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ARTICLES

Export of India's Fish and Fishery Products: Analysing the Changing Pattern/Composition and Underlying Causes

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I

INTRODUCTION

India's vast coastline of 8129 kilometres stretching almost two-thirds of the country and encompassing an exclusive economic zone of 2 million square kilometers offers sufficient surplus of fish and fishery products for external trade after catering to the domestic demand. Though meek as compared to the global volumes, fishery products of Indian origin are being relished by a substantial majority in the rest of the world. Fishery products, thus, have long been serving as an important source of foreign exchange to India's exchequer through substantial amount of exports all over the world. The global trade environment has undergone a drastic change after the entry of WTO as an international regulatory body on transnational trade of goods and services that had its impact on India's exports of marine products too. Subsequently, the agreement on Sanitary and Phytosanitary (SPS) measures has emerged as a major determinant of the flow of agricultural products, particularly marine products to the international market.

In this backdrop, the paper attempts to address the following specific questions; (i) What is the present status and composition of India's fish and fishery products' export?, (ii) Is there any notable shift in its pattern over the years and is it diversifying?, (iii) What are the major underlying factors that govern the dynamics of fishery export from India?, (iv) What are the implications of the recent thrust on quality and safety regulations on fishery exports? and (v) How alert are we, to tackle these issues and what is the way forward, in an increasingly regulated regime of international trade?. The paper is organised into seven sections including introduction. The methodology used for the analysis is discussed in Section II. Section III examines the composition, pattern and trends of India's fishery trade, over the years, beginning from a comparison with the global scenario. The behaviour of

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domestic and international prices of major fishery products are analysed and compared in Section IV. Further, the domestic and global quality and safety standards mandatory for fishery exports and their implications on India's trade flow is discussed in Section V. The final section presents an account of the present status of the WTO negotiations on fisheries trade and India's position in the negotiations. The last section provides conclusions and policy implications.

II

LITERATURE REVIEW, DATA AND THEORETICAL FRAMEWORK

The approach to address the above mentioned specific questions was formulated after reviewing various past studies available in the field. Bhattacharya (2004) brought into notice, the structural change in the product mix of Indian marine exports between 1960-61 to 1999-2000. He highlighted the shift from exports of low value dried items to high value frozen and canned items during 1970s and 1980s which is largely responsible for higher growth in earnings. Another study (IIFT, 2001) noted the decline in price competitiveness of shrimp, the major exported product, due to the rising trend in domestic prices compared to that of international prices. The rising trend in domestic prices is attributed to the acute shortage of raw material for the processing industry, other support facilities like fishing harbours, landing centres, ice plants, cold storage etc. Kumar (2004) analysed the temporal changes in the composition of fishery export, major determinants of trade and India's comparative advantage in the international market. The study observed that India's preparedness to comply with the WTO guidelines on sanitary and phyto-sanitary measures in marine products is very limited. Similar observations on the importance of compliance with food quality specifications were made by numerous other studies also (Sathiadhas and Panikkar, 1988; Jha, 2002; Matthew, 2003; NCAP, 2004; Henson *et al.*, 2004). In addition to it, India's position in the WTO negotiations on fisheries trade and other related issues were being dealt in various studies (FAO, 2008a; GLOBEFISH, 2008).

The study is mainly based on secondary data collected from various national and international sources. The data pertaining to commodity-wise and market-wise exports of major fish products were collected from Marine Products Exports Development Authority (MPEDA), Cochin. The domestic and international prices were obtained from the official website of INFOFISH. The information regarding the export consignment rejections from European Union and United States of America were culled out from the respective websites of European Commission and United States Food and Drug Administration (USFDA). Various other publications and websites of the international organisations like Food and Agricultural Organization of the United Nations (FAO), Rome; World Bank, Washington, D.C., U.S.A. and GLOBEFISH were also utilised in the study.

The study uses common statistical tools like compound growth rates, ratios, and indices of diversity and instability. The compound growth rates of value of exports were worked out after converting the nominal values into real terms using wholesale price index at 1993-94 prices. The diversification or concentration in exports with respect to a specific geographic region at a given period of time can be measured effectively by using the Simpson index of diversity and this was used for the present study (Joshi *et al.*, 2003). The index ranges between 0 and 1. If there exists complete specialisation, the index tends towards 0 and in cases of complete diversification, it tends towards 1. The Simpson Index (SID) is calculated using the following equation:

$$SID = 1 - \sum_{i=1}^n W_i^2 \quad \text{and} \quad W_i = \frac{X_i}{\sum_{i=1}^n X_i}$$

Where,

X_i = Value of export/import of i-th agricultural commodity,

W_i = Proportionate value of export/import of i-th agricultural commodity out of total agricultural exports/imports.

The instability in exports and prices was estimated by using the modified Cuddy-Della Valle index. This index is a commonly used measure employed for estimating the magnitude of instability in exports and imports. The index was originally developed by John Cuddy and Della Valle for measuring the instability in time series data (Cuddy and Della Valle, 1978). It is a better measure compared to coefficient of variation, as it is inherently adjusted for trend, often observed in time series data. It is also superior to other scale dependent measures of deriving the standard deviation or root mean square of the residuals obtained from the fitted trend lines of the raw data, and hence suitable for cross comparisons (Sen, 1989).

The original formulation of the index is given as follows:

$$I_x = \frac{SEE}{\bar{y}} \cdot 100 \quad \dots(1)$$

Where, I_x = Instability index,

SEE = Standard error of the trend line estimates,

\bar{y} = Average value of the time series data.

But the use of equation (1) in calculating the instability of a non-linear time series model was debated and modified later (Della Valle, 1979). In case of a log-linear or any other alternative regression model, the index was altered as follows:

$$I_x = \frac{SEE}{\hat{y}} \cdot \sqrt{\frac{1 - R_a^2}{1 - R^2}} \cdot 100 \quad \dots(2)$$

Where, R^2 = Coefficient of multiple determination obtained from the linear time series.

R_a^2 = Coefficient of multiple determination of any alternative model used.

The present study used the modified index (equation 2) for obtaining flawless estimates of the instability in India's marine exports, commodity-wise and market-wise.

III

COMPOSITION, PATTERN AND TRENDS

Trade in Fishery Products: The Global Scenario

The international trade in fish and fishery products has been growing steadily, the primary stimulus being the rising trend of consumption in Europe and America and a build-up in Asia and other developing regions. The growing demand for fishery products across the world during the recent years is attributed to a change in the dietary habits in favour of fish due to its health enhancing features. Moreover, the establishment of a number of processing industries in countries like China, Thailand and Vietnam also resulted in the boosting up of fishery trade in processed form.

The total world export of fishery products was estimated to be USD 85900 million in 2006. EU was the largest exporter of fish and fish products with a gross share of 25 per cent of the total world exports (Table 1). EU is also the largest fish importer of the world and its prime status of being the largest exporter and importer of fish in the world can be attributed to the significant intra-regional dynamics. However, it is important to note that exports from developing countries account for close to 50 per cent of the total world trade in fish and fishery products. Among them, China adorns the position of world's single largest exporting country with an estimated export of USD 8900 million in 2006. In the recent years, China's imports are also growing due to its increasing involvement in outsourcing raw fish from all over the world for subsequent processing and re-export. The rising domestic consumption in China also contributes to its rising import bills. Contrary to this, the domestic consumption in Japan is on a downfall owing to a long term trend away from fish consumption, leading to a reduction in its imports. As of in 2006, Japan contributes to 15 per cent of the total global imports nearly equalling United States. The recent financial meltdown has resulted in noticeable drop in shrimp exports in EU and Japan, while it is steady in US in comparison. At present, the demand is very low in all three major markets. Sharp setbacks in purchases are expected. Prices have

started to decline in the second half of 2008 and exporters have difficulties in selling at the moment. This situation is not expected to improve in the near future (FAO, 2009a). The best solution for producing countries like India seems to be diversification, including exploration of the domestic and regional markets.

TABLE 1. FISHERY TRADE: THE GLOBAL SCENARIO-2006

Country (1)	Value (US\$ million)		Share (per cent)	
	Exports (2)	Imports (3)	Exports (4)	Imports (5)
EU ¹	21600	37500	25.1	41.9
China and Hong Kong	10800	6700	12.6	7.5
USA	4100	13300	4.8	14.8
Japan	1400	14000	1.6	15.6
India	1800	100	2.1	0.1
World	85900	89600	100	100

¹Including intra-Trade.

Source: FAO, 2008a.

India's Exports of Marine Products

India's share of world fish exports comes to merely 2 per cent only. India hardly imports any fish products and hence India's contribution in the global fish trade is negligible. However, among the various agricultural commodities exported from India, fishery products, especially marine products, hold a prime status. In the year 2006, around 13 per cent of the total agricultural exports from India comprised marine products. Other major exported commodities are basmati and non-basmati rice, Oil meals, spices, meat and preparations, cashew, fresh fruits and vegetables, tea, coffee etc.

Commodity Composition

The marine products are exported in various forms, viz., live, fresh/chilled, frozen, dried/salted/in brine, cooked and frozen, cooked and smoked, prepared/preserved etc. However, majority of the lots are dispatched in frozen form. Frozen shrimp was the largest exported item, both in terms of quantity and value, among the various marine products exported from India during the period 1995-96 to 2006-07. A major source of India's shrimp exports is the *Penaeid* shrimp from Maharashtra and Kerala coasts. *Penaeus mondon*, commonly known as 'Jumbo tiger shrimp' is a highly demanded and priced commodity in the international market, a prominent share of which is exported to Japan and European Union. Cultured black tiger shrimp, mainly from West Bengal and Andhra Pradesh, is another major source of exports which faces a crisis in the recent years in the wake of outbreak of viral diseases. The shrimp export industry in India is also facing severe threat from the *Vennamei* shrimp exports originating mainly from the Central and South American

countries. Even though the quantity of shrimp exports has increased fairly in the last decade, the comparative reduction in the share of shrimp exports, both in quantity and value terms is notable. The share of quantity of shrimp exports has declined from 32.3 per cent to 22.4 per cent while that of exports value has declined from 67.3 per cent to 53.9 per cent respectively over the period 1995-96 to 2006-07. This can be attributed to a relative shift of export towards low value alternatives like finfish and diversification of the export basket. The important finfish which are exported are yellow fin tuna, sardine, mackerel, pomfret, seer fish, etc. which find their market mainly in the South east and Middle East Asian countries. The share of fin fish increased from 33.8 per cent in 1995-96 in terms of quantity to 44.2 per cent in 2006-07 (Table 2) and from 10.6 per cent to 17.4 per cent in terms of value over the same period. However, there was a reduction in the export of frozen squid and cuttle fish. The share of dried items, live items and chilled items were comparatively lesser. The share of other products has also increased underscoring greater diversification and value addition.

TABLE 2. COMMODITY-WISE PERFORMANCE OF MARINE PRODUCTS EXPORTS FROM INDIA

Commodity (1)	<i>(Quantity in tonnes, value in Rs. crores)</i>							
	Export				Share			
	1995-96		2006-07		1995-96		2006-07	
Quantity (2)	Value (3)	Quantity (4)	Value (5)	Quantity (6)	Value (7)	Quantity (8)	Value (9)	
Frozen shrimp	95724	2356.8	137397	4506.0	32.3	67.3	22.4	53.9
Frozen finfish	100093	372.2	270751	1452.8	33.8	10.6	44.2	17.4
Frozen squid	45025	319.5	55701	797.3	15.2	9.1	9.1	9.5
Frozen cuttlefish	33845	260.8	47252	568.3	11.4	7.5	7.7	6.8
Dried items	7415	44.2	24293	183.1	2.5	1.3	4.0	2.2
Live items	1756	31.3	2478	64.0	0.6	0.9	0.4	0.8
Chilled items	2773	26.0	7200	117.3	0.9	0.7	1.2	1.4
Others	9646	89.9	67571	674.3	3.3	2.6	11.0	8.1
Total	295827	3500.170	612643	8363.10	100.0	100.0	100.0	100.0

Source: Marine Products Export Development Authority, Cochin.

The extent of diversification in commodity basket of fish export was quantified using Simpson index of diversity and is presented in Figure 1. The trend in the measure of diversity of exports to world and other major export destinations clearly indicated that the commodity basket of India's fish exports is getting diversified over the years. In the year 1995, the Simpson index of diversity of exports to world was 0.52 which gradually increased to 0.66 by the year 2006-07, giving a clear signal.

The exports to largest destinations like Japan, USA and EU also got diversified, the consignments to EU being the most diverse.

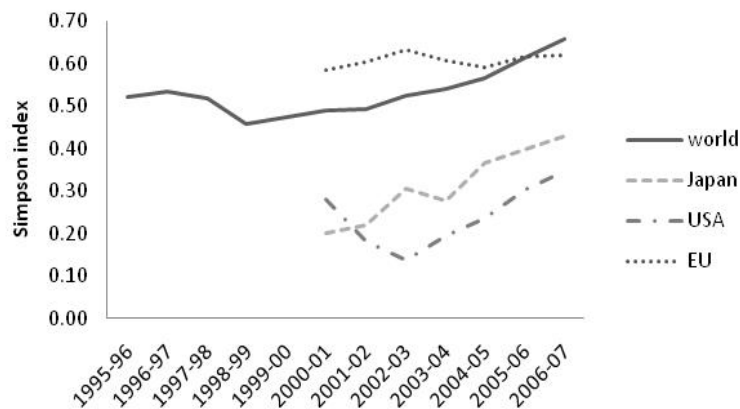


Figure 1. Simpson Index of Diversity of Fish and Fish Exports

Even though a change in the composition of fishery exports has taken place, all the exported commodities registered positive growth rates during 1995-96 to 2006-07 (Table 3). While frozen shrimp, frozen squid and frozen cuttle fish exhibited moderate growth rates, the growth in dried items and chilled items were in double digits. This highlights a momentum in the exports of dried and chilled items, possibly due to the increased customer preference and emergence of new markets for them. Another noteworthy finding is the relatively lower growth in export value of shrimp vis-à-vis its export quantity hinting towards a reduced remuneration for shrimp exports in the last decade. The finding has underscored the impact of plummeting prices of frozen shrimp¹ in the international market which used to be as high as 20 USD per kilogram in the United States and Japan in 1999-2000 which crashed to a level of 10-12 USD by the year 2006. The growth in the exports of frozen fin fish was found to be higher than that of frozen shrimp, again asserting the growing importance of finfish over shrimp. Although compound growth rates give a fair idea on the trends in exports, the stability of exports is an important aspect to be looked into. The results suggested that the export of frozen fin fish was associated with high rates of instability indicating greater inter-year fluctuations in the quantity exported. High levels of instability were also observed in exports of dried, live and chilled items.

TABLE 3. COMMODITY-WISE GROWTH AND INSTABILITY IN INDIA'S MARINE PRODUCTS EXPORTS: 1995-96 TO 2006-07

Commodity (1)	CGR (per cent)		Instability Index	
	Export quantity (2)	Export value (3)	Export quantity (4)	Export value (5)
Frozen shrimp	3.90	2.59	4.60	9.76
Frozen finfish	4.46	5.04	24.31	22.53
Frozen squid	2.79	5.41	2.61	4.42
Frozen cuttle fish	3.62	4.81	6.17	6.45
Dried items	8.81	13.29	13.81	12.40
Live items	3.16	3.92	8.48	10.93
Chilled items	8.94	11.01	15.00	20.27
Others	20.40	17.09	6.85	15.67
Total	5.16	4.19	9.63	10.69

Market Composition

South East Asia was the largest market for Indian marine products during 2006-07. Around 33 per cent of the total exported quantity of marine products from India found market in various South East Asian countries (Table 4). However, it is interesting to note that, European Union claimed the largest share in terms of the value of exported commodities. This clearly indicates that, even though a huge bulk of exports is directed towards South East Asia, they are mostly low value products. The export basket consists mainly of frozen finfish, frozen squid, dried and live items etc. Most of the high value products are exported to EU followed by USA and Japan mainly because of higher purchasing power of the consumers in these developed economies. It is also worth mentioning that, over the last decade Japan's status as a supreme market for Indian marine products has suffered a jolt as indicated by the alterations in relative market shares. The share of Japan as a destination market of India's fishery exports has reduced from 45 per cent to 16.2 per cent in value terms and from 17.5 per cent to 11.0 per cent in terms of quantity exported between 1995-96 and 2006-07. The prominent reason for this is the drastic reduction of shrimp exports to Japan due to various reasons like slump in domestic production of shrimp, gradual erosion in preference among Japanese consumers etc. Another associated cause is Japan's greater preference for shrimp imports from Thailand and China. The data for the recent years indicate such a gradual shift, the reason for which is a matter of a thorough investigation. In this context, it is important to note the findings of a recent study by Shinoj and Mathur (2008) which has cautioned against the higher comparative advantage of these two countries for marine exports as compared to India. The share of Middle East in overall marine exports has slightly improved, while that of Hong Kong and China has been reduced in quantity terms during the same period.

TABLE 4. MARKET-WISE PERFORMANCE OF MARINE PRODUCTS EXPORTS FROM INDIA

Country (1)	<i>(Quantity in tonnes, value in Rs. crores)</i>							
	Export				Share			
	1995-96		2006-07		1995-96		2006-07	
Quantity (2)	Value (3)	Quantity (4)	Value (5)	Quantity (6)	Value (7)	Quantity (8)	Value (9)	
Japan	51789	1576.7	67437	1353.4	17.5	45.0	11.0	16.2
U.S.A.	26008	366.3	43758	1347.8	8.8	10.5	7.1	16.1
EU	86023	900.2	149773	2760.3	29.0	25.7	24.4	33.0
South East Asia China and Hong Kong	41954	264.6	203513	1157.0	14.2	7.6	33.2	13.8
Middle East	69387	232.1	67650	616.7	23.4	6.6	11.0	7.4
Others	8800	77.6	23585	371.1	3.0	2.2	3.8	4.4
Total	12315	83.6	56924	757.3	4.2	2.4	9.3	9.1
	296277	3501.1	612641	8363.5	100.0	100.0	100.0	100.0

Source: Marine Products Export Development Authority, Cochin.

The picture becomes vivid when viewed against the growth scenario of exports to various markets over the above mentioned period. The reduction in exports to Japan becomes obvious from the negative growth rate of -0.48 in quantity terms and -7.78 in value terms (Table 5). A negative growth in quantity was also observed in exports destined to China and Hong Kong. The highest growth in exports was recorded by South East Asia which registered a compound growth of 13.44 per cent (value) and 10.37 per cent (quantity). Growth trends of exports directed towards European Union was also notable. However, the exports to South East Asia and China and Hong Kong were associated with high instability which suggested substantial inter-year fluctuations. Exports to USA, China and Hong Kong and Middle East were also found to be fairly instable.

TABLE 5. MARKET-WISE GROWTH AND INSTABILITY IN INDIA'S MARINE PRODUCTS EXPORTS: 1995-96 TO 2006-07

Market (1)	CGR (per cent)		Instability Index	
	Export quantity (2)	Export value (3)	Export quantity (4)	Export value (5)
Japan	-0.48	-7.78	11.43	15.33
USA	6.57	12.51	10.33	23.97
EU	9.11	10.89	7.27	7.78
South East Asia	13.44	10.37	17.56	12.95
China and Hong Kong	-2.76	1.80	23.82	21.03
Middle East	6.98	11.70	16.51	12.97
Others	12.67	18.82	9.30	3.24
Total	5.16	4.19	9.63	10.69

IV

ANALYSING THE MAJOR DETERMINANTS: THE ROLE OF PRICES

The prices prevailing in the international markets and their differentials with respect to the domestic prices are important factors which govern external trade.

International market prices were found to be more volatile in comparison to the domestic prices, with high intra-year and inter-year instability. The instability in prices was measured using Cuddy-Della index as was done in exports. Lack of stability in international market prices subjected the exporters to greater price risk. High fluctuation in prices also makes the exports dwindling and acts unfavourably on the exporters. The results suggested that, highest intra-year instability was associated with commodities like squid, skip jack tuna and yellow fin tuna (Table 6). Also the level of instability was in general higher in the later years for most of the commodities. This trend was particularly relevant for mackerel, crab and shrimp. The shrimp prices were relatively stable as also the case of crab. The inter-year instability for the period 1997 to 2006 was highest for mackerel, skip jack tuna and squid. Such high levels of instability in prices actually expose the domestic traders to high levels of risk and in turn adversely affect their remuneration in the long run.

TABLE 6. INTRA-YEAR AND INTER-YEAR PRICE INSTABILITY OF MAJOR FISH SPECIES IN TOKYO CENTRAL MARKET

Year (1)	Yellow fin tuna (2)	Skipjack tuna (3)	Sardine (4)	Mackerel (5)	Crab (6)	Squid (7)	Shrimp (8)
Instability Index							
1997	10.96	8.38	6.50	10.91	11.16	20.84	2.61
1998	8.61	15.71	10.35	5.90	1.59	15.11	1.56
1999	11.10	28.23	9.43	5.98	1.31	17.29	0.83
2000	8.27	8.06	25.59	5.85	4.03	15.91	1.42
2001	9.39	34.26	11.08	5.38	4.39	24.12	0.62
2002	11.44	22.53	4.95	7.92	6.13	22.24	3.40
2003	6.48	14.04	6.68	8.64	2.53	19.25	0.66
2004	8.91	22.16	2.84	12.11	5.17	21.40	3.63
2005	11.36	22.21	4.05	11.46	14.22	14.16	2.37
2006	8.10	30.06	13.13	10.44	13.96	25.00	2.34
1997-2006	5.89	10.67	9.86	11.31	7.08	10.58	7.04

V

QUALITY AND SAFETY OF FISH EXPORTS

Food safety has assumed unprecedented attention in the recent years, with the increasing awareness among the consumers about importance of safe food both in terms of economic and health perspectives. This has resulted in the development of various regulations on food trade at the international level. The Codex Alimentarius Commission (CAC) was established jointly by Food and Agricultural Organization (FAO) and World Health Organization (WHO) as early as 1960. However, the subject became more relevant when the World Trade Organization (WTO) has put forward a separate agreement on Sanitary and Phytosanitary (SPS) measures to be

followed at global level. The agreement was intended for the member countries to protect their human/animal/plant health from potential hazards associated with food. In the year 1993, CAC recommended Hazards Analysis and Critical Control Point (HACCP) system as a global requirement to ensure food safety. It uses the approach of controlling critical points in food handling to prevent food safety issues. Good Manufacturing Practices (GMP), Good Hygiene Practices (GHP) and personnel hygiene practices are strong foundations of HACCP and it involves a system approach to identification of hazard, assessment of chances of occurrences during each phase, raw material procurement, manufacturing, distribution, usage of food products, and in defining measures for hazards control. In India, Bureau of Indian Standards (BIS) is the national standards body to deal with all matters concerning standardisation, certification and quality. It offers various certification schemes to the food industry and ensures conformity to the codex and other international standards of the exported products. The Export Inspection Council of India (EIC) undertakes quality control and pre-shipment inspection to ensure safety of the exported consignments. It is important to note that fish and fishery products are subject to mandatory export certification based on Food Safety Based Management System (FSMSC) unlike other cereal and vegetable commodities.

Fish processing sector is particularly prone to health hazards arising out of widely prevalent unhygienic practices followed during various stages of processing, packaging and storage. Recognising this, various countries have put in place stringent rules and regulations to ensure the quality of imported fish and fishery products. In Japan, the administration of food safety is under the jurisdiction of Department of Food Safety, Ministry of Health, Labour and Welfare. A separate office of Import Food Safety is concerned with the safety of imported foods in the country. The European Union has a well developed system in place known by Rapid Alert System for Food and Feed (RASFF) since 1979 to provide effective exchange of information regarding food safety of the imported food and feed commodities. The RASFF issues alert/information notifications to the member countries when a risk is detected in food products entering the territory. Alert notifications are issued when immediate action is required and aims at giving all the members of the network the information to take necessary action and usually results in rejection/recall. Information notifications however, are less serious in nature and are intended to inform about a possible threat of contamination or other risks associated. The reasons for notification were classified broadly under cases of adulteration and that of non-adulteration issues. Adulteration was mainly on account of biological, chemical and others like filth, muddy odour etc. Common biological contamination in fish lots include bacteria, false catfish, salmonella, listeria, etc. while the chemical adulterants are histamines, unsafe additives, veterinary drugs, other poisonous chemicals and heavy metals etc. Violation of HACCP rules on labelling, packaging, etc. were also important reasons for rejection. Some other reasons like illegal import with false license, unauthorised establishment, spoilage of the container cooling system while

transportation, etc. were also noted. Table 7 presents the details on such notifications issued by RASFF on fishery products originating from various exporting countries in the year 2007. Majority of the alerts/information notifications were issued against the consignments from various countries within European Union, mainly Spain and France. Among consignments from outside Europe, China and India were leading the list, with 47 and 29 cases respectively in the year 2007. Chemical contamination was the major causal factor for notifications, while cases of biological contamination were also not less.

TABLE 7. ALERT/INFORMATION NOTIFICATION ON IMPORTS BY EUROPEAN UNION:
JANUARY, 2007 TO DECEMBER, 2007

Country of Origin (1)	Adulteration			Non-adulteration		Grand total (7)
	Biological (2)	Chemical (3)	Others (4)	HACCP issues (5)	Others (6)	
Within EU	47	125	6	2	2	182
China	4	43	0	0	0	47
India	6	21	0	0	2	29
Indonesia	1	15	0	0	1	17
Sri Lanka	4	11	2	0	0	17
Brazil	0	16	0	0	0	16
Vietnam	1	15	0	0	0	16
Thailand	0	14	0	0	0	14
Morocco	3	7	2	0	1	13
Panama	0	10	0	0	0	10

Source: Compiled from European Commission (<http://ec.europa.eu/>).

In USA, the United States Food and Drug Administration (USFDA) is the national quality body for food products regulation and consumer safety and the fishery products also comes under the ambit of its operations. This agency regulates imported food worth of USD 49 billion every year in the country. In 2007, the USFDA released the food protection plan (FPP) to address both food safety and food defense for domestic and imported products. The Federal Food, Drug and Cosmetic Act of 1938 is the principal law associated with seafood safety in America. A Federally Mandated Seafood Rule promulgated in 1995 constitutes the basis for sanitary procedures, processing and importing fish and fishery products into the country including good hygienic practices and HACCP. The FDA also regularly prepares imports refusal reports (IRR), which gives detailed account of the rejected consignments of all food products due to various safety and sanitary reasons. The report is generated using the data collected by Operational and Administrative system for Imports Support (OASIS). The IRR reports pertaining to fisheries products for the period May 2007 to April 2008 for top ten countries' are presented in Table 8. It was observed that the highest number of refusals were of Chinese exports with a total of 337 cases during the period. Refusals of Indonesian and Vietnam exports were also notable. Forty seven cases of Import refusals were registered against India during the period of one year. Most of the rejections were due to microbial and filth

contamination of the exported lots. It is of particular relevance that all the countries that topped the list were Asian and no exports from other developed countries were subject to rejection. This highlights the poor emphasis given to sanitary issues in these countries. Rejections not only lead to economic loss, but also tarnish the reputation of the countries in the global market which has more serious implications. It is therefore important to build up adequate infrastructure and stringent enforcement of the regulations in the country to enable the exporters to stick to strict safety standards.

TABLE 8. REFUSAL OF FISHERY IMPORTS BY USFDA: MAY, 2007 TO APRIL, 2008

Country of Origin (1)	Adulteration			Non-adulteration		Grand total (7)
	Microbial (2)	Chemical (3)	Others (4)	HACCP issues (5)	Others (6)	
China	34	176	106	3	18	337
Indonesia	61	30	181	1	2	275
Vietnam	87	39	76	4	5	211
Philippines	11	7	63	0	31	112
Taiwan	18	8	47	0	8	81
Thailand	13	0	50	6	5	74
South Korea	13	2	2	14	20	51
India	21	0	24	0	2	47
Malaysia	23	8	16	0	0	47
Japan	4	0	2	2	36	44

Source: Compiled from USFDA (www.fda.gov).

VI

FISHERY TRADE AND THE WTO NEGOTIATIONS

Unlike other agricultural and allied commodities, fish and fishery products are not covered under Agreement on Agriculture (AoA) of the WTO. The Doha Round negotiations² on improved market access for fishery imports is included in Market Access for Non-Agricultural Products (NAMA). Following the completion of Uruguay Round, average weighted import tariffs on fishery products in developed countries were reduced to approximately 4.5 per cent. However, the provisions like tariff peaks and tariff escalation³ for processed or value added products keeps the level of market access restrictions in value added fishery products high. Such restrictions continue to hinder economic development of the fish processing sector in many developing countries (FAO-GLOBEFISH, 2000). In addition, a number of non-tariff barriers also hinder fishery trade. These are mostly related to the agreements on Sanitary and Phytosanitary issues and Technical Barriers to Trade. The fishery subsidies are considered to be an important facet of Doha Development Round. There are wide concerns existing about the likely negative effects of trade distorting subsidies that contribute to over-exploitation of marine resources. For example, the price of tuna has declined steadily over the past couple of years in EU, for which it is a staple food. This was mainly because of the over-supply into the market. On the

other hand over-exploitation has also led to below-average catch in all major oceans. Tuna purse seiner owners are discussing a possible 30- day stop of fishing in the first quarter of 2009 in EU. This would be in addition to the restrictions on fishing imposed by the Western and Central Pacific Tuna Commission commencing July, 2009 (FAO, 2009b) and Code of Conduct on Responsible Fisheries which is already in vogue globally since 1995. However, some advocates highlight on the exceptions which are to be negotiated. A recent proposal by China, India and Indonesia submitted to the chair of WTO's rules committee emphasises on the importance of Special and Differential (S&D) treatment for developing countries given the particular importance of fisheries for livelihoods, poverty reduction and food security. It calls for exemptions from subsidy disciplines for developing country's small and artisanal fishermen, as well as fisheries infrastructure and capital and operating costs (GLOBEFISH, 2008). The Doha Agenda also underlines the importance of providing technical assistance and capacity building to developing countries to adjust to WTO rules, implement existing obligations and negotiate and fully exercise the rights of membership (FAO, 2008b).

VII

CONCLUSIONS AND POLICY IMPLICATIONS

Various aspects regarding India's export of marine products have been investigated in this paper. Among the various commodities exported from the country, fish and fishery products hold the prime status. Frozen shrimp and fin fish are the largest exported items, the primary destinations being European Union, Japan and USA. The supreme status of Japan being the largest Indian seafood market has got largely eroded over the last decade. It has also been observed that, India's export basket has got diversified and is showing a dent towards low-value exports routed to South East Asian and Middle East countries at the expense of premium priced shrimp which used to find markets in Japan. However, European Union continues to be a preferred destination for the shrimp exports. The plummeting prices of shrimp, towards the later part of the decade, which resulted in narrowing of price differentials between domestic and international markets, also worked against shrimp exports. The Sanitary and Phytosanitary Agreement along with agreement on Technical Barriers to Trade has been acting as strong non-tariff barriers to marine exports from developing countries. There have been innumerable instances of Indian fishery consignments being rejected by USA, EU and Japan. The inadequate infrastructure, processing, packaging and grading facilities and lack of proper attention towards hygienic practices are being reflected through these incidents. Therefore, an increasing need for compliance to SPS measures has been realised for which conscious efforts and investment in raising our compliance standards are inevitable. In addition, there is an immediate need to take up awareness generation campaigns among the fishermen and exporters on GMP, GHP and Code of Conduct on Responsible Fisheries. In essence,

the study has brought into light many important facts related to India's marine products exports in the last decade and has given insights into the various measures to be taken to enhance fisheries exports from the country.

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NOTES

1. Shrimp is graded based on counts per kilogram. The price of shrimp used for the comparison was corresponding to the grade, Black tiger, headless, 16/20.
2. The Doha round of negotiations was started at the fourth ministerial conference of WTO held at Doha, Qatar in the year 2001 as a follow up to the agreement signed in 1995 and to take forward the negotiations towards greater improvements in market access.
3. The provision of increasing tariffs as a products undergo higher levels of value addition and processing.

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