

## Thalassorama

# European Union 1997 Seafood-Safety Ban: The Economic Impact on Bangladesh Shrimp Processing

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**Abstract** *Major markets for Bangladesh frozen shrimp are the European Union, the United States, and Japan. Bangladesh frozen shrimp imports into the EU and the United States have experienced safety and quality problems. The 1997 European Commission ban on Bangladesh seafood imports into the EU cost the Bangladesh frozen shrimp processing industry US\$14.665 million in lost revenues.*

**Key words** Bangladesh, European Union, seafood-safety, shrimp, trade ban.

### Introduction

The population of Bangladesh is estimated at 124 million with an annual growth rate of 1.8%. Gross domestic product in fiscal year 1997 increased 5.7%, compared to 5.3% the previous year. Agriculture (including livestock, forestry, and fisheries) grew 5.3% in 1997 after years of stagnation or negative growth. Bangladesh export growth was 14% in fiscal year 1997, with frozen shrimp and fish the fourth leading export item at 7.3% of the total. Fisheries contribute 9.8% to the portion of gross domestic product contributed by agriculture. Fisheries play a major role in nutrition, employment, and foreign exchange earnings. Fish supplies about 60% of animal protein, and 1.2 million people are directly employed with an additional 11 million people indirectly employed in fisheries (Konuma 1998).

Bangladesh must continue to develop its fisheries and aquaculture resources and use shrimp and fish not only as a domestic food source, but also as a contribution to

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export growth development. This mandates a focus on developing sustainable fisheries and aquaculture practices, and on producing safe export products which are competitive in the world's seafood markets. Safety and quality problems during recent years with frozen shrimp exported from Bangladesh have affected shrimp export markets. This article provides estimates of the costs to the Bangladesh frozen shrimp industry due to the mid-1997 European Commission ban on imports of seafood products into the European Union from Bangladesh.

## Frozen Shrimp Trade

### *Worldwide*

Frozen shrimp and prawns are important commodities in international commerce. Between 1987 and 1994, the volume of frozen shrimp and prawns imported worldwide increased 46% from 728,931 metric tons to 1,067,787 metric tons. The amount imported in 1995 and 1996 was slightly lower, at 1,002,198 and 1,019,741 metric tons, respectively. Total value of frozen shrimp imports peaked in 1995 at US\$9.081 billion, or a 66% increase over 1987. Imports in 1996 were worth US\$8.462 billion. Exports of frozen shrimp to Japan, the EU, and the U.S. represent from 82% to 86% of the world total from 1987 and 1996. Japan and the EU import approximately the same amount (about 30%) with the U.S. importing about 25%. Japan was the leader by a small margin from 1987 to 1990, but switched places with the EU from 1991 through 1996.

These three regions imported 83% of the world volume in 1996 as follows: the EU (32%), Japan (28%), and the U.S. (23%). This represents about 90% of the world value in imported shrimp. Japan is the leader, with its purchases ranging from 43% of the world total in 1987, to 37% in 1996. The trend has been a slight decline in Japanese imported value. The U.S. value of imports in 1996 was 26% of the world total, followed by the EU at 25%. Value per kilogram imported is highest for Japan, followed by the U.S. and the EU. Since 1987, the highest value per kilogram for all three regions occurred in 1995, with declines in value in 1996. Values per kilogram (1995; 1996) for each region are: Japan (US\$12.07; US\$10.83); U.S. (US\$9.85; US\$9.57); EU (US\$7.16; US\$6.63).<sup>1</sup>

Comparable data for 1997 across all three regions are not yet available, but initial data indicate that 1997 was a record year for shrimp prices due to limited supplies from aquaculture and a very strong U.S. market due to the strength of the U.S. economy and the dollar. United States imports expanded by 10% in 1997, overtaking Japan for the first time as the world's major shrimp market. Japanese imports fell by 7% in 1997 to 267,000 metric tons, the lowest figure in nine years (FAO/GLOBEFISH 1998).

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<sup>1</sup> Value per kilogram data used in this paper represent the total value of frozen shrimp imports divided by the total volume of frozen shrimp imports as reported by the exporting or importing country. Frozen shrimp vary greatly in price depending on the size of the shrimp and product form. For example, in the U.S., frozen shrimp data may be reported as shrimp frozen, other preparations; peeled, frozen; or shell-on, frozen in sizes ranging from 15/20 to over 70 count. The purpose of this discussion is to describe the world trade in frozen shrimp. Data were not intended to be developed by product form or count size. Sources are original data from: Japan, Customs Clearance Statistics, Ministry of Finance; United States, National Marine Fisheries Service, United States Department of Commerce; EU, Fishery Information and Statistics Unit, FAO.

*Bangladesh*

Asia<sup>2</sup> is the major exporter of frozen shrimp and prawns in the world. Asia accounted for 55% to 62% of the volume of frozen shrimp exports worldwide from 1987 to 1995, and 55% to 64% of the value of frozen shrimp exports for the same period. In 1995, Thailand was, by far, the leading frozen shrimp exporter followed by Indonesia, India, China Mainland, Vietnam, and the Philippines. Bangladesh frozen shrimp and prawn exports represent 3.8% to 4.5% of the Asian volume, and 3.5% to 4.8% of Asian value from 1987 to 1995. On a world basis, Bangladesh frozen shrimp and prawns exports represent 2.2% to 3.0% of the volume, and 2.1% to 2.7% of the value. Average annual value per kilogram for Bangladesh exports has been below the average for the Asian region in seven of the nine years from 1987 to 1995. The only two years when Bangladesh's value per kilogram was higher were 1988 and 1989. Since 1990, Bangladesh's value per kilogram received has been from 7% to 16% lower than the Asian region.

A recent study analyzed the comparative advantage of nine shrimp exporting countries to Japan and the U.S. (Thailand, Indonesia, the Philippines, Malaysia, China, India, Taiwan, Ecuador, and Mexico). Taiwan was the only country concluded to have a comparative advantage in frozen shrimp exports to Japan. Indonesia, the Philippines, Ecuador, and Mexico had a comparative advantage in exporting shell-on, frozen shrimp to the U.S. Thailand and China were neutral, and Malaysia, India, and Taiwan had a comparative disadvantage (Ling, Leung, and Sheng 1995). Although Bangladesh was not one of the nine countries included in the study, it is reasonable to assume that Bangladesh does not have a comparative advantage in shipping to Japan or the U.S. Its low percentage of the market, lower-valued product, and negative quality reputation make it a likely price-taker instead of being a price-setter. One way Bangladesh can improve its export position is to improve the safety and quality levels of its shrimp exports since the Bangladesh industry and government controls that particular element of its processing industry.

Bangladesh relies mainly on its inland fishery resources, including aquaculture, for domestic consumption and exports. Cultured shrimp is estimated to be about 4 times that of captured shrimp in export quantity. Shrimp represent about 90% of the value of Bangladesh's marine product exports. Shrimp and prawns exported from Bangladesh are almost entirely in block frozen form. Shell-on packing is either 2 kilogram or 4 pound cartons, depending on the market. Freshwater prawns range in counts from under 5 to 51/60, cultured black tiger shrimp from under 5 to 61/70, and white shrimp from under 5 to 131/150. Other products are peeled and deveined, including mixed species that range in count size usually up to 131/150. Count sizes vary according to species and volume size of pack. Peeled and undeveined shrimp are packed in cartons with mixed species usually up to 300/500 count. Master cartons are 50 pounds, 20 kilograms, or 18 kilograms. Private processing plants target almost entirely the export market while government plants pack for both domestic consumption and export.

Bangladesh depends on three major markets for frozen shrimp exports. The EU has been the leading importer of Bangladesh shrimp from 1989 to 1991 and 1994 through 1996, the most recent year for which comparable data are available. The EU accounted for 34%, 40%, and 50% of total Bangladesh frozen shrimp exports these three years. The U.S. was slightly ahead in 1992 and 1993, second to the EU all

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<sup>2</sup> The sixteen countries referred to as Asia are: Bangladesh, China Mainland, China Taiwan, Hong Kong, India, Indonesia, Korea Republic, Malaysia, Myanmar, Pakistan, Philippines, Singapore, Thailand, Turkey, United Arab Emirates, and Vietnam.

other years, and imported 38%, 32%, and 23% of all Bangladesh shrimp from 1994 to 1996. Japan has gradually increased its share, with 18%, 15%, and 26% from 1994 to 1996. Total value of Bangladesh frozen shrimp imports into these three markets reached a maximum of US\$287.6 million in 1996 with the U.S. accounting for US\$109.6 million, the EU US\$108.8 million, and Japan US\$69.2 million. From 1989 to 1993, the value per kilogram of imports into the three markets was about the same. Some divergence occurred in 1994, with import values per kilogram for the U.S. and Japan increasing at a faster rate than the EU. Prices in Japan fell to EU levels in 1996 and even further in 1997, to 32% below those of the U.S. (see table 1).

## Safety and Quality Problems

Shrimp processed for the world market must be produced to meet minimum international standards. Standards followed should be consistent with those specified by the Codex Alimentarius Commission (Codex 1995; Codex 1978 and subsequent revisions). The product must also meet buyer specifications and be produced to comply with regulatory requirements of the importing country. Meeting minimum standards and buyer and importing country regulations on a consistent basis also creates a "good" reputation for products from the exporting country.

Bangladesh has a reputation for producing seafood that sometimes does not meet the required standards of safety and quality. As in other developing countries, major constraints in Bangladesh include a lack of sufficient funds with which to invest in expensive mechanical equipment, fishing boats, pond grow-out facilities, buildings, and trained personnel. Insufficient and irregular supplies of electricity, inconsistent availability of high-quality water and ice, and poor transportation facilities also hinder the use of modern sanitary practices. Major quality problems begin mainly in preprocessing operations. This includes the handling of raw shrimp (sorting by size and color, removal of heads or peeling) in small plants, sheds, houses, or available open spaces, often under conditions and in facilities unsuitable for food handling. Preprocessed, raw shrimp is the raw material for industrial processing plants. Additional problems incurred during the actual processing at the plant level also often contribute to the safety and quality of processed shrimp traded in world markets.

**Table 1**  
Average Value of Frozen Shrimp Imported into the  
U.S., Japan, and the EU from Bangladesh, 1989–97

Importing Region	Years								
	1989	1990	1991	1992	1993	1994	1995	1996	1997
	US\$ Per Kilogram								
U.S.	7.69	8.45	7.48	8.08	8.32	11.32	13.27	11.87	13.56
Japan	7.53	8.62	7.70	8.22	8.24	10.42	13.75	10.82	9.21
EU	6.90	6.70	7.97	7.84	8.34	9.93	10.95	10.56	*

Source: Derived from: Japan, Customs Clearance Statistics, Ministry of Finance; United States, National Marine Fisheries Service, United States Department of Commerce; European Union, Fishery Information and Statistics Unit, Food and Agriculture Organization, United Nations.

Note: \* Data not available.

By the end of the 1970s, the Bangladesh seafood processing industry began to expand rapidly, but the use of new technology, sanitary facilities and processes, and trained manpower at the worker and management levels did not keep pace with this rapid growth. As a result, the export of frozen seafood suffered considerably from 1975 to 1978, as seafood imports from Bangladesh were placed under automatic detention by the United States Food and Drug Administration (USFDA) (Ahmed 1998).

International aid agencies, including the Food and Agriculture Organization of the United Nations (FAO), have recognized the potential for the expansion of the Bangladesh seafood industry for a number of years. FAO has also recognized the need for improvements in Bangladesh seafood safety and quality, with missions there in the early 1980s to assist it in the development of national fishery product standards, regulations, and fish inspection schemes. In 1983, the Bangladesh Government created a Fish and Fish Product Ordinance (Inspection and Quality Control), and, in 1985, the quality control laboratory was updated and additional personnel hired (Ahmed 1998). In 1997, both industry and government made additional investments and improvements (Cato and Lima dos Santos, in press).

More recently, FAO has initiated a project in Bangladesh to assist in the development of the seafood industry. The project began in April 1996, and focuses directly on the preparation of a HACCP-based fish safety and quality assurance program<sup>3</sup> for shrimp and fish plants in Bangladesh. This project is designed to train key persons in the private and public sectors to design and implement HACCP-based programs. It is also designed to assist the government and shrimp industry in developing the HACCP concept and to inform Bangladesh industry and government personnel about the new sanitary and quality requirements of major importing countries, in particular those that relate to the application of HACCP principles (FAO 1995). A parallel project carried out by INFOFISH with Common Fund for Commodities (CFC) funding, focuses on the export promotion of value-added products and their sustainable development. This project began in mid-1996 and includes such activities as market feasibility studies to identify potential exporters, cost analyses, visits to target markets, the development of pilot production programs, assessing consumer acceptability, exporting value-added products and monitoring the export activity, providing production manuals and industry training, and organizing investment seminars. A final objective includes improving the quality and sustainability of the processed products (INFOFISH 1996).

### **Shrimp Safety and Quality in Major Markets**

These assistance programs are extremely timely. Bangladesh frozen shrimp exporters continue to have both real and perceived problems with buyers in the U.S., the EU, and Japan, concerning the safety and quality of their products. Exporters also continue to experience major problems regarding the reputation of their products with government import inspection programs in the U.S. and the EU.

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<sup>3</sup> The principal focus for seafood HACCP programs is to ensure the safety of seafood. For countries and plants lacking in technical and sanitary standards, the HACCP concept can also be used to improve seafood quality once the plants are capable of achieving adequate sanitary standards. The goal in Bangladesh is to upgrade processed seafood to minimum safety and quality standards.

### *Industry*

Industry buyers have experienced problems with supply irregularity, including poor delivery times, an inability to execute orders in time, under-sizing, inclusion of mixed sizes, and poor quality (such as black spot and under-weight shipments). Some buyers have reduced their Bangladesh imports, except for those from time-tested reliable suppliers. Buyers in the U.S. indicated that some shipments from Bangladesh were filthy and decomposed and that product sourcing was inconsistent. Bangladesh products also brought lower retail prices than those from some other countries, and insurance costs for the product were higher due to the refusal of some shrimp processors to take back product in quality disputes. Buyers in Japan also reported quality problems with previously imported shrimp from Bangladesh (CFC/INFOFISH 1997). As part of the value-added INFOFISH project, visits by Bangladesh shrimp processors to Japan, the EU, and the U.S. were sponsored in February and March 1997. Potential buyers in Germany, France, and Belgium were interested in Bangladesh shrimp products, as long as the processors could assure a constant supply and satisfy quality requirements. Successful initial exports of added-value shrimp products resulted by the end of 1997, particularly to Japan.

### *European Commission Safety-Related Import Ban*

On July 30, 1997, the European Commission banned imports of fishery products from Bangladesh into the EU (EEC 1997) as the result of European Community inspections of seafood processing plants in Bangladesh. The concern resulted from serious deficiencies in the infrastructure and hygiene in processing establishments and because there were not enough guarantees of the efficiency of the controls carried out by the competent authorities (Bangladesh government inspectors). The European Commission determined that consuming fishery products processed in Bangladesh posed a significant risk to public health.

Subsequent inspections and decisions recognized the Bangladesh Department of Fisheries, Fish Inspection and Quality Control, Ministry of Fisheries and Livestock as the competent authority in Bangladesh. They also indicated that Bangladesh quality assurance legislation was equivalent to that of the EU. Subject to certain provisions, the ban was lifted on seafood product imports from Bangladesh for six approved establishments for products prepared and processed after December 31, 1997 (EEC 1998). As of July 1998, the European Commission has approved a total of eleven Bangladesh plants for export to the EU.

### **Effect of the European Commission Safety-Related Ban**

The effect of the European Ban on the Bangladesh frozen shrimp processing industry can be measured in two ways. First, secondary data are available from published sources, and on-going data collection programs from which cost estimates due to the ban can be determined. Second, survey results from shrimp processing firms in Bangladesh also provided data from which cost estimates can be made for some inputs on a per-plant basis.

*Secondary Data Analysis*

Since Bangladesh has become increasingly dependent on the EU as a market for its frozen shrimp, a complete ban on imports to this market can be expected to create economic consequences. Secondary data were used to determine the volume of Bangladesh shrimp exports from August to December 1997. This data did not include shipments to the EU. Bangladesh imports were purchased by the United States, Japan, and all other countries grouped as one market segment. An estimate was also made of the volume and value of Bangladesh shrimp exports "if" the European Commission ban had not been in effect. This estimate was based on both actual 1997 data and historical 1993 to 1996 trading patterns. The difference in value of export sales "with" and "without" the European Commission ban was the economic cost of the ban to the Bangladesh shrimp processing industry.

It is possible to track movements of frozen shrimp exports from Bangladesh to the other two major markets (the U.S. and Japan) during the total ban between August to December 1997. Monthly data on the volume and value of frozen shrimp imports from Bangladesh into the U.S. and Japan are available through December 1997. Monthly data are available for the EU through April 1997<sup>4</sup> (see footnote 1 for source). Since seafood from Bangladesh was not allowed into the EU between August and December 1997, frozen shrimp exports to that market were zero.

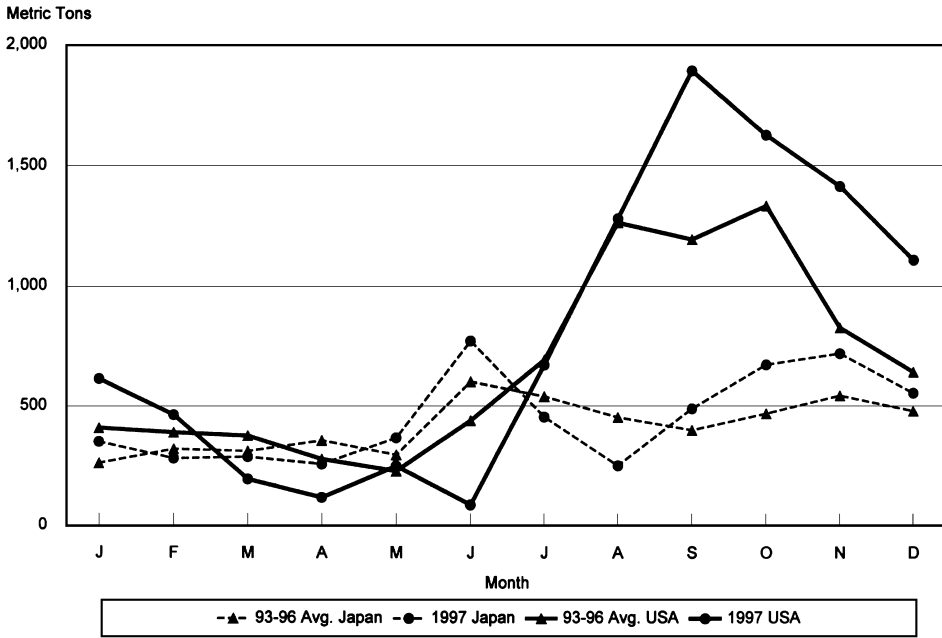
Comparing average monthly exports from Bangladesh into the U.S. and Japan from 1993 to 1996 with those of 1997 clearly shows a shift to these two markets (figure 1). Monthly imports for 1997 compared very closely to the 1993 to 1996 average from January through July 1997. However, from August to December 1997, imports to the U.S. and Japan were substantially higher than the 1993 to 1996 average for those same months. Although some annual and monthly variation can be expected due to shrimp production levels, consumer demand, and in-country economic conditions, it seems clear that market shifts occurred. This is possible with a homogeneous product (same product form to alternative markets), such as frozen shrimp, with a reasonable storage life. The total increase over the average for the U.S. and Japan combined accounted for 47% of the average normally exported to the EU during August to December. The rest apparently was spread among other smaller markets.<sup>5</sup> It is also logical to assume that Bangladesh shrimp could be shipped through other countries for repacking and exporting to the EU, but data are not yet available to track these shrimp product movements.

Value per kilogram comparisons on a monthly basis for frozen shrimp imports from Bangladesh into the United States and Japan also show interesting patterns. On a worldwide basis, the United States has been the highest-value market, followed by Japan and the EU. Monthly values for these three markets for Bangladesh shrimp tracked reasonably close in 1994 and then showed divergence beginning in 1995 (figure 2). Except for a few months, value per kilogram paid by the EU fell below that paid by the U.S. and Japan through 1996. Through 1995, the U.S. and Japan paid about equal values, and in 1996, the U.S. became the highest-value market. Japan dropped to the lowest-value market in early 1997, probably due to the condition of the Japanese economy and the lower value of the Japanese yen in relation to the U.S. dollar. Through the first four months of 1997 (the latest date of EU data availability), the EU paid values about midway between what the U.S. and Japan paid. These value movements and changes are significant, particularly in regard to the Eu-

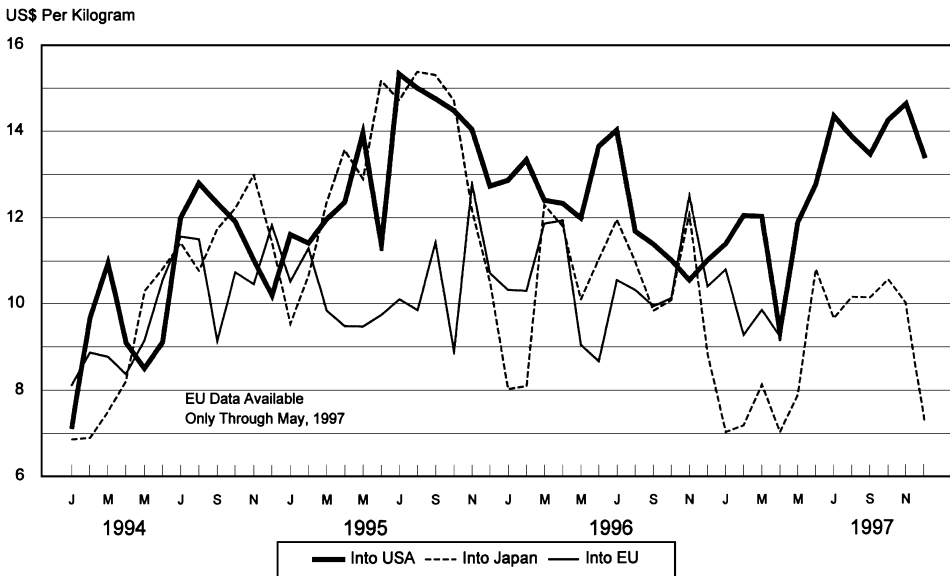
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<sup>4</sup> As of April 1998, when this analysis was completed.

<sup>5</sup> Tracking imports to smaller markets is problematic due to availability of data and may be possible only after data are available one to two years from the time this paper was written.



**Figure 1.** Comparison of 1997 and 1993–96 Average Volume of Monthly Imports of Frozen Shrimp into Japan and the U.S. from Bangladesh



**Figure 2.** Value of Monthly Imports of Frozen Shrimp from Bangladesh into the U.S., Japan, and the EU, 1994–97



ropean ban and the fact that, historically, 46% to 48% of Bangladesh shrimp are processed and sold during the August to December period of each year.

During the time of the European Commission ban in mid-1997, the U.S. was the highest-value market, and shifts of product to that market created an increase in revenues over likely values that would have been received had the product gone to the EU market. Conversely, prices in Japan were substantially below prior years, and product shifted to Japan created a lower value than would have been expected in the EU. Bangladesh-processed shrimp consumed domestically and/or sold in minor markets has always been very low in value. Product shifted to minor markets due to the ban would be expected to receive a much lower price. However, this is offset some by the fact that the diverted product would be of higher quality and lower-count size (than normally sent to those markets) and, thus, would bring higher prices than normal in these markets if the market could absorb the product.

Using estimated sales "with" and "without" the ban, it was determined that the European Commission ban caused Bangladesh frozen shrimp processors to receive US\$14.6 million less in revenues during the August to December 1997 period.<sup>6</sup> Anticipated lost sales in the EU of US\$65.1 million were offset by only US\$50.4 million in increased sales in other markets, or a decline of 8.7% from levels anticipated without the ban (tables 2 and 3).

### *Survey Data Analysis*

Based on FAO records from training programs and personal visits to Bangladesh, and from the INFOFISH database, a list of eighty-six seafood firms was compiled for Bangladesh. Fifty-one firms were identified as known or probable processors of frozen shrimp. A three-page questionnaire was faxed from FAO headquarters in Rome, Italy, during the first week of April 1998 to fifty-one firms located mostly in Khulna and Chittagong, with a few to other locations. Of this total, thirty-six faxes actually connected to a receiving fax machine, with fifteen failing due to outdated fax numbers. Of the thirty-six firms, nineteen returned a completed survey form, by fax, to FAO by April 22, 1998. These nineteen firms represent 30% of the volume and 41% of the value of Bangladesh frozen shrimp exports as determined by comparing 1997 reported

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<sup>6</sup> All monthly value data in yen and ECU were equated to US\$ using monthly exchange rates for these two currencies and the US\$ based on the exchange rate on day 15 of each month. Assumptions used for the analysis are as follows: (i) Actual reported monthly volume and value data for imports in the U.S. and Japan were used; (ii) 1997 monthly imports from Bangladesh were assumed to equal the 1993 to 1996 average, since actual 1997 data are not yet available; (iii) Imports into the EU were zero during the August to December 1997 ban; (iv) Exports to all other countries were calculated as the 1997 Bangladesh monthly estimate less actual imports to the U.S. and Japan; and (v) Value per kilogram data were actual for the U.S. and Japan. For all frozen shrimp, the value per kilogram for 1994 and 1995 for the U.S., Japan, and the EU is about 39% to 45% above world average price. Average value per kilogram data for all Bangladesh frozen shrimp is usually about 7% to 10% below world average price, indicating a very low value for shrimp going to minor markets. Average reported price received by eighteen survey plants was 5% lower in 1977 than the 1996 weighted average price from secondary data, even when U.S. price in 1997 was 14% higher than 1996. For the analysis, the price received in other markets was assumed to be 30% below the Japan price, after studying historical price relationships and data from the industry surveys. The price used for other countries would have been estimated as even lower, except that the diverted shrimp was a smaller count than normally goes to minor county markets. This is also consistent with comments from Bangladesh shrimp processors that shrimp diverted to other markets was selling for as much as \$2.00 less per kilogram (FAO/GLOBEFISH 1998).

**Table 2**  
 Estimates of the Volume and Value (US\$) of Frozen Shrimp Exports  
 from Bangladesh to the U.S., the EU, Japan, and all Other Countries,  
 with and without the 1997 Ban on Bangladesh Seafood Imports by the EU

	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Estimated Trade without Ban in Effect						
Region						
U.S.						
MT <sup>d</sup>	1,264.7	1,195.1	1,335.2	827.5	642.2	
\$ Per kg. <sup>a</sup>	13.88	13.48	14.27	14.65	13.44	
Thousand \$	17,553.3	16,109.8	19,053.4	12,122.5	8,630.8	73,469.7
EU						
MT <sup>d</sup>	917.0	1,025.0	1,057.0	1,049.0	1,064.0	
\$ Per kg. <sup>c</sup>	11.38	10.65	13.27	14.94	13.17	
Thousand \$	10,435.5	10,916.3	14,026.4	15,672.1	14,012.9	65,063.0
Japan						
MT <sup>d</sup>	454.8	402.3	470.9	545.1	481.3	
\$ Per kg. <sup>a</sup>	10.17	10.15	10.57	10.03	7.32	
Thousand \$	4,625.2	4,083.4	4,977.2	5,467.6	3,523.2	22,676.6
All Others						
MT <sup>d</sup>	229.3	228.0	249.0	210.6	190.2	
\$ Per kg. <sup>b</sup>	7.11	7.11	7.39	7.02	5.12	
Thousand \$	1,630.0	1,621.3	1,839.8	1,478.3	973.9	7,543.3
Total						
MT <sup>g</sup>	2,865.7	2,850.4	3,112.1	2,632.2	2,377.7	
Thousand \$	34,244.0	32,730.8	39,896.8	34,740.4	27,140.7	168,752.7
Estimated Trade with Ban in Effect <sup>f</sup>						
U.S.						
MT <sup>a</sup>	1,282.4	1,893.7	1,626.6	1,416.3	1,108.9	
Thousand \$	17,799.3	25,527.4	23,211.1	20,748.7	14,903.3	102,189.8
EU						
MT	0	0	0	0	0	
Thousand \$	0	0	0	0	0	0
Japan						
MT <sup>a</sup>	264.4	491.4	672.8	719.5	554.8	
Thousand \$	2,689.2	4,987.3	7,111.7	7,216.2	4,061.1	26,065.4
All Others						
MT <sup>e</sup>	1,318.9	465.3	812.7	496.4	714.0	
Thousand \$	9,377.3	3,308.6	6,005.6	3,484.9	3,655.8	25,832.3
Total						
MT <sup>g</sup>	2,865.7	2,850.4	3,112.1	2,632.2	2,377.7	
Thousand \$	29,865.8	33,823.3	36,328.4	31,449.7	22,620.2	154,087.5

Sources: Japan, Customs Clearance Statistics, Ministry of Finance; United States, National Marine Fisheries Service, United States Department of Commerce; European Union, Fishery Information and Statistics Unit, FAO.

Assumptions:

<sup>a</sup> Volume and value represent 1997 actual monthly data for shrimp imports into the U.S. and Japan from Bangladesh.

<sup>b</sup> Value estimates for 1997 for all other countries are based on historical price patterns which indicate that the average value per kilogram paid for Bangladesh shrimp imports (except for the U.S., EU, and Japan) is about 30% lower than prices paid in Japan. They are also about 7% to 10% lower than the world average price for shrimp imports.

<sup>c</sup> Value estimates per kilogram for the EU were based on historical relationships for monthly prices from 1994 to 1996. EU values paid per kilogram on a monthly basis for Bangladesh shrimp from 1994 to 1996 were determined. These values were compared to U.S. values paid and 1997 EU values paid for similar shrimp products normally received from Bangladesh. The estimated value per kilogram for Bangladesh shrimp imports was then estimated based on this U.S./EU value relationship.

<sup>d</sup> The average volume of monthly imports from 1993 to 1996 from Bangladesh into each market was determined. The 1997 volume of imports had the ban not been in effect were assumed to be equal to the 1993 to 1996 average.

<sup>e</sup> Exports from Bangladesh to all other countries were determined by the 1997 volume of Bangladesh exports less shipments to the U.S. and Japan.

<sup>f</sup> Value per kilogram data used were the same as those shown for estimated trade without ban in effect.

<sup>g</sup> Actual monthly volume of exports from Bangladesh from August to December 1997.

**Table 3**  
 Estimates of the Net Effect on the Bangladesh Frozen Shrimp  
 Exporting Industry and the Major Importing Markets due to the  
 European Union Ban on Bangladesh Seafood Exports in mid-1997

Importing Region	Without Ban	With Ban	Net Effect *
United States	73,469.7	102,189.9	28,720.0
European Union	65,063.3	0	-65,063.0
Japan	22,676.6	26,065.4	3,388.8
All others	7,543.3	25,832.3	18,289.0
Total (to Bangladesh)	168,752.7	154,087.5	-14,665.2

Note: \* From August to December 1997. Values are in thousands of dollars (U.S.).

volume and value of the nineteen<sup>7</sup> plants with average total frozen shrimp export secondary data from Bangladesh for 1993–95.

Distribution of the nineteen firms, by size, was representative across all segments of the industry. The eighteen firms reporting volume (in metric tons) of frozen shrimp exports in 1997 was as follows: 0–99 (1); 100–199 (5); 200–299 (3); 300–399 (2); 400–499 (1); 500–599 (0); 600–699 (3); 700–799 (2); 800–899 (0); 900–999 (1). These eighteen plants were primarily shrimp processors, with frozen shrimp representing 90% of all volume processed and 10% all other seafood. Average volume and value per firm of frozen shrimp processed in 1997 was 388,135 kilograms valued at US\$4,123,366.

Survey data were consistent with the secondary data analysis, in that the EU was the principal market for the nineteen plants, representing from 42% to 50% of the market share from 1995 through the time of the ban in mid-August 1997 (see table 4). For these plants, the U.S. and Japan became the major markets during the ban with all other regions of the world (except the EU) representing 23%. These plants expect to return to almost identical market share allocations if approved to export to the EU in the future (see table 4). Only 17% of the firms destroyed shrimp products that could not be sold due to the ban. The amount was minimal, averaging US\$7,584 per firm for those that destroyed product. Fifty-eight percent of the plants (of eighteen reporting) dismissed employees due to the ban. Nine plants reported the number of employees, with an average of twenty-seven employees per plant losing jobs during the ban. Average monthly wages lost per plant were US\$7,200. Seventy-one percent of the plants anticipated new market contacts (outside the EU) would result due to the ban.

Shrimp processing plant owners and managers were also asked for general comments about the effect of the EU ban. About half made comments. Several commented that the ban had increased the visibility of Bangladesh seafood exports in the context of the attempt by the Bangladesh industry to raise its product quality to international standards. Both the exporters and importing countries had become more aware of the need to increase quality, and this has caused major investments in plant infrastructure and personnel training in order to achieve acceptable technical and sanitary standards (see Cato and Lima dos Santos). Most of the respondents felt

<sup>7</sup> Eighteen plants reported volume and value data for 1997. The average volume of the eighteen was used as the volume of the remaining plant to determine the percentage of total industry value for the nineteen plants.

**Table 4**

Actual Export Market Shares for Nineteen Bangladesh Frozen Shrimp Processors, 1995, 1996, Before and During the 1997 Ban on Seafood Exports to the EU, and Expected Export Market Shares if Allowed to Export to the EU in the Future

Region	1995	1996	Jan.–Aug. 1997	Mid-Aug.–Dec. 1997	Expected in Future
	Percent				
Japan	22	24	21	44	21
U.S.	25	29	30	42	28
EU	50	44	42	0	45
All others	4	3	7	23 *	8
Total	100	100	100	100	100

Note: \* Regions mentioned as alternative markets included China, Canada, Thailand, Singapore, Malaysia, Vietnam, Norway, Russia, Switzerland, and Saudi Arabia.

that the long-term effects of plant upgrading and HACCP plan implementation would be positive, while a minority felt they were not getting the expected benefits from plant upgrading and HACCP. Several commented that the European Commission ban had stimulated some of the investment to modernize the plants, but that short-term losses had occurred because of the need to find new markets, sell product at reduced prices, or reduce production levels. The result was a short-term loss in foreign currency to both the industry and a developing country.

## Summary

Bangladesh frozen shrimp and prawns exports represent 2.2% to 3.0% of the volume and 2.1% to 2.7% of the value of worldwide shrimp exports. Shrimp represent about 90% of the value of Bangladesh marine product exports, and are a very important source of foreign currency to the Bangladesh economy. Major markets for Bangladesh shrimp are the EU, the U.S., and Japan. Bangladesh shrimp exports have experienced safety and quality problems including detentions for inspection in the U.S., and a ban on imports into the EU. The 1997 European Commission ban on seafood imports into the EU from Bangladesh is estimated to cost the Bangladesh shrimp processing sector a maximum of US\$14.665 million in lost revenues.

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