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Export Performance of Marine Fisheries Sector in Kerala**Shalini Mathews* & Dr. Anitha V****

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Abstract

Fishery sector is a precisely promising and prominent one both in the national and state economies (Economic Review, 2017). The contribution of fisheries sector to the development of the state economy has been increasing over the years as measured by the share of fisheries sector in Gross State Domestic Product (Kerala marine fisheries statistics, 2015). The paper examines the performance of marine fish exports in Kerala. With the aid of Revealed Comparative Advantage, the study found that Kerala has an advantage with respect to export performance of marine products in India, thereby endowing Kerala a competitive edge over other states. Its cardinal position in export industry is vital for the State's economy and GDP.

Key Words

Revealed Comparative Advantage, marine exports of Kerala, Compound Annual Growth Rate, marine fish landings

Introduction

International trade creates both negative and positive impact on the economic growth of an economy. The extent of these impacts depends on the nature of commodity exported and the elasticity of demand for that commodity in the foreign market and the trade policies prevailing in the nations engaged in trade. Of the different commodities exported from India, Kerala contributed a lion's share of marine export. It is inevitable because of its contribution to employment generation and foreign exchange. However, it is important to know whether the export of marine product from Kerala is beneficial or not?

According to Planning Commission one of the most prominent characteristics of Indian fisheries sector is its small scale nature. Among the Indian marine fisher folk, there exist three different stakeholders, primary, secondary and tertiary (Swathi Lekshmi, et al, 2014). In Kerala, the livelihood of 181,308 marine fisher folk, who belong to either primary or secondary sectors, significantly contributes towards the marine product exports (Marine fisheries census, 2010).

The theory of comparative advantage states that, export boosts a nation's gain from trade. The theory creates the link between export

and trickle down effects directly and indirectly on the lives of the marine fisher folk (Sumaila, 2017). According to empirical studies, trade policies promote exports (Moore, 1988). Through its macro-economic impact, it promotes economic growth (Ranjan Kumar, 2009). This necessitates the need for transformation in fishery trade policies (Gunabhagya et al, 2016, Rashid Sumaila et al, 2014). Studies shows that it is important to know the factors that foster growth in fish trade to enhance the market size of export (Krishnan et al, 1994, Shyam Salim, 2003, 2004, 2015, James David, 2013, Sajitha M, 2016). In India a few studies have been conducted on comparative advantage in exporting fish and fish products with the rest of the world (Anjani Kumar, 2004, Naghvan et al, 2017). It is deemed as a positive aspect for fisheries as an upcoming business opportunity and advocated for future outlook in order to make fisheries more profitable and competitive in the international market arena (Navghan et al, 2017)

According to the estimates of 2013-14, among the maritime states in India, Kerala occupies the second position in marine fish production (Economic review 2016). As far as Kerala is concerned, fisheries, to be precise, marine fisheries in particular, constitute an important sub-sector of the primary sector of the state economy. At national level, 66% of the total fish production is contributed by the inland

sector. However, at the State level, the share of inland sector is only 28% which is relatively less than the marine sector (Economic Review, 2017).

Even though Kerala is a top contributor of marine production in the country, there is still a gap in research in understanding the performance of Kerala's marine products export towards the nation. In this backdrop, this paper strives to evaluate the trends (species-wise) in marine exports of Kerala over the past years and to determine the export performance of marine products of Kerala with respect to India.

Significance of the Study

All over the world, marine fisheries resources were unscrupulously exploited (Ratana Chuenpadgee et al, 2005). But by the advent of early 1990s, 60% of the global marine fisheries had already reached a state of depletion and the whole marine production was at a plateau (FAO 1999a). According to the Food and Agricultural Organization (FAO), 87% of the world's marine fish stocks were already fully exploited, overexploited or depleted, and this number has been skyrocketing alarmingly over the years (UNCTAD 2016, FAO 2013).

In the words of John Kurien, it is an incorrect perception that only recently, large quantities of fish entered international trade. From the 1960s to the late 1970s, just under a third of the fish globally harvested and marketed entered international trade (John Kurien

2005). Average annual growth rate of world fishery export volume for the period 1981-2011 for developed countries stood at 2.73%, for developing countries, it was 5.30% and 6.89% for least developed nations. Developing and least developed countries underpins as the major players in international fishery trade since 1981 (FAO, 2017a). In 2014, developing countries fishery net export revenues (exports minus imports) reached USD 42 billion, higher than other major agricultural commodities (such as meat, tobacco, rice and sugar combined) (FAO 2016).

India occupied sixth position among the top ten exporters in 2016 (FAO 2018). During 2016-17, the Indian marine exports surged to US\$ 3,467.62 million, a substantial leap of 19.44% when compared to US\$ 2,903.24 million during 2015-16 (Ministry of Commerce and Industry, 2016-17). Although initially fishing evolved as a livelihood activity, the fisheries sector in India had undergone substantial changes with ever-changing consumption patterns, emerging new market forces and huge surge in technological advancements. The contribution of fisheries sector to India's GDP is around 1%. The Share of fisheries in the GDP from agriculture, forestry and fishing is 5.5% (Economic Review, 2016).

Methodology

The vital cornerstone of theoretical economic support for trade is David Ricardo's comparative advantage. It gathers our attention towards the fact that the entities can

assure themselves of better outcomes by specializing in their comparative advantage. As a result, the players attain momentum due to their comparative advantage and are in a position to generate more of the two goods than if they each produced both goods to meet their own respective demands. Hence, it can be clearly seen that each entity gains from trade. Applying the concept to fish and fish products imply that trade in fish can generate high economic growth, which if properly harnessed can help eradicate poverty and lay a strong economic foundation for marine conservation (Sumaila, 2017).

The present study is mainly based on secondary data, making use of time-series data pertaining to the period 2000-15. This period was selected because; it represents the time frame for millennium development goals. The data pertaining to the quantity and value of marine products export for Kerala and India and market-wise share of export of marine products were compiled from the Kerala Marine Fisheries Statistics, Marine Products Export Development Authority (MPEDA), India Stat and Ministry of Commerce and Industry (GOI). For analysing the data, statistical tools such as mean, standard deviation and ANOVA were used. To study the trends of marine exports, Compound Annual Growth Rate (CAGR) was calculated as:

$g = ((\text{end value}/\text{start value}))^{(1/n)} - 1$. To avoid ambiguity, quantity is expressed in metric tons and values in crores.

The export performance ratio (EPR) as suggested by Balassa (1965), has been used to indicate the comparative advantage of the fisheries sector. Since this is revealed by the observed pattern of trade flows, it is called Revealed Comparative advantage (RCA). The comparative advantage

of fisheries sector for Kerala has been measured by the share of fisheries in the Kerala's total exports (S_{jk}) relative to the fisheries share in India's total exports (S_{ji}); $RCA \text{ or } EPR = S_{jk} / S_{ji}$ ($k = \text{Kerala}$, $j = \text{share of fisheries}$, $i = \text{India}$)

Export performance ratio was calculated to examine the comparative advantage of Kerala's marine exports to that of the country. If RCA is greater than unity, the region has the comparative advantage and if RCA is less than unity, the vice versa (Anjani Kumar, 2004)

Results and Discussion

The basic pre-requisite for trade is adequate production/catch of fish. A retrospective analysis of the marine catch both Kerala and all India values will provides a preliminary picture of the fish harvest over the years (Table 1).

Figure 1 depicts that the landings of both Kerala and India over the years were more or less stable with marginal increase or decrease. A notable fact is that the share of

Kerala landings starts dwindling compared to the initial years under consideration.

Table 2 gives the mean and standard deviation of the share of Kerala's export of different species of fishes to that of India for the period from 2001-02 to 2014-2015. The ratio is maximum (39.36) for Frozen Cuttle fish followed by Frozen Squid (39.51) and minimum for dried items (2.16). The ANOVA table significantly reject the hypothesis that 'the mean ratio of Kerala's export to that of India for different species is equal'.

The post hoc test reveals that expect the pairs (Shrimp, Chilled) with sig. prob 0.69, (Live, Others) with sig. prob 0.11 and (Shrimp, Fish) with sig. prob 0.05 the hypothesis that 'the mean ratio of Kerala's export to that of India for different species is pair wisely equal' is significantly rejected. The mean values for Shrimp (mean -19.48, S.D - 2.89) and Chilled (mean - 18.56, S.D - 6.62) are equal is statistically accepted (Significance probability 0.69). Similarly the mean values for Shrimp (mean -19.48, S.D - 2.89) and Fish (mean - 14.90, S.D - 11.27) are equal is statistically accepted (Significance probability 0.05) and the mean values for Fish (mean -14.90, S.D - 2.89) and others (mean -19.48, S.D - 6.62) are equal is statistically accepted.

The compound annual growth rate (CAGR) of export of all species was fluctuating but remained positive except for frozen fish

(Table 3). A negative slide was seen for frozen fish exports with estimated trend of -1.06% and -7.19% for Kerala and India respectively. The reason for the downward trend is due to the ever increasing demand for certain species of fish like Squid, Cuttle fish and Shrimp.

During 2000-15, in spite of fluctuations in exports, the major export destination of fish products from Kerala was European Union, followed by South East Asia, and Middle East.

The RCA and RSCA values indicate the comparative advantage the state enjoys in the nation's marine exports (Table 5). The productivity of Kerala's continental shelf continued to remain consistent over the years. Backed by the Kerala's marine milieu intertwined with many rivers, backwaters and mangroves. This facilitates heavy influx of rain water that carries large quantities of nutrients that trigger phytoplankton bloom and also provides for migratory passages for several kinds of fishes to breed and to feed on. As a result, the taste of fish delicacies from Kerala's marine catch is famous and far reaching when compared to the fish catches

from other states in India. This surely enhanced the price of fish from Kerala shores.

Conclusion

The present study focuses on explaining the competitiveness of marine products trade of Kerala and the vantage spot it has created for itself in the Indian fish trade scenario. These results above clearly show that Kerala does have a competitive edge over other states in exporting marine products. As a prospective growing business opportunity, it definitely advocates for in-depth analytical study so that Kerala marine exports become more profitable and competitive in the international scenario. The European Union, South East Asia and Middle East are Kerala's top export destinations of marine products. Revealed Comparative Advantage (RCA) of Kerala's marine export is sure proof that fisheries sector has the ability to enhance its uttermost share in total exports if proper focus is given for its further development. An in-depth detailed analysis is the need of the hour to explore how far the fruits reaped out of exports have reached the desired segment, i.e., the marine fisher folks.

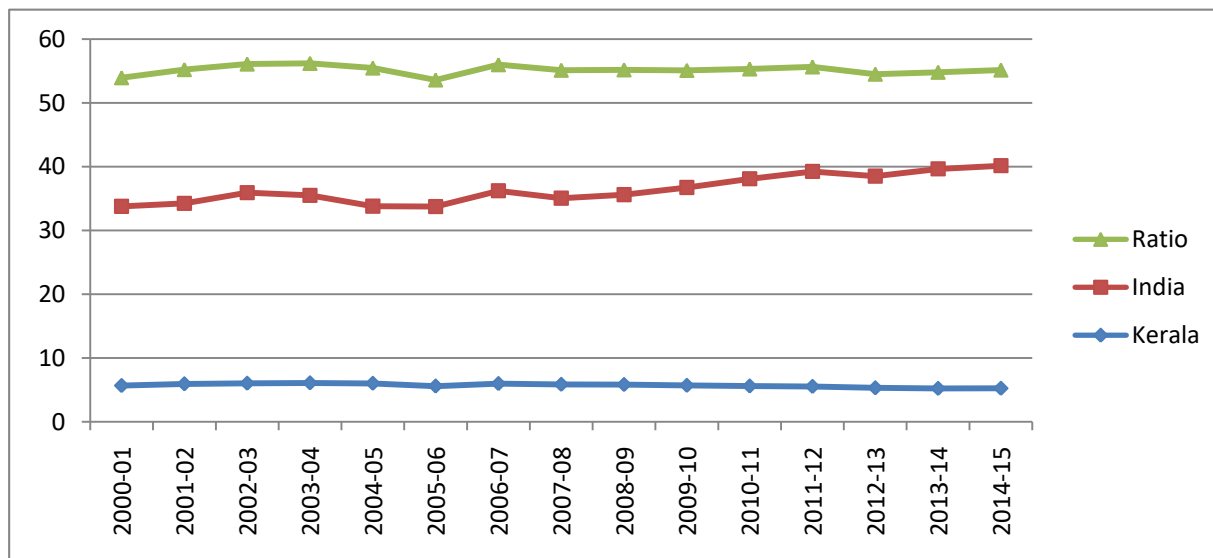
References

1. Balassa B (1965) "Trade Liberalization and Revealed Comparative Advantage", Manchester School of Economics and Social Studies, Volume 33, No: 2, pp: 99-124
2. Dash R K (2009) "Revisited Export-led Growth Hypothesis: An Empirical study on India", South Asia Economic Journal 10:2 pp: 305-324

3. David J et al (2013), "Export Performance of Indian Marine Products to Major Export Market Regions", Agricultural Update, Vol 8, Issue 1&2, pp: 147-152
4. "Economic Review" (2016), State Planning Board, Govt. of Kerala
5. "Economic Review" (2017), State Planning Board, Govt. of Kerala
6. FAO (2016) "The State of World Fisheries and Aquaculture, 2016: Contributing to Food Security and Nutrition for All", Rome
7. FAO (2018) "The State of World Fisheries and Aquaculture, 2018: Meeting the Sustainable Development Goals", Rome
8. Govt. of India (2010), "Marine Fisheries Census, Kerala 2010", Department of Animal Husbandry, Dairying and Fisheries
9. Govt. of Kerala (2015), "Kerala Marine Fisheries Statistics 2015", Directorate of Fisheries
10. Gunabhagya et al (2016) "Growth Performance and Trade Direction of Indian Fish Products", Economic Affairs 61 (1): 65-69
11. Kumar, Anjani (2004) "Export Performance of Indian Fisheries Strengths and Challenges Ahead", Economic and Political Weekly, Vol. 39 No. 38, pp 4264-4270
12. Kurien J (2005) "Responsible Fish Trade and Food Security", FAO Fisheries Technical Paper 456
13. Lekshmi S (2014) "Primary, Secondary and Tertiary Sectors in Marine Fisheries of Karnataka, India: A Socio-economic Profile", Asian Academic Research Journal of Social Science and Humanities Volume 1, Issue 21, pp: 32-50
14. McNab R M and Moore R E (1998) "Trade Policy, Export Expansion, Human Capital and Growth", The Journal of International Trade and Economic Development, Vol. 7 Issue 2
15. Ministry of Commerce and Industry (2016-17), "Annual Report" Govt. of India
16. Navghan M and Kumar N R (2017), "An Empirical Assessment of Indian Seafood Export Performance and Competitiveness", International Journal of Pure and Applied Bio-science 5 (6): 329-336
17. Planning Commission (2012), Report of the Working Group on Development and Management of Fisheries and Aquaculture, GOI
18. Salim S and Ananthan (2003), "Decomposition Analysis of Export of Indian Marine Products", Bihar Journal of Agricultural Marketing, Vol 11, No: 1&2
19. Salim S et al (2004), "Export Performance of Indian Fisheries in the Context of Globalization", Indian Journal of Agricultural Economics, Vol 59, No: 3
20. Sumaila U R (2017) "Trade and Sustainable Fisheries", Asian Development Bank Institute, Working Paper 676

21. UN Conference on Trade and Development (2016), “Sustainable Fisheries: International Trade, Trade Policy and Regulatory Issues: Geneva”

Figure 1: Ratio comparison of marine fish landings of Kerala and India



Source: Marine fisheries statistics, 2015

Table 1: Details of marine fish landings in Kerala and India from 2001-02 to 2014-15

Year	Kerala	India	Ratio
2000-01	5.67	28.11	20.17
2001-02	5.94	28.3	20.99
2002-03	6.03	29.9	20.17
2003-04	6.09	29.41	20.71
2004-05	6.02	27.79	21.66
2005-06	5.59	28.16	19.85
2006-07	5.98	30.24	19.78
2007-08	5.86	29.2	20.07
2008-09	5.83	29.78	19.58
2009-10	5.7	31.04	18.36
2010-11	5.6	32.5	17.23
2011-12	5.53	33.72	16.40
2012-13	5.31	33.21	15.99
2013-14	5.22	34.43	15.16
2014-15	5.24	34.91	15.01

Source: Marine fisheries statistics, 2015

LSD						
(I) Sp	(J) Sp	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Shrimp	Squid	-12.03196*	2.29	0.00	-16.57	-7.50
	Cuttle	-19.88268*	2.29	0.00	-24.42	-15.35
	Dried	17.31783*	2.29	0.00	12.78	21.85
	Live	10.48795*	2.29	0.00	5.95	15.02
	Chilled	0.91	2.29	0.69	-3.62	5.45
	Fish	4.57489*	2.29	0.05	0.04	9.11
Squid	Others	6.78391*	2.29	0.00	2.25	11.32
	Shrimp	12.03196*	2.29	0.00	7.50	16.57
	Cuttle	-7.85073*	2.29	0.00	-12.39	-3.32
	Dried	29.34979*	2.29	0.00	24.81	33.89
	Live	22.51991*	2.29	0.00	17.98	27.06
	Chilled	12.94612*	2.29	0.00	8.41	17.48
Cuttle	Fish	16.60684*	2.29	0.00	12.07	21.14
	Others	18.81587*	2.29	0.00	14.28	23.35
	Shrimp	19.88268*	2.29	0.00	15.35	24.42
	Squid	7.85073*	2.29	0.00	3.32	12.39
	Dried	37.20051*	2.29	0.00	32.67	41.74
	Live	30.37063*	2.29	0.00	25.84	34.91
Dried	Chilled	20.79685*	2.29	0.00	16.26	25.33
	Fish	24.45757*	2.29	0.00	19.92	28.99
	Others	26.66660*	2.29	0.00	22.13	31.20
	Shrimp	-17.31783*	2.29	0.00	-21.85	-12.78
	Squid	-29.34979*	2.29	0.00	-33.89	-24.81
	Cuttle	-37.20051*	2.29	0.00	-41.74	-32.67
Live	Chilled	-6.82988*	2.29	0.00	-11.37	-2.29
	Fish	-16.40366*	2.29	0.00	-20.94	-11.87
	Others	-12.74294*	2.29	0.00	-17.28	-8.21
	Shrimp	-10.53392*	2.29	0.00	-15.07	-6.00
	Squid	-10.48795*	2.29	0.00	-15.02	-5.95
	Cuttle	-22.51991*	2.29	0.00	-27.06	-17.98
Chilled	Dried	-30.37063*	2.29	0.00	-34.91	-25.84
	Fish	6.82988*	2.29	0.00	2.29	11.37
	Others	-9.57378*	2.29	0.00	-14.11	-5.04
	Shrimp	-5.91306*	2.29	0.01	-10.45	-1.38
	Others	-3.70	2.29	0.11	-8.24	0.83
	Shrimp	-0.91	2.29	0.69	-5.45	3.62
Fish	Squid	-12.94612*	2.29	0.00	-17.48	-8.41
	Cuttle	-20.79685*	2.29	0.00	-25.33	-16.26
	Dried	16.40366*	2.29	0.00	11.87	20.94
	Live	9.57378*	2.29	0.00	5.04	14.11
	Fish	3.66	2.29	0.11	-0.87	8.20
	Others	5.86975*	2.29	0.01	1.33	10.41
Others	Shrimp	-4.57489*	2.29	0.05	-9.11	-0.04
	Squid	-16.60684*	2.29	0.00	-21.14	-12.07
	Cuttle	-24.45757*	2.29	0.00	-28.99	-19.92
	Dried	12.74294*	2.29	0.00	8.21	17.28
	Live	5.91306*	2.29	0.01	1.38	10.45
	Chilled	-3.66	2.29	0.11	-8.20	0.87
	Others	2.21	2.29	0.34	-2.33	6.74

Others	Shrimp	-6.78391*	2.29	0.00	-11.32	-2.25
	Squid	-18.81587*	2.29	0.00	-23.35	-14.28
	Cuttle	-26.66660*	2.29	0.00	-31.20	-22.13
	Dried	10.53392*	2.29	0.00	6.00	15.07
	Live	3.70	2.29	0.11	-0.83	8.24
	Chilled	-5.86975*	2.29	0.01	-10.41	-1.33
	Fish	-2.21	2.29	0.34	-6.74	2.33

* The mean difference is significant at the 0.05 level

Post-HOC (Multiple comparisons): Dependent variable ratio

ANOVA					
Ratio					
	Sum of squares	DF	Mean square	F	Sig.
Between Groups	15141.728	7	2163.104	55.045	.000
Within Groups	4401.249	112	39.297		
Total	19542.977	119			

	Frozen Shrimp	Frozen Squid	Frozen Cuttle fish	Dried Items	Live Items	Chilled Items	Frozen Fish
Mean	19.48	31.51	39.36	2.16	8.99	18.56	14.90
Standard Deviation	2.89	9.19	4.34	4.18	2.49	6.62	11.27

Source: Author's own calculation based on data from MPEDA, 2000-15

Table 3: Growth Trends in the Export of Marine Fisheries Products (2000-15): Quantity (CAGR)

Species	CAGR Percent	
	Kerala	India
Frozen Shrimp	4.46	8.05
Frozen Squid	6.15	15.08
Frozen Cuttle fish	5.34	6.14
Dried Items	22.61	16.10
Live Items	7.17	7.54
Chilled Items	18.37	15.08
Frozen Fish	-1.06	-7.19
Others	7.07	9.69

Source: Author's own calculation based on data from MPEDA, 2000-15

Table 4: Export Market Destination of Marine Products from Kerala (Quantity, 2000-15)

Year	Japan	USA	EU	China	SEA	ME	Others
2000-01	10.48	15.06	33.17	27.15	7.16	2.37	4.60
2001-02	12.29	14.34	44.89	7.63	12.06	3.01	5.79
2002-03	7.16	13.07	46.84	13.33	9.68	3.17	6.74
2003-04	11.75	10.06	50.40	7.80	7.89	3.47	8.62
2004-05	9.65	9.32	51.43	7.33	10.31	4.34	7.63

2005-06	7.17	8.68	48.66	11.28	11.15	3.69	9.37
2006-07	6.78	7.25	50.98	9.43	11.99	3.08	10.49
2007-08	7.23	7.63	53.60	4.71	12.20	4.09	10.55
2008-09	4.47	8.28	51.85	5.04	12.48	4.78	13.11
2009-10	5.25	6.26	49.68	6.24	16.24	6.48	9.86
2010-11	5.16	6.05	45.74	9.15	20.62	5.24	8.04
2011-12	5.15	7.16	34.65	4.90	33.39	5.83	8.92
2012-13	7.08	7.53	31.95	2.74	23.41	7.24	20.04
2013-14	5.13	6.06	36.65	2.62	25.46	12.78	11.30
2014-15	5.55	6.11	40.99	3.23	23.63	11.41	9.08

Source: Author's own calculation based on data from MPEDA, 2000-15

**Table 5: Revealed Comparative Advantage of Kerala in India's marine export, 2009-15
(value in Rs crores)**

Year	RCA	RSCA
2009-10	5.07	0.67
2010-11	5.79	0.71
2011-12	6.57	0.74
2012-13	5.73	0.70
2013-14	11.45	0.84
2014-15	11.52	0.84

Source: Author's own calculation based on data from MPEDA, 2000-15, India Stat, Economic Review.