Marine Exports From India To USA And Japan

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Abstract

The study focuses on the trends of export of marine food products of India to its major importers USA and Japan. Various macro economic factors of the importing countries like GDP, population, unit price of marine product, exchange rate of importing country and total production of marine products in India have been considered. The paper focuses among these factors that constitute of the total demand from importing nations. The results show that the factors like population and exchange rate of the currencies has a positive effect on the export demand and the extent of demand varies significantly in USA and Japan primarily due to different food requirements and the segment of products being exported. The US primarily imports the crustacean and specialty segment whereas the exports from India to Japan are all inclusive in nature.

Keywords: marine exports, India, USA, Japan

Introduction

Exports sector in ***India*** constitute a larger portion in the total trading of the nation. The faster rising exports sector in India is largely fuelled by the agriculture commodities. Marine products have emerged as one of the major constituent of agricultural export. India's seafood exports which stagnated few years back are likely to touch over $3.5 billion from the current level of $2.2billion by 2010 provided the key thrust area include value addition, expansion of aquaculture, technological up gradation and tapping unexplored resources. Marine products from India have potential to accelerate faster in view of their growing demand in trading blocs like EU, Middle East, China, Canada, Tunisa, Puertorico and Russia [ASSOCHAM, 2008].

Rapid investment has taken place in India in the form of mechanization of indigenous craft, introduction of mechanized fishing vessels, improvement of fishing implements, establishment of infrastructure facilities for preservation, processing, storage and transportation of fish, fishery products and landing and berthing of vessels [Rao, 1983; Srivastava and Reddy, 1983; Rao, 1988]. Most of the studies have shown that a significant development of this sector occurred so far as quantity of catch is concerned and has recommended for more and more investment in this sector without giving any attention to the overfishing problem. However, some studies report that overfishing is taking place in different parts of the country (George et al., 1980; James, 1988).

The export of marine products in India mainly consisted of dried items like dried fish, dried shrimp, shark fins and fish maws *etc*. However, later there was a decline in the export of dried marine products, and subsequently the exports of processed items continued to make steady progress in marine trade. The markets for Indian marine foods were initially confined to Singapore, Sri Lanka and Myanmar to a great extent. When frozen and canned items

figured increasingly in the export basket, USA, Japan, France, Canada and Australia became the important markets for Indian marine products [Indian Marine Trade and Services, 2004].

Looking at this fast movement of US and Japan markets to import fish from India, in the present paper we aim to explore the opportunities for the Indian markets. The paper tries to study the trend in export demand for Indian seafood in Japan and USA and to identify the important parameters that affects the marine exports from India to these markets. We have designed the following hypothesis for our study:

Null Hypothesis (Ho): There is no relation between the exports of Marine Products from India to the US and Japan and the macroeconomic factors of their economies.

Alternate Hypothesis (Ha): There is a relation between the exports of Marine Products from India to the US and Japan and the macroeconomic factors of their economies.

Methodology

The secondary data information of marine exports from India to US and Japan has been collected from IMF World economic outlook, Indian Statistical Data, Reserve Bank of India and Marine Products Export Development Authority (MPEDA). We have collected information from 1998 to 2007 for our analysis. We have used linear multiple regression techniques in order to find the impact of the importing countries demand for Indian marine products (US and Japan) on India. The data has been collected for the following variables along with their terminologies:

Dependent Variable (Y):

The quantity of Marine products export from India is taken as the Dependent Variable. We will form two linear regression equations to estimate the quantity of marine products exported to USA and Japan, therefore we will be accessing the value for the dependent variable for US and Japan.

Independent Variables (X's):

The independent variables are the factors whose effect we are researching quantitatively on the dependent variable. The intent is to find out to what extent the independent variable explains the change in the dependent variable. Below are the independent variables selected for the current study:

GDP of Importing Country: The GDP of the country which is importing the marine products from India is taken to be a factor while estimating the demand quantity. The GDP of Japan and the USA has been considered for a period of 10 years.

Population of Importing Country: Seafood and other agro marine products being the primary food of Japan and a major food source for USA the population of the country is considered to be a major factor while estimating the demand.

Exchange rate of Importing Country: The exchange rates for the importing country with respect to India have been taken into account as an independent variable. The exchange rate for the US dollar is taken year wise and has been averaged over a period of 12 months. Similarly, for the Japanese Yen ¥ however the Japanese yen is 100¥ conversion to rupee.

Unit Price of Marine Product: We have considered the unit price of the marine product in Rs/Kg. Even though the price of different products is different since the distribution of prices is assumed to be almost equal, we are taking an average of unit price for all products.

Total Production of Marine Products in India: The total production of marine products including the dried, the cut fish and the crustacean variety has been taken as an independent variable.

The multiple linear regression equations have been used for the study. The regression equations for USA and Japan used are as follows:

The regression equations for Japan

$$Y_{Japan} = \beta_0 + \beta_1 Pop_{Japan} + \beta_2 Exchg_{Japan} + \beta_3 GDP_{Japan} + \beta_4 UnitVal_{Japan} + \beta_5 TotQuan + U_t$$

The regression equations for USA

$$Y_{USA} = \beta_0 + \beta_1 Pop_{USA} + \beta_2 Exchg_{USA} + \beta_3 GDP_{USA} + \beta_4 UnitVal_{USA} + \beta_5 TotQuan + U_t$$

Where Y_{Japan} = Quantity Demanded in Japan, Pop_{Japan} = Population of Japan, $Exchg_{Japan}$ = Exchange rate of Japanese Yen (Rs/100¥), GDP_{Japan} = Real Gross Domestic Product of Japan, $UnitVal_{Japan}$ = Unit value of Marine Product exported to USA Rs/Kg, TotQuan = Total production of Marine products for the year; and Y_{USA} = Quantity Demanded in USA, Pop_{USA} = Population of USA, $Exchg_{USA}$ = Exchange rate of US Dollar (Rs/$), GDP_{USA} = Real Gross Domestic Product of USA, $UnitVal_{USA}$ = Unit value of Marine Product exported to USA Rs/Kg, TotQuan = Total production of Marine products for the year.

Data Anaysis

Marine exports in India:

The export of marine products from India set an all time record of 612641 tonnes of value Rs. 83.6353 billion or $2.14 billion and US Dollar 1852.93 million during 2006-07. Nevertheless, marine products exports have shown an increase of 19.62% in quantity, 15.43% in Ruppes value and 12.69% in dollar terms during 2005-06 to 2006-07. The export of marine products from India recorded a growth of 11.29 per cent at 602835MT valued at Rs.8607.94 crore for the period 2008-09. In terms of export earnings, Frozen Shrimp continued to be the largest export item (54% in Value), followed by Fr. Fish (17%), Cuttlefish (10%), Squid (7%), dried items (2%) etc. The export of tuna fish contributed highly to export earnings. Tuna fish exports are targeted to reach 400 million dollar by 2010. Andaman and Nicobar Island have been identified as holding 25-30% of tuna potential in the country.

India’s major export items include frozen fish, cuttlefish, squid and dried items.

States like Andhra Pradesh, Tamil Nadu, Kerala, Maharashtra, West Bengal, Gujarat and Orissa have huge marine products potential which needs to be harnessed in a manner that can enhance India’s export potential, provided all possible incentives and encouragement in terms of policies & finance is given to exporters [ASSOCHAM, 2008].

Marine imports in Japan

The Japanese market for foreign foods products has opened up rapidly in recent years, due to the inability of domestic producers to satisfy internal demand, and as the tastes of Japanese consumers have become more internationalized. In particular Japan's current state of seafood resources and the resultant declining domestic production in fishing, trawling and aquaculture, provides expanding import opportunities in the seafood sector in Japan, which are supported by improved and developed distribution technologies in air transportation and freezing [Food Products trends in Japan, 2007]. The superior quality and taste of Indian products create advantages in this sector particularly for products such as live abalone and fresh sea urchin, which are high-class seafood in Japan.

Marine imports in USA:

The overall U.S. seafood consumption continues its positive trend, with increase of per capita consumption. Since 2001, consumption has increased by 1.8 lbs. (0.82 kg) to 16.6 lbs. (7.5kg). Imports play an increasingly important role for the U.S. and today represent approximately 88% of U.S. seafood consumption. The trade balance of seafood decreased by 375 million pounds (170m metric tons) to 2.14 billion pounds (970m metric tons). However, in value it continues to grow, representing a trade deficit of USD 7.8 billion today. The leading trading partners for the U.S. are India, Japan, Canada and Thailand. Consolidation in the primary and secondary sector of the U.S. seafood industry continues to be necessary, with enormous pressure on the main players and a continuing consolidation on the customer side of the industry, both in retail and food service. The continuing weakness of the U.S. dollar still supports the primary sector, but makes life difficult for the secondary sector [USA Sea Food Industry, 2007].

Marine exports from India to USA and Japan

The Marine products Export Development Authority (MPEDA) acts as a coordinating agency with different Central and State Government establishments engaged in fishery production and allied activities. The following analysis indicates the existing importance of marine products trade from India to Japanese and American markets.

Macro Factors of Japanese Economy and Total Marine products exported from India:

Table 1 indicates the macro factors of Japan and India’s marine exports to Japan during 1998 to 2007. The table shows that the Population of Japan has grown by 1.21% and the GDP of the country has increased by 6.11% from 1998 to 2007. The exchange rate of rupees per 100yen has increased by 11.17% and the marine products export from India to Japan has increased by 12.69% during 1998-2007. This major improvement in India’s exports

to Japan has been due to the improvement in the technology and infrastructure requirements and mainly due to globalization policies of India.

Table 1: Macro Factors of Japan and Marine exports from India

Year	Pop_{Japan}	$Exchg_{Japan}$ Rs/100Y	GDP_{Japan} million$	TotQuan lakhTonne	$UnitVal_{Japan}$ Rs/KG	$Y_{japan\ Tonnes}$ (Quantity Exported)
2007	127,777,178	35.21	$4,302	60	1221812	67373
2006	127,771,546	39.02	$4,367	64	1119170	67437
2005	127,768,457	40.10	$4,514	66	1125638	67277
2004	127,787,234	41.89	$4,426	63	1056388	66990
2003	127,546,746	40.20	$4,125	64	1025979	68983
2002	127,432,765	38.87	$3,873	62	996255	64905
2001	127,043,756	38.87	$4,147	60	1067087	54916
2000	126,926,870	41.73	$4,746	57	1137419	50020
1999	126,765,756	38.00	$4,537	57	1193885	57832
1998	126,242,875	31.67	$4,054	53	1280125	59785

The result of the regression equation is shown in Eq1. The coefficient of all macro-economic variables selected for the study are showing positive but insignificant impact on the marine exports from India to Japan except the GDP of Japan which is negative but again insignificant. This shows that none of the factor identified in the study is statistically significant. Only the F- value is significant at 5% level of significance. This implies that there may be some other factors which show an impact on India's marine products to Japan.

Equation 1

Yjapan = 0 .0048POPjapan+ 9394.69Exchgjapan--89.91GDPjapan+1298.89TotQuan+0. 34UnitValjapan-

R^2 = 0.9045 Multiple R = .95107 Adjusted R square = .7852 Standard Error = 3016.67 Observations = 10

986066.16

Macro Factors of USA Economy and Total Marine products exported from India:

Table 2 indicates the macro factors of USA and India's marine exports to USA during 1998 to 2007. The table shows that the Population of USA has grown by 10.1% and the GDP of the country has increased by 28.63% from 1998 to 2007. The exchange rate of rupees per US dollar has depreciated by 9.75% and the marine products export from India to USA has increased by 6.20% during 1998-2007. This growth in India's marine exports to USA has been due to the opening of the Indian economies with the rest of the World and also because of improvement in technology and infrastructure required for the rise in exports from India.

Table 2: Macro Factors of USA and Marine exports from India

Year	Pop_{USA}	$Exchg_{USA\ Rs/\$}$	GDP_{USA} million $	TotQuan Lakh tonnes	$UnitVal_{USA}$ Rs/Kg	$Y_{USA\ Tonnes}$
2007	302,532,272.00	$45	11663	60	2617957	36,612
2006	299,398,484.00	$45	11413	64	2517203	43,758
2005	296,410,404.00	$44	11003	66	2495102	55,817
2004	293,655,404.00	$45	10676	63	2355831	50,045
2003	290,809,777.00	$47	10301	64	2211379	53,153
2002	287,578,864.00	$49	10049	62	2067684	61,703
2001	284,747,546.00	$47	9891	60	2096122	49,041
2000	281,421,906.00	$45	9817	57	2184463	41,747
1999	277,747,239.00	$43	9470	57	2199572	36,645
1998	274,747,475.00	$41	9067	53	2197158	34,472

The result of the regression equation is shown in Eq2. The coefficient of all macro-economic variables selected for the study are showing positive except GDP of USA but insignificant impact on the marine exports from India to USA. The coefficient of total quantity supplied from India to USA has a positive and statistically significant impact on the total marine exports from India to USA. The ANOVA analysis shows that the F- value is significant at 5%

level of significance. This implies that with the increase in the demand of total quantity of marine products in USA will increase its imports of marine products from India.

Equation 2

Yusa = 0.00053POPusa+32996.178Exchgusa-58.09GDPusa+2089.92TotQuan+0.66UnitValusa-1597311.8

R^2 = 0.9567 Multiple R = .9781 Adjusted R square = .9025 Standard Error = 2850.211 Observations = 10

Comparative Study for the Export demand for USA and Japan:

The macro –economic indicators of USA and Japan with respect to total marine exports of India to these countries can be interpreted as below:

1. *Population Factor*: From the equations we access that the population co-efficient for Japan is around ten times that of the USA. Even though the population factor is low but usually the change in population is the range of 100,000 or over the co-efficient becomes significant. The difference in factors occurs because of the primary source of food in Japan is considered to be seafood and dried marine food products whereas in the USA even though the population is much higher the primary source of food is not seafood. Moreover the USA also gets large quantities of marine products from nearby Carribean and the Hawai islands.

2. *Exchange Rates:* There is a large difference in the co-efficient of exchange rates. Meaning it is far more profitable for India and also the USA to import marine products from India when the Indian currency depreciates against the USA dollar as compared to depreciation of Indian rupee against the Japanese Yen.

3. *GDP:* The GDP of both countries comes as a negative coeffient for both US and Japan. The probable reason for this could be that during the last 2 time periods even though the GDP is decreasing the corresponding change in the imported quantity has not lowered significantly.

4. *Total Quantity Produced in India:* The quantity produced in India is also a significant factor since more produce is exported from India. The coefficient is higher for the US since it is more profitable to export to the US overall and the same is reflected in the equation.

5. *Unit Value*: The unit value is more significant in the US than for Japan although its overall contribution is not very large. This can be interpreted by understanding that either the price is too les to be of consequence or the quality of products exported from India is very high. Hence, price is not a major factor. In the US the exported products are usually expensive products like Crustacean, shrimps, Sardine and Tuna hence not effected largely by change in prices.

Conclusion

It is evident that the trends have distinct features for the two countries that have been considered. It can be said that with respect to the population factor, Japan has a stronger demand for Indian seafood, in spite of a much smaller population, because of the eating preferences of the Japanese people. As far as Rates of Exchange are concerned, it is quite clear that it is a win-win situation for both USA and India to transact on marine products between each other. The Indian marine exports industry should not worry about the economic indicators like GDP of Japan and USA, because the negative correlation coefficient underlines the non-reliance of GDP on India's marine export quantities. The total quantity of production is a significant factor with respect to both the countries, more so with respect to USA. Factors like high quality of Indian marine exports are underlying reasons for the relative insignificance of the unit value factor. On an introspective note, one factor, namely the high level of multi co linearity between the various factors considered can be looked at as a potential drawback of this analysis.

Recommendations

Export items like Frozen Shrimp continue to contribute healthily to the export percentage (54 %). Tuna fish, a relatively small contributor to this percentage till now has shown remarkable progress and scope of further exploitation. Andaman and Nicobar Islands has been identified as holding 25-30 per cent of tuna potential in the country. An effort to rationally tap this option will go a long way in improving the marine export scenario, especially with respect to a more niche US market. Export to Japan showed a positive growth. However, export to USA showed a negative trend. This is one issue that needs immediate attention because all these countries, especially USA have immense potential as importers of Indian seafood. Other than that, steps like creation of fisheries related infrastructure, cold storage chain, fish processing units, setting up training facilities for skill building and trade development should also be undertaken.

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