HS Code	2003	Share (%)	2004	Share (%)	2005	Share (%)	2006	Share (%)	2007	Share (%)
ROCK LOBSTERS & OTHER SEA CRAWFISHFROZEN	030611	2,459,462	1.82	669,827	0.4803354	114,643	0.08	258,656	0.15	463,688	0.30
LOBSTERS FROZEN	030612	433,480	0.32	273,968	0.1964635	51,774	0.03	405,537	0.24	397,558	0.26
SHRIMPS AND PRAWNS FROZEN	030613	115,856,661	85.57	114,059,004	81.792129	121,328,283	80.04	135,387,884	80.94	112,715,027	73.73
CRAYFISH FROZEN AND OTHERS	030619	6,934,642	5.12	4,592,128	3.2930318	2,695,195	1.78	581,154	0.35	9,062,181	5.93
ROCK LOBSTER & OTHER SEA CRAWFISHINAIRTIGHT CONTAINER	030621	899,549	0.66	940,092	0.6741434	981,772	0.65	1,823,352	1.09	132,543	0.09
LOBSTER INAIRTIGHT CONTAINER	030622	1,411,558	1.04	1,609,585	1.1542393	1,373,074	0.91	1,567,262	0.94	1,579,066	1.03
SHRIMPS AND PRAWNSIN AIRTIGHTCONTAINER	030623	4,498,849	3.32	4,064,436	2.9146219	3,123,352	2.06	3,041,874	1.82	3,745,241	2.45
CRAY FISH INAIRTIGHT CONTAINER	030629	2,845,718	2.10	882,384	0.6327608	1,262,140	0.83	831,503	0.50	943,844	0.62
SHRIMPS AND PRAWNS PREPARED OR PRESERVED	160520	47,528	0.04	12,358,430	8.8622753	20,655,579	13.63	23,376,844	13.97	23,793,626	15.56
LOBSTER PREPARED OR PRESERVED	160530	0	0.00	0	0	1,000	0.00	5,490	0.00	31,808	0.02
OTHER CRUSTACEANS PREPARED OR PRESERVED	160540	402	0.00	0	0	18	0.00	26	0.00	3,908	0.00
TOTAL		135,387,849	100	139,449,854		151,586,830	100	167,279,582	100	152,868,490	100

Source: WITS, 2008 (processed)

Table 2.10

The value of Indonesia Export based on HS number (Million US$)

Type of Commodity	HS Code	2003	Share (%)	2004	Share (%)	2005	Share (%)	2006	Share (%)	2007	Share (%)
ROCK LOBSTERS & OTHER SEA CRAWFISHFROZEN	030611	9,603	0.83	2,170	0.24	413	0.04	1,890	0.17	4,386	0.43
LOBSTERS FROZEN	030612	2,936	0.25	1,477	0.17	233	0.02	1,426	0.13	2,789	0.27
SHRIMPS AND PRAWNS FROZEN	030613	785,856	68.17	770,317	86.83	804,022	85.33	939,711	84.65	792,386	77.59
CRAYFISH FROZEN AND OTHERS	030619	32,424	2.81	22,823	2.57	13,596	1.44	5,988	0.54	67,083	6.57
ROCK LOBSTER & OTHER SEA CRAWFISHINAIRTIGHT CONTAINER	030621	2,599	0.23	3,272	0.37	3,010	0.32	6,096	0.55	4,039	0.40
LOBSTER INAIRTIGHT CONTAINER	030622	3,773	0.33	6,597	0.74	5,263	0.56	7,332	0.66	8,100	0.79
SHRIMPS AND PRAWNSIN AIRTIGHTCONTAINER	030623	2,974	0.26	3,440	0.39	2,557	0.27	4,287	0.39	2,409	0.24
CRAY FISH INAIRTIGHT CONTAINER	030629	9,751	0.85	3,428	0.39	559	0.06	561	0.05	552	0.05
SHRIMPS AND PRAWNS PREPARED OR PRESERVED	160520	297	0.03	73,598	8.30	112,614	11.95	142,721	12.86	139,417	13.65
LOBSTER PREPARED OR PRESERVED	160530	0	0.00	0	0.00	3	0.00	36	0.00	26	0.00
OTHER CRUSTACEANS PREPARED OR PRESERVED	160540	5,217	0.45	0	0.00	0.1	0.00	0.3	0.00	7	0.00
TOTAL		855,430	100	887,122	100	942,270	100	1,110,048	100	1,021,194	100

Source: WITS, 2008 (processed)
Does not include HS 0306

Table 2.11
Yearly Shrimp Production by Major Producing Countries 1991-2000
('000 metric tons)

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
China	564.1	574.1	488.7	603.4	665.6	751.8	829.6	970.9	1,222.7	1,241.9
India	300.5	290.4	363.0	446.6	406.1	415.6	366.6	413.1	423.3	405.7
Thailand	289.9	300.6	343.1	385.0	389.3	370.8	350.8	345.4	370.9	398.5
Indonesia	296.8	312.1	300.7	317.1	334.7	343.3	382.2	345.5	384.5	398.4
USA	148.5	156.5	137.9	130.2	140.2	145.0	132.9	128.0	140.1	153.0
Vietnam	81.3	86.2	94.6	111.7	138.1	135.9	147.7	148.4	148.9	151.1
Canada	44.7	43.1	47.4	53.2	63.1	65.7	82.1	113.1	120.0	130.6
Malaysia	104.7	129.4	109.8	106.4	99.6	108.0	101.0	57.1	102.7	111.9
Mexico	70.6	66.2	79.8	77.3	85.9	78.9	88.5	90.3	95.6	95.1
Greenland	73.1	81.9	76.5	79.8	81.9	72.0	63.9	69.6	79.2	81.5
Philippines	84.9	118.8	130.1	126.6	127.5	113.2	74.5	72.3	73.1	79.4
Norway	49.0	49.1	49.0	38.2	39.3	41.5	42.0	57.1	64.2	66.2
Bangladesh	19.6	21.0	28.5	28.8	34.0	49.3	56.5	66.1	81.1	58.2
Brazil	42.3	44.0	38.4	38.5	43.0	38.9	44.1	42.8	47.7	56.6
Ecuador	118.8	127.0	97.5	98.7	112.1	112.9	137.2	147.4	121.0	51.4
Koren Rep.	55.8	67.1	68.0	58.1	42.5	40.9	41.1	47.6	44.7	37.2
Others	532.7	529.3	542.0	551.7	594.5	622.9	633.7	647.4	599.2	651.7
Total	2,877.3	2,996.8	2,995.0	3,2513	3,397.4	3,506.6	3,574.4	3,762.1	4,118.9	4,168.4

Remark: data include all types of shrimp, namely farm-raised shrimp and wild shrimp
Source: Globefish, 2001

Table 2.12

Estimation on shrimp aquaculture production (in 1,000 metric tons)

Country	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Thailand	120.0	150.0	225.0	220.0	160.0	150.0	210.0	220.0	250.0	280.0
China	220.0	55.0	35.0	70.0	80.0	80.0	80.0	85.0	85.0	100.0
Indonesia	150.0	80.0	100.0	130.0	90.0	80.0	80.0	85.0	85.0	90.0
India	42.0	60.0	70.0	70.0	70.0	75.0	70.0	75.0	80.0	100.0
Bangladesh	27.0	29.0	30.0	30.0	35.0	34.0	38.0	45.0	45.0	55.0
Ecuador	110.0	90.0	100.0	100.0	120.0	130.0	155.0	80.0	40.0	20.0
Vietnam	39.0	41.0	50.0	50.0	30.0	30.0	25.0	35.0	35.0	42.0
Mexico	6.0	6.5	12.0	12.0	12.0	16.0	17.0	20.0	25.0	32.0
Philippines	25.0	20.0	18.0	25.0	25.0	10.0	15.0	20.0	20.0	25.0
Colombia	10.0	12.0	18.0	20.0	20.0	18.0	18.0	18.0	20.0	25.0
Taiwan	25.0	20.0	15.0	7.0	6.0	14.0	10.0	9.0	10.0	10.0
Honduras	5.2	5.7	6.5	10.0	10.0	12.0	12.0	10.0	10.0	12.0
Panama	4.2	4.4	4.6	10.0	10.0	10.0	10.0	9.0	8.0	5.5
Guatemala	2.5	2.7	3.0	7.0	7.0	7.0	7.0	6.0	6.0	4.5
Peru	5.6	5.8	6.0	8.0	8.0	6.0	6.0	5.0	5.0	2.5
Japan	3.5	3.5	3.6	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Others	45.0	51.2	50.0	14.0	30.0	35.0	55.0	54.0	50.0	47.0
Total	840.0	636.8	746.7	788.0	718.0	712.0	815.0	781.0	779.0	855.5

Source: Globefish

Table 2.13

World Total Export of Shrimp by Value ('000 US$), 2001-2005

HS	Exported value 2001	Share (%)	Exported value 2002	Share (%)	Exported value 2003	Share (%)	Exported value 2004	Share (%)	Exported value 2005	Share (%)
030611	452	0.0043%	577	0.0057%	617	0.0054%	647	0.0055%	634	0.0053%
030612	305	0.0029%	320	0.0032%	325	0.0028%	310	0.0026%	381	0.0032%
030613	8,191,833	77.199%	7,637,127	75.607%	8,490,311	73.782%	8,484,293	71.894%	8,582,796	71.149%
030619	213	0.0020%	226	0.0022%	300	0.0026%	283	0.0024%	305	0.0025%
030621	286	0.0027%	285	0.0028%	282	0.0025%	329	0.0028%	345	0.0029%
030622	619	0.0058%	699	0.0069%	771	0.0067%	773	0.0066%	801	0.0066%
030623	346	0.0033%	383	0.0038%	408	0.0035%	444	0.0038%	446	0.0037%
030629	150	0.0014%	153	0.0015%	168	0.0015%	186	0.0016%	178	0.0015%
160520	2,219,964	20.921%	2,299,24	22.762%	2,719,691	23.634%	3,083,120	26.125%	3,199,92	26.526%
160530	114	0.0011%	118	0.0012%	120	0.0010%	139	0.0012%	179	0.0015%
160540	196,979	1.8563%	161,972	1.6035%	294,355	2.5580%	230,648	1.9544%	277,101	2.2971%
TOTAL	10,611,26	100%	10,101,10	100%	11,507,34	100%	11,801,17	100%	12,063,09	100%

Source: www.trademap.org

Table 2.14

World Total Export of Shrimp by Volume (Tons), 2001-2005

HS	Exported quantity 2001	Share (%)	Exported quantity 2002	Share (%)	Exported quantity 2003	Share (%)	Exported quantity 2004	Share (%)	Exported quantity 2005	Share (%)
030611	26	0.0020%	33	0.0024%	31	0.0021%	30	16.9133%	-	0.0000%
030612	22	0.0017%	21	0.0015%	21	0.0014%	17	9.6876%	18	0.0012%
030613	1,272,752	96.6871%	1,349,611	97.6632%	1,444,708	96.4066%	-	0.0000%	1,425,547	96.3636%
030619	35	0.0027%	36	0.0026%	58	0.0039%	47	26.6350%	38	0.0025%
030621	16	0.0012%	14	0.0010%	14	0.0009%	15	8.5615%	15	0.0010%
030622	62	0.0047%	67	0.0048%	63	0.0042%	60	34.1273%	58	0.0039%
030623	98	0.0074%	128	0.0092%	131	0.0087%	-	0.0000%	114	0.0077%
030629	24	0.0018%	27	0.0019%	25	0.0017%	-	0.0000%	20	0.0014%
160520	300	0.0228%	323	0.0234%	390	0.0261%	-	0.0000%	492	0.0333%
160530	6	0.0005%	6	0.0005%	7	0.0004%	7	4.0753%	10	0.0006%
160540	43,021	3.2682%	31,637	2.2894%	53,109	3.5440%	-	0.0000%	53,031	3.5848%
TOTAL	1,316,362	100%	1,381,903	100%	1,498,556	100%	176	100%	1,479,342	100%

Source : www.trademap.org

Table 2.15

World Export Value ('000 US$) for HS 030613

YEAR	Exporter						
	World estimation	Other	Thailand	Vietnam	Indonesia	India	Ecuador
2001	8,191,833	4,312,859	722,291	1,198,044	799,215	879,318	280,106
2002	7,637,127	4,926,533	784,617	0	888,908	784,392	252,677
2003	8,490,311	4,752,476	1,008,688	841,694	826,047	785,856	275,550
2004	8,484,293	4,883,537	995,733	780,926	734,681	770,317	319,099
2005	8,582,796	4,501,955	1,081,302	903,470	845,607	804,023	446,439
2006							
Share (%)							
2001	100%	52.65%	8.82%	14.62%	9.76%	10.73%	3.42%
2002	100%	64.51%	10.27%	0.00%	11.64%	10.27%	3.31%
2003	100%	55.98%	11.88%	9.91%	9.73%	9.26%	3.25%
2004	100%	57.56%	11.74%	9.20%	8.66%	9.08%	3.76%
2005	100%	52.45%	12.60%	10.53%	9.85%	9.37%	5.20%
Average Share (%)							
2001-2005	100%	56.63%	11.06%	8.85%	9.93%	9.74%	3.79%

Source: www.trademap.org

Table 2.16:

World Export Volume (Tons) for HS 030613 (idem)

YEAR	Exporters						
	World estimation	Other	Thailand	Viet Nam	Indonesia	India	Ecuador
2001	1,272,752	765,068	134,944	80,999	108,744	138,836	44,161
2002	1,349,611	946,201	92,898	86,612	104,837	166,258	45,703
2003	1,444,708	892,627	113,369	111,725	115,857	158,768	52,362
2004	1,208,028	659,245	116,805	111,814	114,059	140,474	65,631
2005	1,425,547	824,611	150,611	122,857	121,328	116,580	89,560
Share (%)							
2001	100%	60.11%	10.60%	6.36%	8.54%	10.91%	3.47%
2002	100%	70.11%	0.00%	6.42%	7.77%	12.32%	3.39%
2003	100%	61.79%	7.85%	7.73%	8.02%	10.99%	3.62%
2004	100%	54.57%	9.67%	9.26%	9.44%	11.63%	5.43%
2005	100%	57.85%	10.57%	8.62%	8.51%	8.18%	6.28%
Average Share (%)							
2001-2005	100%	60.88%	7.74%	7.68%	8.46%	10.80%	4.44%

Source: www.trademap.org

Table 2.17

World Total Import of Shrimp by Value ('000 US$), 2001-2005

HS Code	Imported value 2001	Share (%)	Imported value 2002	Share (%)	Imported value 2003	Share (%)	Imported value 2004	Share (%)	Imported value 2005	Share (%)
030611	561	0.005%	641	0.006%	624	0.005%	636	0.005%	606	0.005%
030612	269	0.002%	300	0.003%	323	0.003%	324	0.003%	389	0.003%
030613	9,032,077	80.611%	8,281,018	78.305%	9,307,431	78.219%	9,508,849	77.228%	8,904,035	74.627%
030619	265	0.002%	268	0.003%	298	0.003%	328	0.003%	336	0.003%
030621	277	0.002%	258	0.002%	261	0.002%	268	0.002%	241	0.002%
030622	653	0.006%	699	0.007%	762	0.006%	785	0.006%	857	0.007%
030623	436	0.004%	421	0.004%	479	0.004%	514	0.004%	505	0.004%
030629	135	0.001%	135	0.001%	155	0.001%	178	0.001%	189	0.002%
160520	2,034,800	18.161%	2,210,570	20.903%	2,432,851	20.445%	2,667,350	21.663%	2,839,737	23.801%
160530	115	0.001%	118	0.001%	125	0.001%	130	0.001%	163	0.001%
160540	134,873	1.204%	80,957	0.766%	155,926	1.310%	133,402	1.083%	184,259	1.544%
Total	11,204,46	100%	10,575,38	100%	11,899,23	100%	12,312,76	100%	11,931,31	100%

Source: www.trademap.org

Table 2.18

World Total Import of Shrimp by Volume (Tons), 2001-2005

HS Code	Imported quantity 2001	Share (%)	Imported quantity 2002	Share (%)	Imported quantity 2003	Share (%)	Imported quantity 2004	Share (%)	Imported quantity 2005	Share (%)
030611	28	0.0021%	30	0.0022%	29	0.0019%	28	0.0019%	27	0.0018%
030612	16	0.0012%	16	0.0012%	16	0.0011%	19	0.0012%	18	0.0012%
030613	1,333,688	97.9944%	1,355,360	98.5366%	1,489,694	97.8764%	1,479,006	98.1996%	1,457,017	97.8511%
030619	38	0.0028%	36	0.0026%	38	0.0025%	40	0.0027%	38	0.0025%
030621	14	0.0010%	13	0.0010%	14	0.0009%	-	0.0000%	13	0.0008%
030622	59	0.0043%	66	0.0048%	61	0.0040%	60	0.0040%	58	0.0039%
030623	114	0.0084%	121	0.0088%	145	0.0095%	-	0.0000%	132	0.0088%
030629	20	0.0015%	23	0.0017%	21	0.0014%	22	0.0014%	22	0.0014%
160520	295	0.0217%	332	0.0242%	369	0.0243%	394	0.0262%	446	0.0300%
160530	6	0.0005%	7	0.0005%	6	0.0004%	6	0.0004%	7	0.0005%
160540	26,704	1.9621%	19,484	1.4165%	31,621	2.0776%	26,547	1.7626%	31,238	2.0979%
Total	**1,360,983**	**100%**	**1,375,489**	**100%**	**1,522,016**	**100%**	**1,506,122**	**100%**	**1,489,015**	**100%**

Source: www.trademap.org

Table 2.19

Five Major Country Importer for HS 030613 ('000 US$)

YEAR	*Importers*						
	World estimation	United States of America	Japan	France	Spain	Italy	Others
2001	9,032,077	3,039,235	2,276,712	399,790	768,818	267,722	2,279,800
2002	8,281,018	2,716,664	2,156,192	398,195	712,727	226,930	2,070,310
2003	9,307,431	3,078,260	1,949,886	502,942	958,936	338,657	2,478,750
2004	9,508,849	2,952,599	2,007,367	536,352	953,450	322,564	2,736,517
2005	8,904,035	2,920,194	1,938,849	546,898	511,914	350,376	2,635,804
Share (%)							
2001	100%	33.65%	25.21%	4.43%	8.51%	2.96%	25.24%
2002	100%	32.81%	26.04%	4.81%	8.61%	2.74%	25.00%
2003	100%	33.07%	20.95%	5.40%	10.30%	3.64%	26.63%
2004	100%	31.05%	21.11%	5.64%	10.03%	3.39%	28.78%
2005	100%	32.80%	21.77%	6.14%	5.75%	3.94%	29.60%
Average Share (%)							
2001-2005	100%	32.68%	23.02%	5.28%	8.64%	3.33%	27.05%

Source: www.trademap.org

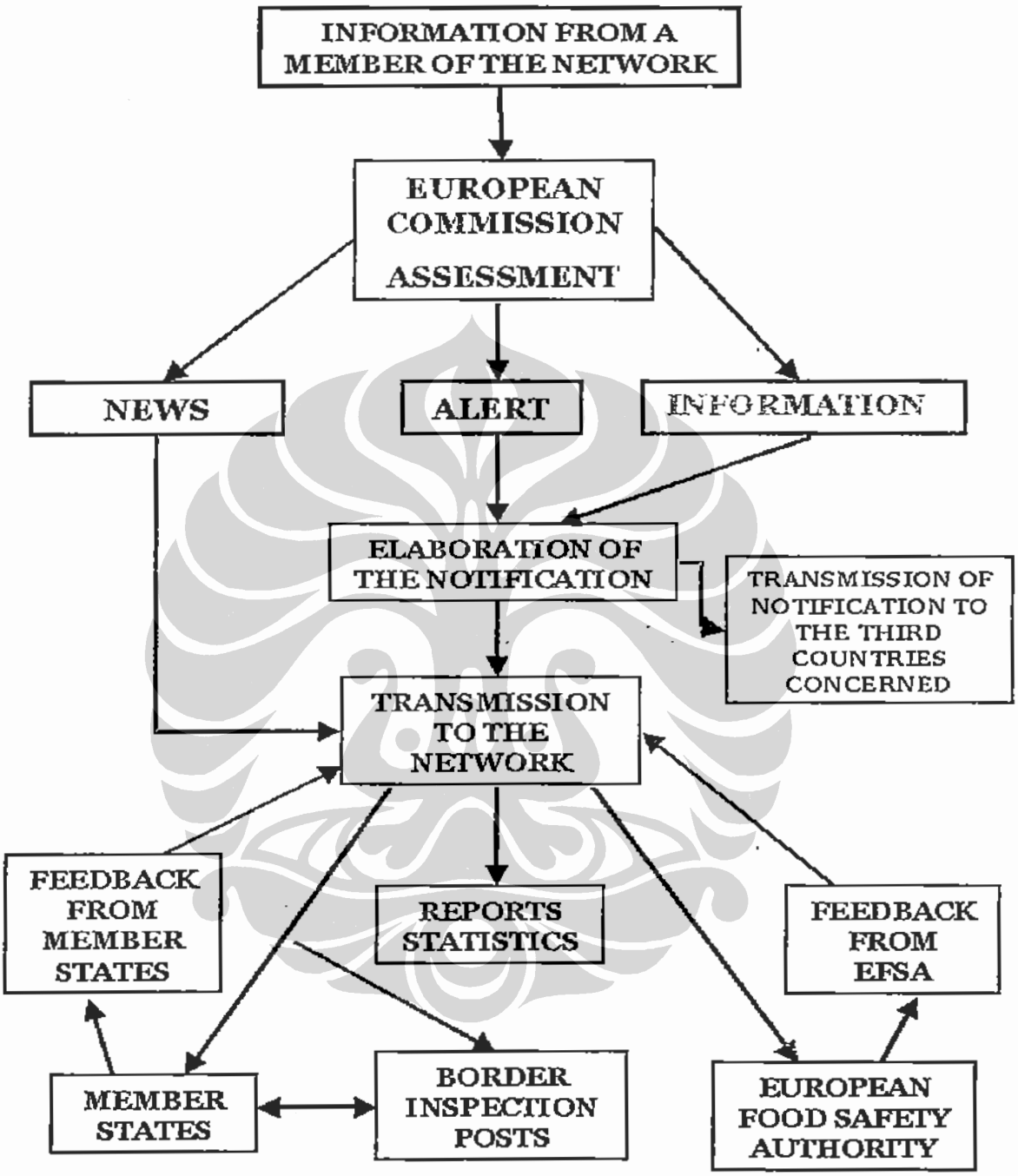
Table 2.20

World Import Quantity (Tons) for HS 030613

YEAR	Importer						
	World estimation	Others	United States of America	Japan	Denmark	Spain	France
2001	1,333,688	499,829	324,192	245,048	75,948	130,746	57,925
2002	1,355,360	505,496	331,290	248,868	81,673	125,162	62,871
2003	1,489,694	550,939	398,339	233,195	89,719	141,556	75,946
2004	1,479,006	528,883	395,748	241,443	86,261	141,680	84,991
2005	1,457,017	569,343	395,924	232,435	91,558	83,933	83,824
Share (%)							
2001	100%	37.48%	24.31%	18.37%	5.69%	9.80%	4.34%
2002	100%	37.30%	24.44%	18.36%	6.03%	9.23%	4.64%
2003	100%	36.98%	26.74%	15.65%	6.02%	9.50%	5.10%
2004	100%	35.76%	26.76%	16.32%	5.83%	9.58%	5.75%
2005	100%	39.08%	27.17%	15.95%	6.28%	5.76%	5.75%
Average Share (%)							
2001-2005	100%	37.32%	25.88%	16.93%	5.97%	8.78%	5.12%

Source: www.trademap.org

FLOW-CHART FOR TRANSMISSION OF INFORMATION



Source : RASFF report

Figure 2.9 Rapid Alert System for Food and Feed Mechanism

1. Model Pooled Least Squares

Dependent Variable: LOG(EXS?)
Method: Pooled Least Squares
Date: 11/12/08 Time: 19:48
Sample: 1997 2007
Included observations: 11
Number of cross-sections used: 7
Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.043894	1.514418	2.670262	0.0094
LOG(GDPREL?)	0.111987	0.144249	0.776343	0.4401
LOG(NER?)	0.643208	0.125297	5.133458	0.0000
LOG(RPINA?)	-1.367489	0.527715	-2.591341	0.0116
DUM?	-0.884303	0.291816	-3.030342	0.0034

R-squared	0.556602	Mean dependent var	7.064114
Adjusted R-squared	0.531969	S.D. dependent var	1.303889
S.E. of regression	0.892027	Sum squared resid	57.29131
Log likelihood	-97.87549	F-statistic	22.59559
Durbin-Watson stat	0.408629	Prob(F-statistic)	0.000000

2. Fixed Effect Model

Dependent Variable: LOG(EXS?)
Method: Pooled Least Squares
Date: 11/12/08 Time: 19:48
Sample: 1997 2007
Included observations: 11
Number of cross-sections used: 7
Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPREL?)	-0.270800	0.440575	-0.614650	0.5409
LOG(NER?)	0.116073	0.075911	1.529060	0.1310
LOG(RPINA?)	-1.182740	0.279237	-4.235608	0.0001
DUM?	-0.296861	0.194744	-1.524368	0.1322
Fixed Effects				
_BEL--C	11.34545			
_DEN--C	8.752445			
_FRA--C	10.79512			
_GER--C	10.63102			
_NED--C	10.46706			
_SWE--C	8.319053			
_UK--C	11.65606			

R-squared	0.896133	Mean dependent var	7.064114
Adjusted R-squared	0.880396	S.D. dependent var	1.303889
S.E. of regression	0.450934	Sum squared resid	13.42056
Log likelihood	-41.99810	F-statistic	56.94308
Durbin-Watson stat	0.858583	Prob(F-statistic)	0.000000

3. Random Effect Model

Dependent Variable: LOG(EXS?)
Method: GLS (Variance Components)
Date: 11/12/08 Time: 19:45
Sample: 1997 2007
Included observations: 11
Number of cross-sections used: 7
Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.529367	1.786794	3.654236	0.0005
LOG(GDPREL?)	0.271122	0.252488	1.073803	0.2865
LOG(NER?)	0.158889	0.078641	2.020426	0.0471
LOG(RPINA?)	-1.199979	0.293002	-4.095465	0.0001
DUM?	-0.475480	0.175238	-2.713337	0.0083
Random Effects				
_BEL--C	1.407722			
_DEN--C	-0.778824			
_FRA--C	0.010768			
_GER--C	-0.334010			
_NED--C	0.333460			
_SWE--C	-1.389536			
_UK--C	0.750420			
GLS Transformed Regression				
R-squared	0.874735	Mean dependent var		7.064114
Adjusted R-squared	0.867775	S.D. dependent var		1.303889
S.E. of regression	0.474129	Sum squared resid		16.18551
Durbin-Watson stat	0.718634			
Unweighted Statistics including Random Effects				
R-squared	0.892479	Mean dependent var		7.064114
Adjusted R-squared	0.886506	S.D. dependent var		1.303889
S.E. of regression	0.439266	Sum squared resid		13.89276
Durbin-Watson stat	0.837231			