

MARINE PRODUCTS EXPORTS FROM KERALA
A STUDY OF COMPOSITION, TRENDS
AND PERFORMANCE, 1840 - 1985

Dissertation submitted in partial fulfilment of
the requirements for the award of
the degree of Master of Philosophy in Applied Economics
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I hereby affirm that the research for this dissertation titled "Marine Products Exports from Kerala - A Study of Composition, Trends and Performance - 1840-1985" being submitted to the Jawaharlal Nehru University for the award of the Degree of Master of Philosophy was carried out entirely by me at the Centre for Development Studies, Trivandrum.

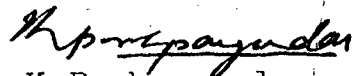
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CHAPTER 1

I N T R O D U C T I O N

The development and exploitation of marine resources is of paramount importance to nations possessing vast coast lines and having large peasant communities who depend upon the resources from the sea for their livelihood. The sea-based resources have, since historical times, catered mainly to meet the food requirements of growing populations. The expansion of trade and the technological progress in harvesting and processing of marine resources during the last century have made trade in marine products exports an attractive proposition in more recent times. The growth of marine products exports had facilitated changes both in the sphere of production, processing and also in the composition of exports.

In this study, we analyse the growth pattern of marine products exports from Kerala -- a state with a long coast line and with a fishing community, who had from time immemorial lived along the border of the coast line, traditionally engaged in the production-and-trade of marine products. Kerala's share in total marine products exports from India has progressively increased from 13% (Rs.5.1 million)

in 1957/58 to 37%(Rs.1404 million) in 1984/85. At this level it accounted for 4% of India's total export earnings in 1985. During the same period, contribution of Kerala's marine products exports in value terms to Kerala's total export earnings also increased from 2.6% to 21.5%.

Focus of the Study

This study focuses on the trends and patterns in the growth of marine products exports from Kerala and also attempts to find out how its export performance is biased towards different sectors involved in the Industry. The impact of growing exports on the consumers will also be dealt with.

In this study, we will be dealing with the following three aspects:

(a) Growth pattern of Marine Products Exports from Kerala

Here, an attempt is made to find out the trends and patterns in export of marine products from the region that forms present day Kerala between 1840-1950. This is done for the purpose of capturing the changes in product mix, overseas markets and technology for harvesting and processing, which took place during this period.

(b) Instability in export Earnings of Marine Products from Kerala

An exercise of this kind is attempted to bring out the changes in relative levels of instability in earnings from export of marine products, (taking into consideration the high degree of fluctuations in its earnings by being a primary commodity) and further, to identify the sources of instability in export earnings, during a period of twenty years from 1963-1983.

(c) Kerala's export Performance and Bias

In this section, we will try to find out, how Kerala's performance in exports of marine products is biased towards different sectors involved in this export industry viz. primary producers (i.e. fishermen) and the entrepreneurs. The effect of increasing exports of marine products on the consumers also will be looked into. Here, also, focus of analysis will be during 1963-1983.

In our study, we have identified a group of supply factors and demand factors, which disrupt the smooth flow of trade in primary commodities between countries. Though the whole period of our analysis is divided into two, we will be basically looking at these main supply factors and demand factors which affect the trade, in both the periods.

FACTORS AFFECTING THE SUPPLY OF PRIMARY COMMODITIES IN TRADE

Trade in primary commodities form a substantial part of international trade (56% of the total world exports in 1987)*. Most of the primary commodities originate from less developed countries of Asia and Africa and it forms a major source of their scarce foreign exchange earnings.

The supply of primary commodities to national and international markets depend upon a variety of factors such as resource position, nature of the product, fluctuations in production, the levels of technology used, the organisation of production and trade, marketing strategies and government policies.

Resource and Environmental Considerations

Trade in primary commodities depends primarily on the resource situation (abundance of the resource) and its steady availability. The factors affecting supply of the resource (i.e. raw material for export) further vary depending upon whether the resource are exhaustible or renewable. In the case of renewable resources - such as forest or marine products- the level and mode of exploitation plays an important role in deciding the continued (steady) supply of the resource.

Environmental and seasonality factors also play a crucial role in product availability and can create fluctuations in supply. Continual upgrading of technology used to

* World Development Report, 1987.

harvest the renewable resources (e.g. resource from the sea) has contributed to a certain extent in reducing the level of these fluctuations. The achievements on this count in the sphere of primary agricultural products are far ahead when compared to those of harvesting marine resources. In the latter case, oceanographic factors, salinity, temperature etc. are much beyond technological control.

Technology of Harvesting and Processing

In the case of most primary products (like marine products) the harvesting technology is directly linked to the level of capital and skills of the producer. In addition, the perishable nature of certain primary products (especially marine products) make technological factors crucial. Increase in the level of capital investment used for processing is utmost importance. More capital intensive technology has greatly contributed to reducing the perishability of marine products, thereby resulting in substantial enlargement and change in the magnitude and composition of exports and final markets. The importance of harvesting and processing technology in production and trade of marine products is thus apparent.

Common Property Question

Steady supply of primary commodities like marine products is further affected by the common property nature of the resource. Unlike other primary commodities where production is largely based on cognizable property rights, exports of marine products is based on harvesting a resource which is

common property. The common property nature often results in unbridled exploitation of the resource as more and more entrepreneurs enter the sector to maximise production and profits.

Structure of Production and Trade

The structure and organisation of production in primary commodities vary widely between and within sectors. Primary commodities are produced by peasant communities, large farmers, small and large partnerships, private and joint stock firms or multinational concerns. The structure and organisation of trade is also important. This is because of the ability of the merchant class to convert any commodity into profit through circulation. Their primary interests revolve around investments which will in turn facilitate profit, and they have no particular interests in the sphere of production. The large fluctuations in international markets and large profits to be made often motivate merchants to lay less stress on quality of products exported often resulting in a decline/stoppage of export of respective products.

State Policies and Incentives

The nature of government policies is of paramount importance. The divergent needs of export and domestic markets often leads to conflicting position regarding the end use of a primary commodity. For example, while exports of marine products may have a critical function of earning

scarce foreign exchange, retaining marine products for local consumption may be a priority from the point of nutritional norms within the country/region. In this context, the involvement of the state becomes important in balancing the priorities. For achieving this, various types of measures may be utilised. Taxation measures and other forms of social control over the export industry are examples.

FACTORS AFFECTING DEMAND FOR PRIMARY COMMODITIES IN TRADE

Demand for a primary commodity is determined by a number of factors such as nature of the product (whether substitutes are available or not). Purchasing power of the main buyers, access to main markets, political events which take place in the exporting as well as the importing countries, discovery of attractive markets, quality standards of the products exported and continuous supply of products.

Nature of the Product

Demand for primary commodities is mainly determined by the end-use of these products at the main consumption centres. Primary commodities cater both to industrial uses and also for human consumption. Demand for primary commodities used for industrial purposes is a 'derived demand' and it basically depends upon the nature of the industries which consumes it while, development of new synthetic substitutes

leads to decrease in demand, the development of new end uses for the final product leads to an increase in demand. In the case of primary commodities used for human consumption, demand is relatively more stable, as food preferences do not usually change abruptly at the consumption centres.

Purchasing Power

Purchasing power of the main buyers significantly affects the demand for primary commodities. Trade with developed countries flourish faster than that with developing countries mainly because of the purchasing power of the developed countries. But in the case of inferior goods, an increase in income would lead to a shift of consumption towards products of superior quality. Shift in demand patterns can occur in primary commodity trade with the discovery of remunerative markets. This can be due to increase in price realised for the same product in a different market or due to less transportation charges to a certain market or due to a combination of the two factors.

Technology

Demand for primary commodities is also influenced by the levels of technology used for production and processing. Higher levels of technology enable access to larger markets and this is much more important in the case of primary

commodities of a perishable nature. Use of such technology requires the availability of adequate technical know-how and capital investments.

Political Aspects

General trade agreements between countries which encourage smooth flow of trade, tend to increase demand for products exported. But such agreements primarily depend upon various political permutations and combinations taking place in the exporting as well as importing countries. In the colonial period, trade in primary commodities was regulated to suit the requirements and interests of the colonial rulers who encouraged trade to satisfy the food requirements of their colonies.

Quality Standards

Quality of the products exported also influence demand for the commodities. Continued adherence to rigorous quality helps to increase the confidence of the consumers in the particular product. But, superior quality standards are more likely to be maintained only if the producers and exporters have long term interests

in promoting production and trade. Further, quality standards of the products exported also depends on the technologies used in the production and processing sectors.

CHAPTER 2A BRIEF HISTORY OF MARINE PRODUCTS EXPORTSFROM KERALA (1840-1950)INTRODUCTION

History of marine products exports from Kerala can be traced back to the Sangam period (i.e. 1st - 4th Century AD). In Kerala's trade relations with Phoenicians, Egyptians, Greeks, Romans etc., marine products figured as an important item. Before the arrival of the Portuguese, from the Malabar region, pearl of superior quality was imported by the Romans. An Arab merchant, who visited Kerala in 851 AD, noted that China was a major market of Kerala's marine products.^{1/}

Paucity of data prevents us from conducting a detailed analysis of trends and patterns in exports of marine products from the region that forms Kerala during the century prior to independence (i.e. around 1840-1950). However, with the information available, we have tried to reconstruct, some of the trends and patterns of marine products exports during the above period.

The region of present day Kerala, during the century prior to 1950 consisted mainly of Malabar and Travancore. The

essential difference between the two sub-regions pertained to the level of involvement of the British. The British directly ruled the Malabar region. Travancore was a princely state, where the British had only indirect control.

The abundance of the fishery resource, presence of a group of enterprising traders and the colonial interest of the British were the important factors which facilitated the existence/development of an export market in Kerala.

Resource specificcs and Fishing Methods

Reports on abundance of fishery resources in the waters of the coast off the Malabar region was available from the early part of the 19th century. Dissumer in 1827^{2/} had noted the abundant availability of fish while Francis Day in 1865^{3/} pointed to the abundance as well as the uncertainty of arrival of the shoals (i.e. fluctuations in catch).

In Travancore, according to Velupillai, the waters off the region alone yielded 254 kg of fish/hectare, which was "double the quantity produced by an acre of water considered to be rich by fishery experts of the world"^{4/}.

The fishery resources exhibited certain geographic specificities. The fishery of Malabar region was supported by two main species - Oil Sardines and macherds. Oil sardine is a fish with high oil content and hence highly perishable

in nature. This was mainly used for making fish oil and salt fish. As mentioned earlier, the annual catch of this species was marked with violent fluctuations. From the point of view of processing for export, this variety was the most important especially in the latter half of the 19th century.

The Travancore region had a multispecies fishery. The main species of commercial significance were prawn and sardine which was exported in dried form.

Modes of fishing in the region varied with seasons. Main methods of fishing were with cast nets, stake nets, chinese nets, shooting with bows and arrows, hook and line fishing, capturing by means of bamboo labrynth and poisoning by using Nux-vomica.^{5/}

Fisheries during this period gave employment to many in catching, processing and carriage to distant places. According to census figures, in 1901, total number of fishermen (i.e. sea going, Inland fishermen and fish dealers and curers) contributed 1.55% (44313) of the total workforce of 2858090 . And by 1931, percentage of number of fishermen to total workforce of the region increased to 1.98% (i.e. 67,407 out of 3410248).

Presence of Traders

During the period, a large group of enterprising private traders were involved in fish trade. According to S.Mathew,^{6/} the high profit margin in dry prawn trade, prompted the migration of muslim merchants from the Kutch region in Gujarat to Cochin in the early years of this century to participate in this trade. They were very quick in their response to market potentials abroad and modified their export commodities according to the preference of the buyers, characteristically reflecting the nature of the market, which was essentially a buyers market. One salient aspect of these traders was that, their processing and export activities were labour intensive, involved only low levels of capital investments. As noted by Day,^{7/} "only" . . . slight labour, little skill and very small outlay. . . . " was required for processing fish oil, which was one of the main items of export during the period.

Colonial interest in fish trade

During the above period, there was only very limited access to foreign markets. As the Britishers were keen to ensure their colonial interests, exports from Malabar were mainly directed to their colonies.^{8/} They encouraged fish trade to U.K. and to their colonies in the Asian region. Civil servants like Frederick Nicholson and John Hornell attempted to develop this industry along commercial lines.

Processors in the Malabar region were provided with inputs for processing such as salt. No extra tariffs were imposed on exports. This was in contrast to the princely state of Travancore, where the curers had to pay tax on salt and additional tariffs on exports of marine products. This clearly shows the differences in priorities between Malabar and Travancore. When the former was keen to develop this industry, for an export market, the latter was probably keen to encourage fish for local consumption which came in the form of tariffs which in turn prevented the development of this trade.

Poor purchasing power of the importers during the colonial period (during 1840 - 1950), low quality of products exported and uncertainty in steady supply also had affected this trade badly during the above period. By the end of the period, the marine products export trade from the Kerala region was in a totally destroyed state. This was mainly due to changing import policies of the main buyers of Kerala's products. This should be viewed in the back drop of the political events which was taking place during the period. By the end of the first half of the present century, as a result of the reorganisation in trade arrangements, most of the countries which were Kerala's markets ceased to be British colonies and this must have had a definite bearing on the trade.

Important marine products exported in the century prior to independence fell under two categories:

Those products

- (a) Exported as food
- Salted/Dried fish
 - Dried prawns
 - Sharkfins
- (b) Exported as Industrial Products (for which substitutes are available)
- Fish Oil
 - Fish guano
 - Fish maws.

For those products which are exported as food, the three important factors which affected the smooth flow of trade were size, quality and price of the fish. Important products exported as food was salted/dried fish, dried prawn and sharkfins; and market for the first two products were Sri Lanka & Burma and for Sharkfins the main markets were straits settlements and Malaya.

Exports of products in the 2nd category comprised of fish guano, fish oil and fish maws. Important market for fish oil in the 19th century was London and in the first half of the present century the main markets were Sri Lanka and Maldives. For fish guano, which was exported in the early 20th century, Sri Lanka was the main market and for a short while, sizeable quantities of this product was exported to Japan also. Main markets for fish maws were strait settlements and Malaya.

a) PRODUCTS EXPORTED AS FOOD(1) Salted/dried fish

Salted/dried fish was mainly exported to Sri Lanka in the 19th Century, and in the first half of the 20th century, this product was exported to Sri Lanka and Burma. Main centre from where this product was exported to foreign markets was Malabar. In the 19th Century, between 1854/55 and 1863/64, 65% of the total salt/dried fish exported to foreign markets, value wise was from Malabar. Travancore's share in value terms was only 35%.

In the early 20th century, till 1928/29, salted/dried fish exports were made only from Malabar and the only market was Sri Lanka. Main Centres from where salt/dried fish were exported was Calicut, Cannanore and Tellicherry in Malabar. Salt fish export from Travancore in the beginning of the 20th century started only in 1928-1929, and was exported to Burma only.

Export of salted/dried fish both quantity wise and value wise, to foreign markets were marked with fluctuations (Refer Table-1). In 1900-01, 2843 t of salted/dried fish was exported thereby earning Rs.616(000). This declined to 26 t worth Rs.23(000) in 1925/26, increased to 3794 t worth Rs.1909(000) in 1937/38 and again declined to 81 t in 1943/44 thereby earning Rs.22(000). This would have happened because of the violent fluctuations in landings of oil sardine which was mainly used for preparing salt fish. 9/

TABLE 2.1EXPORT OF SALTED/DRIED FISH FROM THE REGION THAT FORMED KERALA (1850-1950) - SELECT YEARS

*Quantity (tonnes); Value (000'Rs); Price = Rs./tonne

REGION OF ORIGIN		1854-55	1856-57	1860-61	1863-64	1900-01	1908-09	1913-14	1925-26	1928-29	1937-38	1943-44	1949-50	MARKETS
TRAVANCORE	Q:	575	1027	967	1528	-	-	-	-	2254	3794	81	1000	Main market was Sri Lanka in the 19th Century and export was to Burma in the 20th century
	V:	12	21	20	61	-	-	-	-	2022	1909	22	1727	
	P:	21	21	21	40	-	-	-	-	897	503	272	1727	
MALABAR	Q:	NA	NA	NA	NA	2843	685	122	26	-	-	-	-	Sri Lanka
	V:	18	62	69	87	617	188	54	23	-	-	-	-	
	P:	-	-	-	-	217	274	443	885	-	-	-	-	

* Between 1854-55 and 1863-64, quantity exported was available only in cwt. It was converted into tonnes.

- Source:
1. "Fishes of Malabar" - Francis Day.
 2. Various issues of "Report of Cochin Chamber of Commerce".

(2) Dried Prawn

Main markets of dried prawns were Sri Lanka and Burma scattered evidences available shows that dried prawns were exported, especially from Travancore region as early as in 1853 itself. In this year, it was reported that 53 bundles (i.e. 27 t) of dried prawns was exported to foreign markets from the Travancore region.¹⁰ / No information was available on the export of this product in the 19th century. But, for the period between 1900-1950, more reliable data on export of dried prawns to foreign markets is available.

In Kerala, this product was exported only from Travancore. This was due to the abundant availability of this species in the waters off the coast off Travancore compared with that of Malabar region.

Definite trends were observed in the case of dried prawns exports from Kerala especially during the period, 1900-1950. Till 1917/18, in terms of quantity, more than 50% of the total dried prawns export was to Sri Lanka (refer Table-2). But value wise, contribution of Burma was high, thereby implying a high unit value realisation for this product in Burma. So from this year onwards, dried prawns export to Srilanka started showing decline both in terms of quantity as well as value and by 1935/36, contribution of Sri Lanka to total dried prawns exports came down to 2% in both quantity and value terms.

TABLE - 2-2

Export of Dried Prawns from the region that
formed Kerala (1850 - 1950) - Select years

Q (tonnes) V (000'Rs) P = Rs/tonnes

TRAVANCORE						
YEARS	SRILANKA			BURMA		
	Q	V	P	Q	V	P
1853	27	NA				
1900-01	723	72	100	688	260	378
1913-14	160	13	81	67	5	75
1917-18	96	21	218	83	54	651
1923-24	10	33	303	454	220	485
1926-27	35	16	457	1364	821	602
1935-36	10	4	400	575	232	403
1939-40	3	9	300	532	157	295
1940-41	--	--	--	108	60	556
1944-45	--	--	--	--	--	--
1949-50	--	--	--	--	--	--

Source: Various issues of "Report of Cochin Chamber of Commerce".

On the other hand, as a result of the high/tonnes price available, Burma's share in terms of quantity and value increased to 98% in terms of quantity and value. Export of dried prawns to Sri Lanka stopped in 1940/41, and to Burma, it came to an end in 1941/42. This was due to the changing import policies of



of the main buyers.^{11/} What looked to be a sizeable trade with Burma stopped abruptly with the commencement of World War II.

(3) Shark fins

Sharkfins are prepared from dorsal and caudal fins (tail fins) of sharks. This product was exported to foreign countries where it was employed in soups. This product, which was exported only from Malabar, in the latter half of the 19th century was exported mainly to China, while, in the early 20th century, the main markets were Malaya and Strait settlements.

(b) PRODUCTS EXPORTED AS INDUSTRIAL GOODS

(1) Fish Oil

Market for fish oil developed as a result of oil shortage which arose out of the over killing of whales.^{12/} Main market of this product during the 19th century was London. Fish oil produced in Kerala was suited for all uses for which the animal oils were put to, but mainly, it was used for industrial purposes and war purposes.^{13/} Export of this product increased from 3.35t (average of five years ending in 1845-46), to 1736 t in 1859/60 (refer Table-3). In terms of value also, it increased from Rs.77(000') in 1854/55.^{14/} to Rs.137(000') in 1859/60. But from this year onwards export of fish oil started declining and by 1898 it almost stopped completely.

Dux

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TABLE -2.3

Export of Fish Oil from the region that formed Kerala

Quantity(tonnes) V (000' Rs.) P=(Rs/tonne) (1840-1900)

Select years

REGION OF ORIGIN	1845-46*	1856-57	1859-60	1862-63	1863-64	1893	1898	MARKETS
Q:	3.35	116	1736	36	1156	NA	--	
V:	NA	9	137	5	160	13	--	LONDON
P	--	78	78	139	138	-	--	

MALABAR

22

Source: Compiled from various tables in "Fishes of Malabar" -- Francis Day.

Export of fish oil to foreign markets reappeared in the early 20th century. But there was a change in the markets to which it was exported. Between 1920's and 30's, sizeable quantities of fish oil was exported to Sri Lanka and Maldives, especially from the Malabar region.^{15/} The stoppage of continuous supply of fish oil to foreign markets was due to the following factors.

On the supply side, the main reason was the fluctuation in total catch of sardine.^{16/} and on the demand side, it was due to

- (a) Low quality of the product exported, for instance, according to the fisheries investigation report of the Madras Fisheries Bureau, for the quarter ending in 31st Dec.1905". The Oil obtained by ancient methods viz. by the putrefication of fish in open receptacles, was a product of disgusting character and its production has largely fallen off owing mainly to the introduction of mineral oils and to its own unpleasantness"^{17/}
- (b) Due to the introduction of mineral oils which was more suited for the end uses for which fish oil was put to.^{18/}

Main centre of fish oil export between 1840-1950 was Malabar. This was due to the abundant availability of Sardine, which was the main species used for preparing fish oil in this region.

(2) Fish Guano

Fish guano is "the residue ("scrap") obtained by drying the tissues and osseous material which is left after boiling and pressing the fish for oil".^{19/} This was an item which was introduced into Kerala's export product mix in the early 20th century. Main market of fish guano were Asian countries viz. Sri Lanka and Japan. Manufacture of fish guano was widely prevalent in the Malabar region even in the 19th century itself because of the abundant availability of sardine, which was used for preparing this product. Only fish oil was exported while the scrap (fish guano) obtained was left out and used as manure in the region itself.

But, with the establishment of Madras Fisheries Department in 1906, a new chapter was opened in the production of fish guano in the Malabar region. A retired civil servant namely Sri Frederick Nicholson, together with a famous Ichthyologist named James Hornell, working in a government research factory at Feroke, evolved a system of boiling and pressing of fresh sardine (based on an early American method of preparation) which produced large quantities of fish oil, and the residue obtained was fish guano, which had a much higher manurial content than fish manure.^{20/} (fish manure is a fertilizer obtained by simply drying the whole fish on the sandy beach instead of boiling it for oil and guano). The department taught this new method of preparation of fish guano to one Cannanore

merchant namely Unni choyi. This business was fully adapted for small factory production and the number of establishments using this method increased to 647 in 1922-23.^{21/} Since fish guano was a good fertilizer for tea and rubber, it was demanded in large quantities by plantation owners in Sri Lanka. Japan also started exporting this item in 1918/19, buying 65 t of fish guano worth Rs.8(000'). It reached a peak of 2404 t worth Rs.295(000') in 1919/20 and from this year onwards, export of this item to Japan started declining and quantity exported came down to 104 t in 1924/25 and then it stopped completely. Total fish guano exports, after reaching an all time high of 7120 t in 1919/20, worth Rs.1102(000') started declining and by 1928/29, it reached 445 t worth Rs.8(000') and further declined to 31 t in 1940/41 and then stopped completely.

One salient aspect of this industry was its complementary nature with that of fish oil industry. While fishguano as a good fertilizer was demanded in certain markets fish oil was also demanded for an entirely different end use (mainly industrial and war purposes).

Following factors are responsible for the decline in exports of fish guano to foreign markets:

- (a) The most important reason for the sudden stoppage of fish guano exports, especially to Japan was the failure of Sardine fishery caused by the flood of

1924, which washed away all the inshore feeding grounds of these fishes.^{22/}

- (b) Second important reason was the adulteration of the product. Several manufacturers/exporters had resorted to adulteration of the product to increase the rate of profit. It was reported that fish guano was mixed with sand and consequently, the adulterated product was rejected by importers. For eg. "some European firms refused to take delivery of fish guano which by reason of sand and admixture was not even upto the sample, it was also noted that a consignment sent to Japan was rejected admission to the country owing to similar adulteration"^{23/} As a result of such an adulteration, price of fish guano declined rapidly.
- (c) As a consequence of breakdown of fish guano trade, factory owners started shifting to preparation of fish manure, because it fetched a higher price than fish guano. As quoted in the Madras Fisheries Bulletin "some factory owners abandoned the manufacture of fish guano and reverted to the old practice of sundrying the whole fish on the beach, such fish obtained high prices, by even Rs.10/t than the guano.....". Besides, since the size of the fish was small and lean, manufacturers found sundrying more cheaper than preparation of fish guano which required more capital and labour.^{24/} This shift also affected guano trade badly.

- (d) The drawbacks of the new method introduced by F. Nicholson and J. Hornell also had led to the decline of fish guano exports. The most important reason as quoted in the Madras Fisheries Bulletin was the "falling into the power of money lenders, brokers etc. owing to the individual weakness and need of capital of the manufacturers, and therefore inability to stand up against adverse seasons or to avoid selling at unduly low prices"^{25/}
- (e) Due to introduction of synthetic fertilizers on a large scale.

(3) Fish Maws

The fish maws are mainly prepared from air bladders of cat fishes. This was exported to foreign countries for industrial purposes (e.g. smoothening of hard surfaces). Fish-maws, in very limited quantities, in the latter half of the 19th century was exported to China, and in the early 20th century also, very small quantities was exported to Malaya and straits settlements. Main centre of export of this item in Kerala was Malabar.

Salient features of export trade in marine products to foreign markets in the latter half of 19th century and early 20th century

- (a) Product basket consisted of only limited number of products viz. salt/dried fish, dried prawns sharkfins, fish oil, fish guano and fish maws.

- (b) There were only limited number of markets such as London, Sri Lanka, Burma, Japan, Malaya and Strait settlements.
- (c) Presence of a buyers market where control of exports on the market was absolutely nil. .
- (d) Price sensitivity shown only in the case of shift in market preference for dried prawn exports from Sri Lanka to Burma.
- (e) Adhocism in Trade - for instance, late 19th century export of fish oil and salt/dried fish, and early 20th century export of fish guano, mid 20th century export of fish oil from Malabar and late 19th century and early 20th century export of salt/dried fish from Malabar and dried prawn from Travancore. The crucial difference between the two region was made by the abundant availability of the resource and the policies adopted by the British, who ruled the Malabar region directly.
- (f) Major set back to trade, as a result of the changing import policies of the major buyers towards the end of the 1st half of the present century.

So, by the end of the period, Kerala's marine products export industry was in a dislocated state. Good demand for a new item - namely frozen prawn - existed in the United States. Resource was available in plenty, but Kerala could

not penetrate into this market due to the absence of relevant technologies for processing the product for the newly emerging markets.

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5. Day, Francis - "The Fishes of Malabar" - pp.XIV.
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8. This was needed because of the opening up of vast tracks of tropical forests in Sri Lanka and Burma for rubber and tea plantations and the necessity to feed the labour force. In addition, fish guano was a cheap source of fertilizer.
9. For instance, following table gives the total landings of O.Sardine in Malabar and South Kanara between 1925/26 - 1949/50.

Table showing total Landings of Oil Sardine
in Malabar and South Kanara during 1925/26-
1949-50

Year	Landings (MT)
1925/26	44507.00
1928/29	1807.00
1933/34	71796.50
1936/37	27161.70
1938/39	3413.20
1940/41	25268.00
1946/47	8.80
1949/50	3390.00

Source: "The Sardine" - Velappan Nair - in
"Fisheries of the West Coast of
India" - pp.34-35.

10. "Papers relating to Palliport Farm and Fisheries"
- Microfilm

11. According to an MPEDA study - "after the war
Sri Lanka slashed her import of sea food heavily
....." - A Status Report on the
Marine Products Processing Industry in Kerala -
prepared for the Small Industries Service Insti-
tute, Trichur, MPEDA, Cochin - 1982, pp.9.

12. Demand for fish oil is related to overkilling
of Whale and thereby shortage of supply. But
perhaps, it can also be related to the burgeoning
of military warfare in the Mediterranean and
Atlantic Seas.

13. Its main uses are, as baths in tempering steel, in batching jute, in leather dressing, in the manufacture of saddle and barness soap, in arsenals for "browning" rifle stocks, in mixtures for lubrication and in paints.
14. Value figures were available from 1854/55 only.
15. The reemergence of fish oil exports in early 20th century can perhaps be related to the development of fish guano industry during this period, because large quantities of fish oil was obtained as a by-product of guano industry.
16. Refer foot note No.9.
17. Fisheries Investigation Report for the quarter ending in 31st Dec.1905. Madras Fisheries Bureau pp.221.
18. Ibid pp.221.
19. Nicholson, F.A - "Manufacture of Fish Oil and Guano" - Bulletin No.13, Madras Fisheries - Industrial Reports 1921, pp.149.

20. Nicholson wrote the following about the manurial content of fish guano:

" The percentage of nitrogen (8%) and phosphoric acid(9%) shows it to be a valuable fertilizer..... it easily disintegrates in the soil and therefore readily assimilable by plants..... it is fairly free from oil and insoluble matter, and being very dry, and almost free from oil whilst dry, it is very acceptable by planters since it is readily transportable and easily mixed evenly with soil....." Ibid.pp.150.

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CHAPTER 3GROWTH PATTERN OF MARINE PRODUCTS EXPORTS
FROM KERALA (1950-1985)

The growth of marine products exports industry registered phenomenal changes in the post independence period. Political changes did contribute to this, but more importantly, it was the changing demand structure and the availability of new processing and harvesting technologies in the international markets which played a dominant role. In the pre-independence period, the demand in the export markets closely resembled the nature of the demand in the domestic markets, because the products consumed internally were almost the same. Moreover, the technologies involved in harvesting and processing were largely labour intensive and the duality of harvesting and processing technologies for different markets (i.e. domestic and international) was largely absent.

This pattern of export trade in marine products was disrupted during the decade of the forties and a new pattern started unfolding. The World War-II which broke out during this period, led to a major reconstruction in the export markets of Kerala's marine products. New markets started emerging and new technologies were introduced to

cater to the needs of the newly emerging markets. This coupled with the opening up of rich prawn grounds off the Quilon and Cochin coasts led to a radical transformation in the sea food scenario. As a result, markets shifted from traditional ones like Srilanka and Burma to new markets such as USA and Japan, and with this, form of the products exported also changed from dry to frozen.

We have divided this chapter into two periods viz. 1950-1966 and 1967-1985, so as to capture the major changes such as change in product mix, product markets, technological change which took place in the pre and post devaluation periods.

1950-1966

The post independence period, prior to the devaluation of the rupee originated radical changes in the marine products exports industry. It was during this period that the necessary technologies, which facilitated the impressive performance of the industry in the production and the export sectors were initially introduced. The marine products export sector at the beginning of the period had to overcome the problems faced due to the disruption of trade following the political realignments after the second World War. After the war, most of the countries of South Asia (which were under a common colonised administration) became independent and the

ultimate result was the stoppage of exports to these countries. According to an MPEDA study "after the war..
 Srilanka slashed her imports of sea food heavily..... Other countries like Singapore and Malaysia also cut down their imports considerably. The impact of the cuts/stoppages posed a disastrous threat to India's trade in marine products as well as to the very existence of the persons engaged in it." 1/

Moreover, this period also saw the emergence of new competitors for Kerala's marine products in the Asian region. For instance, Pakistan emerged as an important competitor for Kerala's dried fish trade with Srilanka. Further, the after effects of changes enforced by the government of Srilanka in the mode of dry fish trade also affected Kerala's trade with Srilanka. 2/

Emergence of New Markets

During this period, there was growing demand for a new item - frozen prawn - especially in the U.S.A.

This was due to

- (a) Drying up of prawn supply from China (which was the main source of prawn import during 1930's and 40s).
- (b) The food patterns with a definite preference for crustaceans, 3/ and

(c) Increase in levels of prosperity.

Moreover, by the beginning of sixties, Japan was also searching for prawn supplies as a result of a drastic fall in domestic production of fish^{4/}.

The main factors which prevented the entry of Kerala's products into the new markets were the absence of appropriate technologies for harvesting and processing the product for these markets and the market linkages and credit needed for this.

New Technology for Harvesting and Processing

Kerala was introduced into the map of international trade in frozen prawn by the pioneering effort made by a private merchant in Cochin, who exported 13 tonnes of frozen prawn to USA in 1953. The harvesting and processing technologies needed for this was acquired through foreign assistance. Prior to the independence, in the sphere of harvesting, no effective technology was introduced. But after independence, a major technological change in harvesting the resource (mainly for export) was initiated through the Indo Norwegian Project (INP) with the initiation of Bottom Trawlers in 1958. Moreover, INP was instrumental in carrying out a resource survey in collaboration with the CMFRI (Central Marine Fisheries Research Institute) in the same year, which confirmed the presence

of abundant prawn resources in the coast off Kerala. (especially between Alleppey and Quilon). Though there were some indications which pointed towards abundance of fishery resource off Kerala waters^{5/}, this survey was the first of this kind, which officially confirmed the presence of untapped prawn resources in this region.

Technology for processing the product in the form which can cater to the needs of the newly emerging markets was acquired through foreign assistance by the private merchant who first exported frozen prawn to USA in 1953 and then through the INP. It should be noted that , this was in contrast to the situation which prevailed in the pre-independence period, where, technology for processing was totally initiated by the British (so as to protect their colonial interests).

Technology for processing acquired through foreign assistance was the - Freezing Technology. This technology was of paramount importance in the context of exports of marine products to emerging markets because, this technology helped to preserve the fish form of the product and further, the time taken for preservation was also limited in this case. The introduction of technology for freezing the product for export led to the popularisation of ice as

a preserving material because, it was a pre-requisite in all intermediate stages of processing.

Entry of New Entrepreneurs

Prior to independence, export trade in marine products was mostly carried out by people who were traditionally involved in fish trade using low level of capital and labour intensive methods of harvesting and processing. Emergence of new markets with high purchasing power and introduction of new technologies for harvesting and processing on the one hand, and the increasing demand for marine products -- especially frozen prawn -- on the other hand, prompted the entry of a new class of profit motivated merchant capitalists (essentially from outside the fishing community) especially in the sixties. Moreover, their entry into this sector can also be treated as a response to crisis in the trade in other commodities in which they had been traditionally involved^{6/}. The INP also helped these entrepreneurs by allowing them to make use of its infrastructural facilities at a nominal rent for undertaking exports and further, it provided financial support and marketing assistance to set up new processing plants and to find new markets abroad^{7/}. And as a result of this, investments in harvesting and processing started increasing^{8/}.

State Encouragement

The growth of marine products exports were further facilitated by the policies of the government. On realising the foreign exchange potential of this sector, the state decided to give more importance to this sector. Of the total allocation of Rs.27.2 million spent on fisheries development during the third plan (1961 - 1966), Rs.17.8million (65%) was spent on programmes to augment export of marine products. (out of the Rs.17.8 million, Rs.11.2 million was used for financing mechanised boats meant for fishing prawns and another Rs.6.6 million was spent for financing export processing and marketing facilities). This got reflected in the Government of India's policies also, which set up a Marine Products Export Promotion Council (MPEPC) in 1962 with its Head Quarters at Cochin.

Nature of Products and Change in Export Product Mix

There was a marked change in the nature of the products exported during this period. While in the period prior to independence, marine products exported were meant for different end uses, (such as for human consumption as well as for industrial purposes), after fifties it was exported mainly for human consumption only. This period also witnessed a change in the export product mix from dried prawn to frozen prawns and canned prawns(see table below) (also see graph 1 and 2)

TABLE 3.1

Structure of Marine Products Exports Industry of Kerala
- (Select Years)

Products	1961-62	1963-64	1964-65
Frozen and Canned Prawns	37(54)*	69(80)*	80(88)*
Dried Prawns	63(46)*	31(20)*	20(12)*

* figures in paranthesis represent share in value.

Source: Report of Cochin Chamber of Commerce, Various Issues.

The "Consignment System" of sale, adopted by the main buyers also contributed to the growth of marine products export trade to a large extent. This type of selling arrangement was helpful to both the exporter as well as the importer. From the exporters side, this system of sale allowed them to draw money in advance from Banks to purchase raw material for export, and from the importers point of view, as the development of the sea food industry was taking place only slowly, they supported the exporters to the maximum extent, so as to ensure regular flow of merchandise to them^{9/}.

Trends in Total Marine Products Exports

Total marine products exported from Kerala increased from 1032 tonnes in 1950-1951 to 10309 tonnes in 1965-1966

in terms of quantity. In value terms, it grew from Rs.2.05 million to Rs.54.81 million during the same period. Frozen prawn exports alone accounted for 84 per cent of the total quantity exported and 69 percent of the total value earned by 1965-1966. With this, Kerala's share in total exports of the country also started increasing. Contribution of Kerala to total export of marine products exports from the country increased from 5 percent and 8 percent in terms of quantity and value in 1950-1951 to 67 percent and 78 percent in 1965-1966. This substantial increase in export of marine products during the period can be explained in terms of emergence of new markets with high purchasing power and the growing demand for frozen prawn in the new markets.

With the increase in export of marine products from Kerala, the major port through which exports were made also started changing. Cochin started emerging as the most important port from which marine products was exported, from the country. This port which had an average share of only 7.8 percent of the total quantity of marine products exported in 1951 - 1952, became the major port, exporting 62 percent of the marine products exported from the country by 1965-1966.

Main Products Exported during 1950-19661. Frozen Products(a) Frozen Prawn

Main markets for this product during the period under consideration was USA and Japan. Japan entered into the trade in 1962 by importing 35 tonnes worth Rs.29.4 million. Their entry into the trade was prompted by the scarcity of prawn supplies as a result of having lost access to Mexican waters. In 1953-1954, USA was the only market for frozen prawn exported from Kerala. But by 1965-1966, share of frozen prawn exported to USA declined to 85 percent in terms of quantity and 82 percent in terms of value. While, Japan increased its share to 15 percent quantity wise and 18 percent value wise. (refer table 3.2). The increase in share of Japan can be mainly attributed to the high per tonne price realised for this product compared to USA. During the period, when per tonne of frozen prawn fetched Rs.6985 on an average in Japan, it was only Rs.4749 in USA. Export of frozen prawn to other markets in Asia such as Singapore, Hongkong, Strait settlements and Malaysia were negligible, both in quantity as well as value terms.

(c) Canned Prawns

Main market of this product was UK and France,

and USA. Export of canned prawn which started in 1957* also showed an increase by reaching 999 tonnes worth Rs.9.5 million in 1965-1966 from 774 tonnes in 1961-1962. In 1965-1966, it contributed 10 percent in terms of quantity and 17 percent in value of the total exports of marine products from Kerala. The main market of canned prawn during this period was USA which contributed 51 percent and 49 percent in terms of quantity and value of total export of canned prawn in 1964-1965. (refer table 3.2). UK and France which were the major markets in Europe contributed 27 percent and 25 percent of the total quantity and value of canned prawn exported. Canned prawn was the item which fetched highest per tonne price during this period. In 1964-1965, when per tonne price of frozen prawn was Rs.6510 only, for canned prawn, it was Rs.8324.

1. Dried Products

(a) Dried prawn

Major market for this product during this period was Burma. Out of the total of 1676 tonnes worth Rs.55.72 million of dried prawn exported from Kerala in 1964-1965,

* Technology of canning was introduced in the pre-independence period. First cannery was started in Chaliyam (North Malabar) in 1911 by the British Government. But canned products entered into export trade only in 1957.

TABLE 3.2

EXPORTS OF MARINE PRODUCTS FROM KERALA (1950-51 TO 1964-65)

Quantity (tonnes) Value (Rs 000') P = Rs/tonne

PRODUCTS		1950-51	1953-54	1955-56	1957-58	1959-60	1961-62	1963-64	1964-65	MARKETS
FISH OIL	Q:	-	-	-	1839	18728	34990 (litres)	-	106473 (litres)	Asian Markets like Maldives, Iraq, Bahrain, Japan and Kuwait.
	V:	-	-	-	1	125	211	-	386	
	P:	-	-	-	-	-	-	-	-	
SALT/DRIED FISH & DRIED PRAWNS*	Q:	1007	3648	551	3833	1754	3238	1659	1129	Burma
	V:	1968	5747	1182	11470	4456	8630	5172	3536	
	P:	1954	2398	2145	2992	2540	2665	3118	3132	
DRIED PRAWNS*	Q:	16	2697	1473	1670	507	493	596	547	Other Asian Markets like Sri Lanka, Hong Kong, Singapore etc.
	V:	47	1420	1484	754	1443	1848	1614	2036	
	P:	2938	526	1007	451	2841	3749	2708	3722	
FROZEN PRAWN	Q:	-	22	118	456	1163	1404	3706	4765	U.S.A.
	V:	-	102	415	2412	5234	6804	18179	26576	
	P:	-	4630	3521	5268	4500	4846	4905	5577	
SHARKFINS & FISH MAWS	Q:	9	6	9	11	25	18	33	11	Asian Markets mainly Singapore, Hong Kong, Straits and Malaysia
	V:	38	41	50	47	117	82	260	77	
	P:	4196	6890	5569	4283	4676	4528	7867	6966	
CANNED PRAWNS	Q:	-	-	-	NA	NA	66	45	254	U.K. and France
	V:	-	-	-	NA	NA	592	425	2025	
	P:	-	-	-	NA	NA	8970	9444	7972	
CANNED PRAWNS	Q:	-	-	-	NA	NA	623	853	483	U.S.A.
	V:	-	-	-	NA	NA	3800	4636	3738	
	P:	-	-	-	NA	NA	6100	5435	7739	
CANNED PRAWNS	Q:	-	-	-	NA	NA	85	139	206	Other Markets in Asia and Europe
	V:	-	-	-	NA	NA	793	1102	1908	
	P:	-	-	-	NA	NA	9329	7928	9262	

* From 1957-1958 Exports include salt/dried fish and dried prawns

Source: Various Issues of "Report of Cochin Chamber of Commerce"

Burma's share was 67 percent in terms of quantity and 63 percent in terms of value (refer table 3.2). Other important markets of this product were Asian markets namely Singapore, HongKong and Srilanka.

(b) Fish Oil and Shark Fins and Fish Maws

Export of fish oil was not continuous during the period (refer table 3.2). Main markets were Asian countries namely Maldives, Iraq, Bahrein, Japan and Kuwait. Sharkfins and fish maws were exported to Asian markets such as Singapore, Hongkong, Straits settlements and Malaysia.

Devaluation of the Indian rupee in June 1966, gave a further boost to the marine products exports from Kerala^{10/}. Marine products were ideal export items because, the import content involved in processing was low. (refer table 3.3)

Between 1965 and 1966, while there was an increase of only 17 percent in terms of quantity, the value wise increase was more than 100 percent.

TABLE 3.3

Effect of Devaluation on Kerala's Marine
Products Exports(1964-1968)

Period	Quantity (tonnes)	Value (million)
<u>Pre Devaluation</u>		
1964	9570	46.2
1965	9930	58.3
<u>Devaluation</u>		
1966	11595	114.6
<u>Post Devaluation</u>		
1967	14784	168.4
1968	16876	181.3

Source: Port wise exports of marine products(1962-1969)
pp.119. Statistics of Marine Products Exports
1970 (MPEPC).

1967-1985

The post devaluation period witnessed an all round effort to increase the production and thereby exports from the marine sector. The growth factors which emerged in support of the industry in the post independence period further accelerated, leading to impressive performances in many sectors of the industry. The new markets which had earlier supported the industry were further strengthened.

This period saw the emergence of Japan as the major market for Kerala's marine products exports in 1971, mainly because of the increase in price realised for foreign prawn in this market. This increase in price prompted the entry of more and more entrepreneurs - especially large business houses and multinationals - on a large scale into this industry. But this led to increased investment in harvesting and processing thereby leading to a more than proportionate increase in the number of trawlers for fishing prawns and excess capacity in processing facilities. The bias in production towards meeting the demands of the export markets led to a further shift in the product mix of exports in favour of frozen prawns. During this period, exports of traditional products such as dry prawn, shark fins

and fishmaws stopped, while that of canned prawn was very negligible. Quality standards of products exported and competition from other countries also affected the export trade badly. With the increase in importance of frozen prawn in the export product mix, the number of markets to which Kerala's products were exported also got concentrated among two markets viz. Japan and U.S.A.

Shift in Major Market

During this period, a major shift occurred in the -

TABLE 3.4

Market Share of USA and Japan in Frozen Prawn Export from Kerala

- (Select Years)
(Percentages)

Year	U.S.A.		Japan	
	Quantity	Value	Quantity	Value
1963-64	91	90	8	9
1966-67	81	77	12	23
1970-71	50	34	40	56
1978-79	39	28	45	63
1982-83	34	26	47	60
1984-85	37	31	48	56

Source: Compiled from various issues of "Report of Cochin Chamber of Commerce".

main market of Kerala's marine product exports. Japan, which entered the trade in 1962, became Kerala's major market by 1971.

Important reasons for this shift were:

- (a) High price realised for frozen prawn in the Japanese market^{11/}
- (b) Freight advantage, if exported to Japan, and
- (c) Higher yield from wet weight as a result of the particular Japanese specifications.

TABLE 3.5

Average Unit Value Realisation for Kerala's Frozen Prawn
in U.S. and Japanese Markets
 - (select years)

Y e a r	Average Unit Value Realisation (Rs/Kg)		Ratio of US Price to Japanese price
	U.S.A.	Japan	
1968-69	10.67	14.42	
1972-73	11.77	19.84	59
1975-76	18.05	36.59	49
1980-81	28.60	40.00	72
1982-83	33.16	55.00	60
1984-85	42.50	58.17	73

Source: Computed from various issues of "Report of Cochin Chamber of Commerce".

As seen from the above table, there was more than 65 percent price difference between the Japanese and US markets. Moreover differences in freight charges to US and Japanese ports were more than 40 percent^{12/}.

Entry of Big Business

In response to the increase in world demand and a consequent increase in price of frozen prawn, more and more entrepreneurs entered the export industry on a large scale, both in the production and export sectors. These entrepreneurs included Kerala based firms, large business houses and multinational companies^{13/}. This led to an increase in investment both in processing the product for export, thereby leading to excess capacity and in harvesting with a more than proportionate increase in number of trawlers for catching prawns^{14/}. But this increased investment in harvesting and processing did not bring about sufficient increase in export of marine products. On the contrary, between 1969-1970 and 1984-1985, quantity of marine products exported from Kerala, showed wide fluctuations. It fluctuated between 2122 tonnes in 1969-1970 and 30683 tonnes in 1984-1985. This was in turn due to the high fluctuations in the total catch production of prawn during the above period. (see table 3.6)

Involvement of the State

Fisheries development plans of the state, as in the earlier period, followed the same pattern of giving more stress for augmentation of export oriented activities. Plan expenditure during 1974 and 1984, increased to Rs.363 million. Out of this, Rs.176.5 million(48.6percent)

TABLE 3.6

Production of Penaeid Prawns in Kerala(1966-1985)
 -(Select years)

Year	Quantity(tonnes)
1966	28120
1969	34334
1973	86000
1976	35000
1980	52600
1982	26772
1985	35900

- Source: 1. Landings of Marine Crustaceans in Kerala Appendix 39.4 pp.227 in 'Report of National Commission on Agriculture 1976'.
2. Economic Review: State Planning Board. Various issues.

was spent on production oriented schemes and 39 percent (Rs.68.8 million) of the amount spent on production oriented schemes was used for financing mechanised boats and another 28 percent (i.e. Rs.49.6 million) was used for financing processing and marketing oriented schemes. The policies of the Government of India also gave a big boost to the export of marine products. Important among these were the liberalisation of export credit and various incentive schemes such as import replenishment licence, cash compensatory support, duty draw back facilities etc. introduced

for traditional products (which included marine products also) as a part of the import - export policy.

Quality Standards

The merchant capitalists who entered the marine products industry on a large scale during this period, were basically interested only in investments which would bring them 'quick profit'. The large profit realised through export of frozen prawn from the international market motivated the merchant capitalists to lay less stress on the quality of products exported and subsequently in the middle of 1979, Indian Shrimps were block-listed by the United States Food and Drug Authority (USFDA) on the ground of bad quality. Around 260830 lbs. (114 tonnes) of frozen shrimps were rejected and further exports were restricted till the early 1980's^{15/}. As a result, export of Indian Shrimp to US market came down by more than 50 percent in the next year. (see table 3.7 below). Such a -

TABLE 3.7
Export of Indian Shrimp to USA and Japan(1979-1981)
Quantity (tonnes), Value(\$'000)

	1979		1980		1981	
	Quantity	Value	Quantity	Value	Quantity	Value
U.S.A.	13996	53129	5864	23154	8662	36535
Japan	38757	247000	35249	1922000	40049	242165

Source: Rackowe et al, pp.158-159 and pp 194.

situation assumes importance when the number of buyers are few because, this can increase the bargaining power of other buyers and subsequently, in our case, price per tonne of shrimp in the Japanese market (which was the major market of Indian shrimps) came down to \$5.45/Kg in 1980 from \$6.37/Kg in 1979. A similar situation had earlier occurred in the preindependence period, when fish guano exports to Japan from Kerala came to an end as a result of bad quality of the product exported.

Increasing Competition

During this period, Indian shrimp started facing competition from other countries like Indonesia, Mexico and Thailand in its major market viz. Japan. The toughest competition was offered by Indonesia, which increased its share from 3 percent to 15 percent of the total imports to Japan between 1969 and 1981. (see table 3.8)

Average unit value realised for Indian shrimp also started showing a declining trend in Japan during this period. Till 1970, all important suppliers in the Japanese market were realising almost the same unit value. But from 1972 onwards, different suppliers were realising different values and by 1982 shrimp from Mexico realised the highest price and India's shrimp realised the lowest. (see table 3.9).

TABLE 3.8Share of India and Indonesia in Total Frozen Shrimp
Import to Japan(Percentages) - (select years)
Quantity (tonnes)

Year	India	Indonesia
1969	10	5
1974	19	19
1977	20	20
1979	24	18
1981	25	15

Source: Marine Product Export Statistics 1977 and
Rackowe, R. et al 1983.

Many reasons have been attributed for such a drastic decline in average unit value realised for Indian Shrimp.

- (a) India's exports consists of small sized prawns which fetch only a lower price .
- (b) Indian prawn is less fresh compared to prawn from Thailand, Indonesia, Mexico and China due to the lack of facilities for on-board freezing and poor handling before it reaches the processing plant.
- (c) Indian prawns generally do not have a uniform appearance^{16/}

Defective grading, unattractive packing and defects in quality are also other reasons which contributed to the low unit value realisation.

TABLE 3.9

Average Unit Value of Imports of Frozen Shrimp to Japan
(1967-1981)

-(Select years)
(\$/kg)

Name of the Country	YEAR						
	1967	1970	1972	1975	1978	1980	1982
India	2.15	2.30	2.34	3.05	5.42	5.43	6.86
Indonesia	2.13	2.39	3.34	4.38	7.22	7.90	9.36
Thailand	2.03	2.34	3.23	4.16	7.13	7.52	9.33
Mexico	2.43	2.77	4.13	7.94	8.53	10.77	12.81
China .	2.06	3.09	4.40	4.83	10.15	9.31	11.21
Malaysia	2.25	1.98	2.31	3.17	7.23	8.89	10.08

Source: Sebastian Mathew 'Growth and Changing Structure of the Prawn Export Industry in Kerala, 1953-1983' - Table 7, pp.107.

Product Concentration

The shift in the Product mix of Kerala's marine products exports in favour of frozen prawn, which appeared in the earlier period (as a result of substantial increase in export of frozen prawn to the newly developed markets) became very prominent in this period. Share of frozen prawn which was 76 percent in terms of both quantity and value in 1966-1967 increased to 95 percent and 97 percent quantitywise and value wise in 1984-1985. Share of canned prawn which was 15 percent and 19 percent in terms of quantity and value in 1966-1967 declined to a negligible amount by the end of the period. Export of dry products also stopped, by 1984-1985. (Ref.graph 1 and 2).

TABLE 3.10

Structure of Marine Products Export Industry of Kerala
(1966 - 1985)

-(Select years)

(Quantity and Value given as percentages)

Y e a r s	Prawn						Other Products	
	Dry		Canned		Frozen		Q	V
	Q	V	Q	V	Q	V		
1966-67	8	4	15	19	76	76	*Neg.	*Neg.
1972-73	1	1	8	10	91	89	*Neg.	*Neg.
1980-81	*Neg.	*Neg.	1	1	90	92	9	7
1984-85	*Neg.	*Neg.	*Neg.	*Neg.	95	97	5	3

*Neg. - Negligible

Source: Computed from various issues of "Report of Cochin Chamber of Commerce".

Market Concentration

With the increase in importance of frozen prawn in the export product mix, the number of export markets to which Kerala's marine products were exported got further concentrated and by the end of the period under consideration two markets viz. Japan and U.S.A. together contributed 80 percent in terms of quantity and 85 percent in terms of value of the total marine products exported from Kerala. Share of all other markets put together was only 20 percent and 15 percent respectively in terms of quantity and value.

TABLE 3.11

Contribution of Major Markets in Kerala's Marine Products
Exports(1966-1985)

- (Select years)

(Percentages)

Y e a r	M a r k e t s					
	Japan		U.S.A.		Other Markets	
	Q	V	Q	V	Q	V
1966-67	9	11	59	57	32	32
1972-73	54	61	27	18	19	21
1975-76	38	55	52	37	10	8
1978-79	42	60	36	27	22	13
1980-81	51	59	29	24	20	17
1982-83	45	58	33	25	22	17
1984-85	46	54	35	30	19	16

source: Compiled from "Report of the Cochin Chamber of Commerce" - various issues.

The "consignment system" of sale adopted in the pre-devaluation period was replaced by "outright" sales system in the post devaluation period. This was due to two reasons:

- (a) Emergence of Japan as the major market - because the consignment sale system prevented the exporter from selling more prawns in the Japanese market and also because the Japanese buyers preferred the outright sale system.
- (b) Availability of easy credit from the commercial banks - the liberalisation of credit from 1971 onwards enabled exporters to secure finance for processing/packing facilities from commercial banks and government agencies, thus reducing their dependence on importers for finance and credit.

Trends in Total Marine Products Exports

The total quantity of all marine products exported from Kerala, during the period, increased from 13965 tonnes in 1967-1968 to 30683 tonnes in 1984-1985. Increase in value terms during the same period was from Rs.149.4 million to Rs.1496.7 million. Following table gives the quantity and value of total exports during the period. (See table - 3.12).

TABLE 3.12

Exports of Marine Products from Kerala
(1967-1985)

- (Select years)

Year	Quantity(tonnes)	Value(million)
1967-68	13965	149.43
1970-71	23003	259.10
1973-74	30213	571.20
1975-76	29107	740.15
1978-79	31484	1024.60
1982-83	34118	1451.04
1984-85	30683	1496.70

Source: Various issues of "Report of Cochin Chamber of Commerce"

The stagnation observed in the post seventies in export of marine products in quantity terms did not affect the value earned. This was because of the increase in price per tonne realised for frozen prawn which increased from Rs.11907/tonne in 1966-1967 to Rs.48467/tonne in 1984-1985. But, Kerala's share in total marine products exported from the country showed a decline during this period. Contribution of Kerala to total marine products exported which was 64 percent and 76 percent in terms of quantity and value in 1967-1968 came down to 37 percent and 39 percent in

1984-1985. With this, Cochin port began to lose its importance as a major port of fisheries export. The quantity and value terms of marine products exported through this port was 70 percent and 85 percent in 1967-1968 and it decreased to 36 percent and 37 percent in 1984-1985.

Main Products Exported during 1967-1985

(a) Frozen Prawn

Frozen prawn was the main product of export to foreign markets during 1967-1985. On an average during this period, frozen prawn contributed 80 percent and 85 percent in terms of quantity and value of total marine products exported from Kerala. This product was mainly exported to Japan, USA and other markets in Asia and Europe. In 1968-1969, 9344 tonnes of frozen prawn worth Rs.111.3 million was exported to foreign markets and by 1984-1985, it increased to 29297 tonnes worth Rs.1451.2 million. There has been a major shift in market of this product during this period. Till 1970, USA was the main market of this product. But Japan became the major market in 1971. By 1984-1985, it imported 48 percent and 56 percent in terms of quantity and value of the total frozen prawn exported from Kerala. By 1984-1985, the share of USA declined to 37 percent and 31 percent respectively.

The contribution of other markets to total frozen prawn exported by the end of the period was only 15 percent quantity wise and 19 percent value wise (refer table 3.13). (refer graph 1 and 2).

(b) Canned Prawns

This product, during the period under consideration was exported mainly to U.K. and France, U.S.A. and other markets in Europe and Asia. There has been a drastic decline in the export of canned prawn during this period. Exports of this product, which contributed 10 percent and 17 percent in terms of quantity and value in 1965-1966 almost came to an end in 1984-1985 (refer table 3.13). This was mainly due to high cost of production of inputs (such as container, vegetable oil etc.) used for processing this product for export.

(c) Dried Prawn

Main market of dried prawn during 1967-1985 was mainly Asian markets such as Singapore, HongKong, Burma, Saudi Arabia, United Arab Emirates, Kuwait, Qatar and Japan. In the beginning of the period i.e. in 1967-1968 share of dry prawn was 9 percent quantity wise and 5 percent value wise to the total exports from Kerala. But this declined to 0.1 percent and 0.2 percent respectively in 1984-1985. (refer table 3.13). This was largely due to

TABLE 3.13

EXPORTS OF MARINE PRODUCTS FROM KERALA (1965-66 TO 1984-1985)

Quantity (tonnes) Value (Rs. '000) P - Rs/tonne

PRODUCTS		1966-67	1966-69	1970-71	1972-73	1975-76	1976-79	1980-81	1982-83	1984-85	MARKETS
FISH OIL	Q:	60360(lit)	33000(lit)	36048(lit)	14	66	-	32	-	-	Asian Markets such as Iraq, Bahren, Iran
	V:	69	58	57	28	186	-	204	-	-	
	P:				2000	2318	-	6375	-	-	
DRIED PRAWN	Q:	1104	1012	903	231	32	373	64	31	57	Mainly Asian markets such as Japan, Singapore, Hong-Kong, S. Arabia, U.A.E., Kuwait, Qatar.
	V:	6658	5651	5369	2532	404	1389	738	3774	1748	
	P:	6031	5584	5946	11177	12625	3724	11531	123741	30670	
FROZEN PRAWN	Q:	7565	11571	9316	6175	15011	11232	8789	11096	10695	U.S.A.
	V:	86079	123520	72862	72676	271000	272289	251406	367962	454347	
	P:	11378	10675	7821	11769	16053	24242	28605	33162	42482	
	Q:	1154	3760	7445	12221	11034	13129	15315	15419	13976	Japan
	V:	16570	54240	121600	242447	403800	609681	612535	845820	813033	
	P:	14359	14426	16333	19839	36596	46438	39996	54856	58174	
	Q:	625	587	1965	2629	2321	4704	2877	6570	4626	Other Markets in Europe and Asia
	V:	8614	7188	20472	38383	48207	89305	93159	206072	183854	
	P:	13782	12245	10418	14600	20770	18985	32381	31366	39744	
SHARKFINS & FISH MAWS	Q:	2	20	16	-	-	-	-	-	-	Mainly to Singapore
	V:	19	340	200	-	-	-	-	-	-	
	P:	9500	17000	12500	-	-	-	-	-	-	
	Q:	982	874	704	1208	74	27	76	14	-	U.K. and France
	V:	14548	9420	11822	28136	2137	1088	3815	1097	-	
	P:	14815	10778	16792	23291	28878	40296	50197	78357 (only U.K)	-	
CANNED PRAWN	Q:	657	634	940	243	8	-	-	-	-	U.S.A.
	V:	9489	7308	13699	3696	228	-	-	-	-	
	P:	1443	11527	14573	15210	27805	-	-	-	-	
	Q:	267	278	641	287	27	31	115	60	0.2	Other Asian and European Markets
	V:	4364	3506	10527	6231	717	787	4720	3988	9	
	P:	16345	12612	16423	21711	26556	25387	41043	6647	45000	

"Report of

Source: Various Issues of "Cochin Chamber of Commerce"

increase in price realised for prawn in frozen condition. For instance, in 1984-1985, when per tonne of frozen prawn fetched Rs.46800 price of dry prawn per tonne was only Rs.30670.

(c) Sharkfins and Fish Maws and Fish Oil

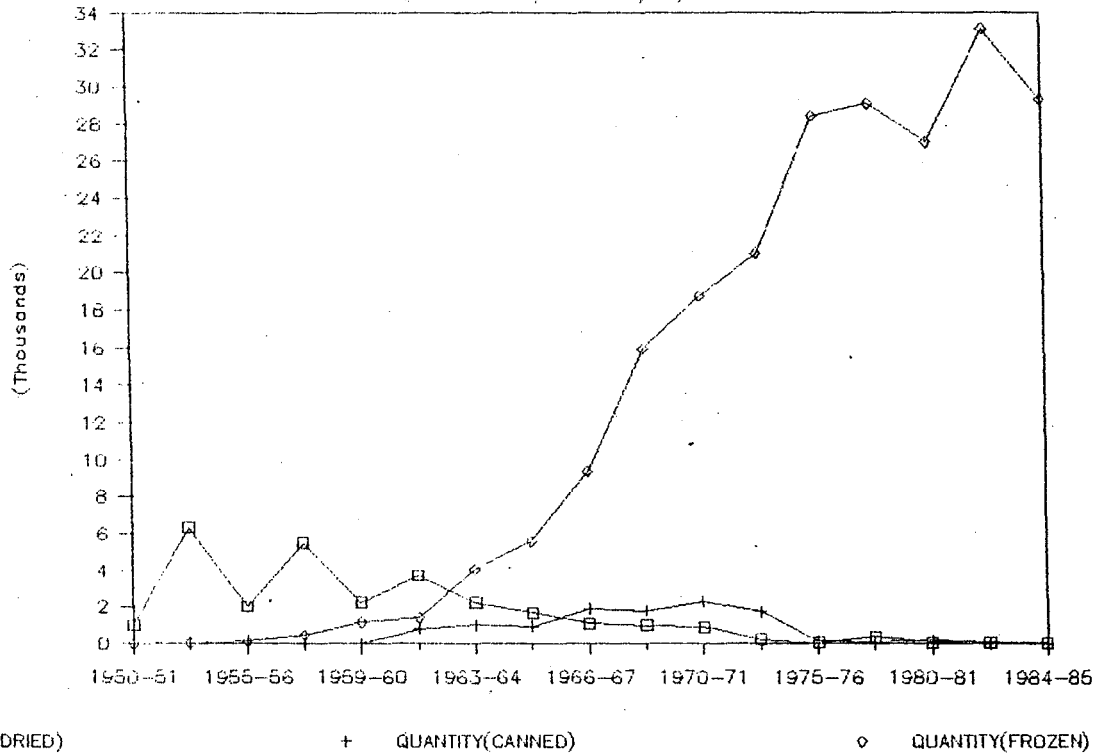
During the period under consideration, sharkfins and fish maws in very small quantities were exported to Singapore, while fish oil, also in limited quantities was exported to Asian markets such as Iraq, Bahrein and Iran. Exports of sharkfins and fish maws to foreign markets stopped by 1970-1971 while that of fish oil ceased by 1980-1981.

Thus, it can be summed up that the impressive performance of the marine products export industry in the post independence period was primarily due to the ability of the industry to adapt to the needs of the constantly changing demand patterns in the international markets. Though the total value of exports showed a rising trend through out the period, it was subject to wide fluctuations especially in the late seventies and early eighties. In the next chapter, we will attempt to analyse the levels of instability in earnings and the factors which contributed to it.

GRAPH - 1

PATTERN OF PRAWN EXPORTS

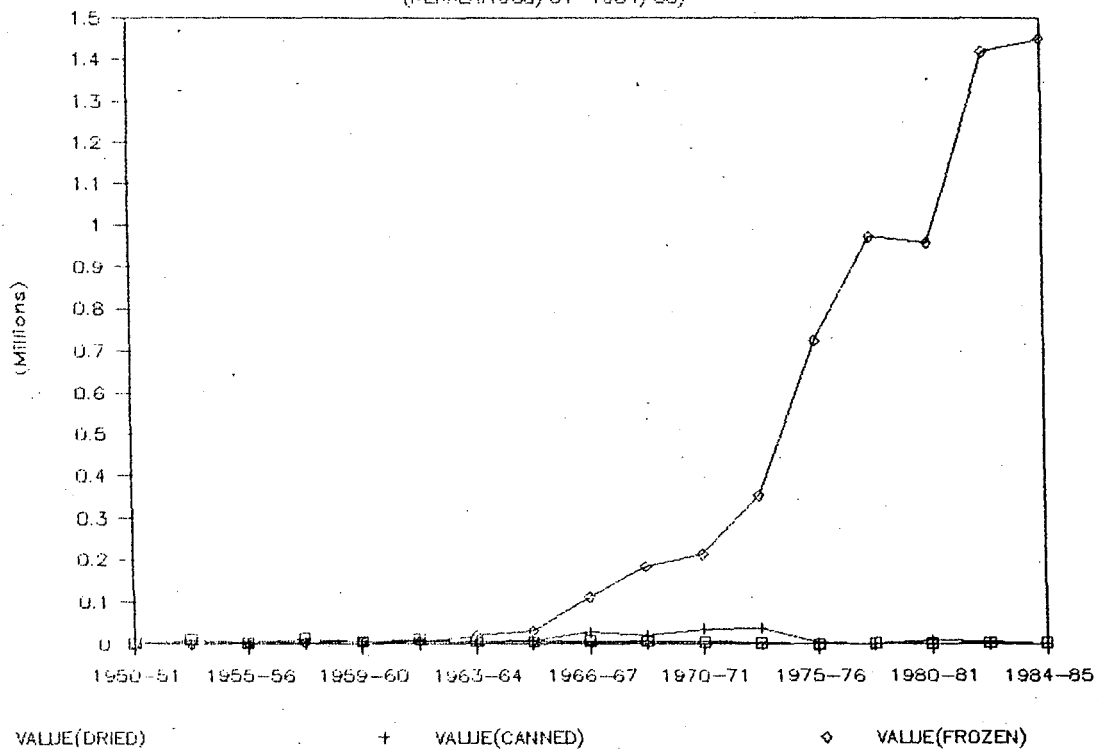
(KERALA: 1950/51-1984/85)



GRAPH-2

PATTERN OF PRAWN EXPORTS

(KERALA: 1950/51-1984/85)



NOTES AND REFERENCES

1. MPEDA, 1982 - "A Status Report on the Marine Products Processing Industry in Kerala" -prepared for The Small Industries Service Institute, Trichur, pp.9.
2. According to a study on dry fish trade with Sri Lanka "upto 1961, the import in dried fish in Ceylon (erst-while Sri Lanka) was in the hands of the private sector, mostly merchants from India. As a policy, the Ceylon government instituted the Co-operative Wholesale Establishment (CWE), an organisation created by an act of the Parliament to cater to the needs of the people as a monopolistic importer in Ceylon, for dried fish. The change had driven almost all the then importers of dried fish in Ceylon and their principals in India into wilderness. As a consequence, the exporters were paralysed " - S.Ambrose Fernando, Sea food Exporter 1966, May, Vol.No.1, pp.21.
3. During World War II, more people began to eat sea food mainly due to shortage of meat. Moreover, due to shifts in population during the war, many people in the inland areas were introduced to sea food and with their return home they continued eating this item.
4. Their entry into the trade was largely due to a drastic fall in domestic consumption. But their large-scale entry by the beginning of seventies was due to a couple of factors such as (i) full exploitation of domestic prawn grounds (ii) loss of access to international waters (because of the proclamation of EEZ) and (iii) substantial rise in cost of production as a result of the oil crisis of 1972.
5. According to Velu Pillai, in 1940, 1/200th of the total quantity of fish caught through out the world was from Travancore and about 90,000 tonnes of edible fish were landed every year from inshore waters of the States. Refer T.K.Velu Pillai - Travancore State Manual Vol.III pp 430 and 433 (1940).

6. For instance, cashew industry was beginning to face crisis in early 1960's and many merchant capitalists subsequently shifted to prawn export.

7. M. Sebastian - "Growth and Changing Structure of the Prawn Export Industry in Kerala, 1953-83" pp.24-25. M.Phil(unpublished) CDS, 1986.

8. Number of trawlers meant for harvesting prawn increased to about 175 by the end of sixties from zero in 1950. By 1963-66, freezing capacity available for freezing prawns for export increased to 244 tonnes and that of frozen storage to 3452 tonnes. Information regarding the total capital investment during the decade of sixties for the whole Kerala is not available. But a study conducted by the department of fisheries revealed that, by the end of 1968, in two villages of Shakti-Kulangara and Neendakara in Quilon district, total capital investment in fishing enterprises was about Rs.12.5 million. Out of which Rs.11.4 million (92%) was in the private sector. Investments in processing establishments alone came to Rs.9.4 million. The study further showed that the capital investment in fishing enterprises in the above 2 fishing villages increased to Rs.12.5 million in 1968 from Rs.0.005 million in 1953.

9. M. Sebastian. - "Growth and Changing Structure of the Prawn Export Industry in Kerala, 1953-83" pp.34. M.Phil.thesis(unpublished), C.D.S., 1986.

10. In response to the war between India and Pakistan in 1965 the major aid giving countries cut off all aid to both the warring nations. After the war, the Aid India Consortium (AIC) offered to resume aid to India only if it devalued her currency substantially. Given the alarmingly low level of foreign exchange reserves and the large trade deficit India decided to devalue her rupee in June 6, 1966, and the rupee was devalued by 57.5% , the official rate increasing from Rs.4.76 to Rs.7.50/US\$.

11. This was as a result of increasing shrimp consumption in Japan.

12. Freight Rates on Marine Products

(Rates in US\$/Cubic meter)

Type of Product	Japan			U.S.A. Pacific Ports		
	1979	1980	1981	1979	1980	1981
Frozen Sea ₃ food (1000 Kg)m	128.35	128.35	128.35	196.50	196.50	304.24

Source: 'Report of the Task Force on Marine Products',
Sept:1982 - Ministry of Commerce, Government of
India - Annexure IX, pp.135.

13. Between 1970 and 1982/83, the total number of firms involved in frozen prawn export increased from 53 to 224. The large number of new entrepreneurs who invested in the industry during this period were attracted to the export sector mainly because of
- Increase in price of frozen prawn in the international market - as a result of the emergence of Japan as the major market of Kerala's products in 1971.
 - Availability of unutilized processing capacity
 - Liberalisation of export credit, and
 - As a result of the import-export policy introduced by the Government of India for traditional products (which included marine products also) which contained many incentives schemes like import replenishment license, cash compensatory support, duty drawback facilities etc.

The big business firms which entered into the marine products export trade during this period, basically functioned like merchants, i.e. they did not directly invest in the industry but instead,

(contd..p/69)

encouraged other entrepreneurs who were willing to become their agents. But their entry into this sector on a large scale, brought stiff opposition from the Kerala based firms and the Government of India decided to discourage the activities of these big business houses in the marine export sector. By the end of seventies, most had wound up their marine fishing and export activities and in the beginning of eighties only three were in the field.

14. During the period 1968 and 1982 the freezing capacity increased from 320 tonnes per day to 590 tonnes per day. But the capacity utilization during the above period declined from 31 percent and 43 percent to 18 percent and 25 percent based on 250 days per year and 180 days per year respectively. M,Sebastian - "Growth and Changing Structure of the Prawn export industry in Kerala 1953-83",pp.52.M.Phil thesis (unpublished) CDS 1986.
15. Fisheries Research Cell (1980) - "The Shrimp Affair" PCO Centre
16. M,Sebastian - "Growth and Changing Structure of the Prawn Export Industry in Kerala, 1953-83, pp.108, M.Phil thesis(unpublished),CDS, 1986.

CHAPTER 4INSTABILITY IN EXPORT EARNINGS OF MARINE PRODUCTSEXPORTS FROM KERALAIntroduction

The purpose of this chapter is to examine the relative levels of instability in earnings, quantity and price of Kerala's marine products exports during the period 1963 to 1983, by dividing it into two sub-periods namely 1963-64 -- 1970-71 and 1971-72 to 1982-83. The objective is to capture the changes in the levels of instability and to bring out shifts (if any) in the source of instability after Japan became the major market for Kerala's marine products in 1971. A comparison of results obtained for Kerala with that of India is also attempted.

Instability in export earnings, quantity exported and prices, create great amount of instability, thereby preventing the smooth growth of the economy. Its effects on Less Developed Countries (LDC's) are more severe, because the export basket of these group of countries consists mainly of primary commodities, which are more volatile to fluctuations. India, being a major primary commodity exporting country, faces a real threat from

instability in her export earnings.

As the marine products export industry is based on a sea based resource, which depends on a number of factors such as salinity, oceanographic conditions, temperature etc. to obtain a steady supply of raw material, fluctuations in supply can bring forth great amount of instability in earnings obtained. Common property nature of the fishery resource also contribute to increase in fluctuations in supply, thereby increasing levels of instability. On the other hand, fluctuations in demand for the product in the international markets also leads to instability in earnings.

Chapter Outline

This chapter is divided into 3 sections. Section 1, attempts to examine the changes (increase/decrease) in the measure of instability in export earnings and quantity of Kerala's marine products exports. Section 2, tries to capture the sources of instability in earnings (i.e. whether it is demand induced or supply induced) and will also examine the impact of the important economic variables - commodity concentration and geographic concentration - on instability in export earnings. Section 3, summarizes the main results and discusses policy implications arising from the analysis.

Data

Data covers the period between 1963-64 to 1982-83. Kerala exports around 26 items of marine products every year. Important among them are frozen prawn, frozen lobster tails, frozen frog legs, canned prawn, frozen fish, dried shrimp and sharkfins and fish maws. Contribution of all other products to the total export are negligible and are included in a common category namely miscellaneous items.

In our analysis, for Kerala, levels of instability as well as source of instability in earnings will be confined to

- (i) frozen prawn - (because prawn contributes a major share in the export basket, both in quantity terms and value terms) and,
- (ii) All products in their entirety.

We shall undertake the analysis for the two sub-periods - 1963 - 64 to 1970-71 and 1971-72 to 1982-83. For comparison, data for India as a whole, will be considered for the same product groupings over the same time period.

Section - 1

Measurement of Instability

Export instability can be defined as, short term fluctuations in export earnings, quantity or price, corrected from the trend. Trend elimination becomes essential because, if export of one sub-period is growing rapidly compared to the other, it will get more weightage on the instability scale. Instability measure is usually defined as an average of the "trend eliminated" values of a time series. Number of measures of instability of export earnings have been proposed in the literature.^{1/} In this analysis, we would be following the method used by David Murray in his study on instability levels and sources of instability of developed and developing countries.^{2/} For constructing an instability index, we have used the Mac Bean Index (MBI), which measures deviations from a five year moving average of observed values. Comparison of instability for products is based on mean values of two sub periods. Decline in instability over the period is examined by comparing mean instability levels across the periods. The formula used is given below:

$$\text{MBI (Mac-Bean Index)} = (100/n-4) \sum_{t=3}^{n-2} (X_t - M_{AT} / M_{AT});$$

where,

M_{AT} = 5 year moving averages of X_t values
(earnings, quantities or prices) centered
on year t , and ,

n = number of observations.

Results

Levels of Instability

Mean instability indices for the two periods for Kerala as well as India is given in Table 4.1. For total exports of marine products from Kerala as well as India, across the two periods, we notice that while levels of instability of quantity exported declined, for value earned it increased for Kerala, whereas in the case of India, it showed a decline. Though in both Kerala and India,

TABLE 4.1

Mean Macbean Indices of Marine Products Exports from KERALA and INDIA

(1963-64 to 1970-71) and (1971-72 to 1982-83)

Products	KERALA		INDIA	
	Quantity	Value	Quantity	Value
<u>Total Exports*</u>				
1963-64 to 1970-71	15	14.46	11.08	17.52
1971-72 to 1982-83	8.8	18.25	10.5	15.48
Increase/Decrease (%)	59%	26%	5%	12%
	(decrease)	(increase)	(decrease)	(decrease)

* Figures for total exports have been calculated by adding the weighted values of the individual products.

the level of instability of quantity exported decreased, the relative levels of decrease were considerably different: it was as high as 59 percent for Kerala but only 5 percent for India. (Refer Technical Appendix).

Table 4.2 shows changes (Increase/decrease) in levels of instability of frozen prawn, and other products excluding frozen prawn for the two-sub periods for Kerala. When levels of instability of quantity exported declined for both frozen prawn and other products, it showed an increase in value terms (see Table 4.2 below).

TABLE 4.2

Mean Macbean Index Values of Period 1 and Period 2 for Prawn and Other Products (excluding Frozen Prawn) Exported from KERALA

Products	Period - 1 1963-64 to 1970-71	Period - 2 1971-72-1982-83	Increase/ Decrease (%)
<u>Frozen Prawn</u>			
Q*:	7	6	14%(D ⁺)
V*:	17.33	20.31	17%(I [*])
<u>Other Products</u>			
Q*:	31.25	26.62	15%(D ⁺)
V*:	24.42	27.12	11%(I [*])

Q* = Quantity, V* = Value, D⁺ = Decrease, I^{*} = Increase.

But, for India, results obtained for frozen prawn and other products (excluding frozen prawn) moved in the opposite direction. When levels of instability of quantity exported and value earned declined for frozen prawn across the two periods, for other products it showed an increase both in terms of quantity and value (See Table 4.3 below).

TABLE 4.3

Mean Macbean Index Values of Period 1 and Period 2 for Frozen Prawn and Other Products (excluding Frozen Prawn)

From INDIA

Products	Period-1	Period-2	Increase/ Decrease (%)
	1963-74 to 1970-71	1971-72 to 1982-83	
<u>Frozen Prawn</u>			
Q:	7.27	3.98	45%(D)
V:	15.20	13.59	11%(D)
<u>Other Products</u>			
Q:	15.20	28.32	86%(I)
V:	22.73	27.27	20%(I)

So, in the latter period, (i.e. 1971-72 to 1982-83), levels of instability of quantity exported has declined for both Kerala as well as India. While for value earned, when it showed an increase for Kerala, it declined for India.

Section - 2

Measurement of Source of Instability

In this section, an attempt is made to find out the sources of instability in export earnings of marine products exported from Kerala. Analysis for both subperiods is also undertaken to bring out the changes in source of instability in earnings across the sub-periods. Results obtained for Kerala will be compared with that of India also.

Instability in export earnings can arise due to either, fluctuations in price or quantity or both price and quantity. For finding out the relative contribution of fluctuations in price and quantity in instability in earnings, the variance of log of earnings around an

exponential trend are analysed.

Given the identity,

$$\begin{aligned} \text{Export earning} &= \text{Price} \times \text{Quantity} \\ E &= P \times Q \dots\dots\dots (1) \end{aligned}$$

then,

$$\log E = \log P + \log Q \dots\dots\dots (2)$$

and the variance of $\log E$ around a fitted growth rate trend line is given by the identity,

$$\begin{aligned} \text{Var} (\log E) &= \text{Var} (\log P) + \text{Var} (\log Q) + 2 \text{Cov}(\log P, \\ &\qquad \qquad \qquad \log Q) \dots\dots\dots (3) \end{aligned}$$

where, variances and covariances are around trend lines.

Terms on the right hand side of the above equation was calculated from price and quantity values. Then these terms are expressed as percentages by dividing them by their sums.

For instance, the term,

$$\text{Contribution of Price (CP)} = \frac{100 \text{ Var}(\log P)}{\left[\text{Var}(\log P) + \text{Var}(\log Q) + 2 \text{Cov}(\log P, \log Q) \right]}$$

can be explained as contribution of trend corrected variance of price to trend corrected variance of earnings. The same exercise was repeated to find out proportional contribution of quantity instability to earnings instability. These terms indicate the proportional contribution of price/quantity to instability in earnings. Table 4.4 gives components of variance of earnings of total products exported for the whole period (i.e. 1963 to 1983) from Kerala and India.

TABLE 4.4

Components of Variance of Earnings - KERALA and INDIA
- 1963-64 to 1982-83

Products	Var(log E)	Var(log P)%	Var(log Q)%	2Cov(log P, log Q) %
<u>Total Products</u>				
Kerala	0.01638	20.43	41.98	37.59
India	0.01953	37.43	39.13	23.43

For both Kerala as well as India, fluctuations in earnings were due to fluctuations in quantity exported. Compared with that of India (39%) the magnitude of quantity

fluctuations was marginally higher for Kerala (42%).

Now, we will examine, whether sources of instability of total products exported from Kerala and India has undergone any changes in the two sub-periods.

TABLE 4.5

Components of Variance of Earnings of Total Products Exported
- KERALA and INDIA
 (1963-64 to 1970-71) and (1971-72 to 1982-83)

	Var(log E)	Var(log P)%	Var(log D)%	2. Cov(log P, log Q) %
<u>Period-1</u>				
<u>Total Products</u>				
Kerala	0.0250	24.35	30.19	45.44
India	0.0178	75.38	20.85	3.77
<u>Period-2</u>				
<u>Total Products</u>				
Kerala	0.0112	16.70	51.81	31.52
India	0.0065	36.79	52.78	10.53

During period 1, for Kerala, quantity fluctuations was the major contributor towards instability in earnings. But, for India, it was caused by fluctuations in price.

When we come to the second period, same result was obtained for Kerala and India. In both the cases, fluctuations in earnings was caused by fluctuations in quantity.

Analysis of sources of instability of prawn products (frozen prawn and canned prawn) exported from Kerala as well as India showed a continuity in experience. In both the periods, quantity was the main source of instability in export earnings for both Kerala and India. But in the case of frozen prawn export from India as a whole, in the second sub period, contribution of price and quantity was found to be almost same (refer Table 4.6 and 4.7).

TABLE 4.6

Components of Variance of Earnings of Frozen and Canned Prawn Exported from KERALA in the Subperiods

	Var(log E)	Var(log P)%	Var(log Q)%	2 Cov(log P log Q)%
<u>Period-1</u>				
<u>Products</u>				
Frozen Prawn	0.0451	28.11	44.29	27.59
Canned Prawn	0.2340	18.62	50.09	31.29
<u>Period-2</u>				
<u>Products</u>				
Frozen Prawn	0.0106	18.53	64.40	17.06
Canned Prawn	0.4486	1.844	96.70	1.46

TABLE 4.7

Components of Variance of Earnings of Frozen and Canned Prawn Exported in the Subperiods - INDIA

	Var(log E)	Var(logP)%	Var(log Q)%	2 Cov(log P, log Q) %
<u>Period 1</u>				
<u>Products</u>				
Frozen Prawn	0.0459	12.42	57.63	29.95
Canned Prawn	0.0233	19.97	40.99	39.04
<u>Period-2</u>				
<u>Products</u>				
Frozen Prawn	0.0089	32.36	32.11	35.53
Canned Prawn	0.4050	0.91	100.80	-1.70

For total exports of marine products from Kerala, a shift in the major market did not bring about any change in the major source of instability, while in the case of India as a whole, this resulted in a shift in the major source of instability in earnings from price to quantity, across the periods.

Importance of Supply and Demand Variations in Earnings Instability

Fluctuations in price and quantity occur mainly due to changes in either demand or supply. The sign of the covariance term indicates whether above-trend values of prices are associated with above or below-trend values

of quantities. "If demand tends to change in a relatively unstable manner, while supply changes steadily, we would expect price and quantity to be both above or both below, trends in a particular year - which would tend to result in a positive covariance term. If demand has the relatively stable growth path and supply is the less stable growth variable, we expect above-trend values of prices to be associated with - below trend values of quantities and vice-versa - resulting in a negative price/quantity covariance"^{3/}. So, a positive covariance term implies that demand fluctuation have been the dominant cause of instability, while supply fluctuations will be the major source, if covariance term is negative.

The significance of supply/demand relationship was examined by testing whether the correlation co-efficients are significantly different from zero at 5 percent level of significance. Table 4.8 gives the covariance contribution (in %) for total products and prawn products (frozen and canned prawns) exported from Kerala as well as India across the periods. (Data from Table 4.5 to 4.7).

But the covariance terms obtained irrespective of their signs were found to be statistically insignificant for total products as well as for individual products exported from Kerala and India as a whole in both the periods.

TABLE 4.8

Components of Variance of Earnings Around Trend in Sub-Periods
- Total Products and Individual Products Exported - KERALA and

INDIA

Products	Covariance Contribution(%)			
	Kerala		India	
	Period-1	Period-2	Period-1	Period-2
<u>Total Products</u>	45.44*	31.52*	3.77*	10.53*
<u>Individual Products</u>				
Frozen Prawn	27.59*	17.06*	29.95*	35.53*
Canned Prawn	31.29*	1.46*	39.04*	-1.70*

* r is statistically insignificant at 5 percent level

So this leads us to a conclusion that instability in earnings from marine products exports from Kerala and India as a whole was due to a combination both supply and demand factors.

Impact of Commodity Concentration and Geographic Concentration on Instability in Earnings from Marine Products Exports of Kerala

There are many economic variables that possibly contribute to instability in export earnings. Some of the important among them are commodity concentration, geographic

concentration, size of export trade, per capita income, level of socio-economic development, dominance of primary commodities in export trade etc.^{4/}

Here we will analyse the impact of increasing commodity concentration as well as geographic concentration on instability in value of marine products exported from Kerala for examining commodity concentration. We have calculated percentage shares of frozen prawn in the export basket for every year from 1963-64 to 1982-83 (frozen prawn was taken as the representative sample because it contributed more than 80 percent in terms of quantity and value of total marine products exported from Kerala every year). Average share of frozen prawn exported was found out, both in quantity terms and value terms for the two sub periods for comparison.

In period 1 (1963-64 to 1970-71) frozen prawn contributed 62 percent of the total quantity exported and 70 percent of the total value earned, on an average of total marine products exported from Kerala. While in the second period (1971-72 to 1982-83), contribution of frozen prawn increased to 86 percent in terms of quantity and 88 percent in terms of value, thereby showing increase in commodity concentration both in terms of quantity as well as value.

So, to prove that commodity concentration leads to increase in instability, this should lead to increase in level of instability in value earned. Result obtained in section 1 (Table 4.1) shows an increase in level of instability, in value terms, thereby confirming the view that commodity concentration leads to increase in instability.

Main markets of Kerala's marine products during the period 1963-1983 were mainly USA and Japan. In period 1 (1963-64 to 1970-71), these two markets together imported 74 percent quantity wise and 80 percent value wise of the total exports from Kerala. Their share increased to 85 percent and 86 percent respectively in period 2 (1971-72 to 1982-83) thereby showing an increase in geographic concentration both in terms of quantity and value. As per the result obtained earlier (Table 4.1) levels of instability in terms of value has risen across the sub periods. This shows that increase in geographic concentration also leads to increase in instability in export earnings.

Section 3

Results and Policy Implications

Results obtained from the analysis are listed below:

- (a) Levels of instability of quantity of total marine products exported has declined across the two sub periods, for Kerala as well as India. But for value earned, for Kerala when instability increased, for India it declined.
- (b) For the whole period of analysis (1963-1983) for total products exported, both Kerala as well as India, quantity was the major contributor to increase in instability. In the sub-periods, when total products exported were considered, in the case of Kerala also, fluctuations were caused by quantity. But in the case of India, there has been a shift in the major contributor which caused instability from price (in period 1) to quantity (in period 2). Results obtained for individuals products exported from Kerala as well as India also showed a continuity in experience. In both the cases, quantity was the major contributor to fluctuations in earnings.
- (c) Source of fluctuations in earnings for Kerala and India was due to a combination of both supply and demand factors, across the two sub-periods.
- (d) Further, commodity concentration and geographic concentration were found to increase instability in earnings of marine products exported from Kerala.

From our analysis, it emerges that, both supply as well as demand factors has led to increase in fluctuations in value earned. From the supply side, the fluctuations in total catch of prawn, which is the most important constituent in the export basket would have led to an increase in instability. And from the demand side, quality standards of products exported, fluctuations in shrimp consumption in importing countries and increasing competition from other countries like Indonesia, Mexico, Thailand (dealt with in detail in the earlier chapter) must have contributed to increase in instability in value earned. So the policy measures adopted should help to stabilise the supply in national level and demand in the international level. Encouraging people to concentrate on culturing practices may help to stabilise supply of raw materials to a certain extent. While, the fluctuations, in demand can be brought down by exporting good quality, value added products. Further, diversification, both in terms of products as well as markets may help to decrease the level of instability in export earnings.

FOOT NOTES AND REFERENCES

1. Murray, David (1978) - "Export Earning Instability - Price, Quantity, Supply and Demand ?": Economic Development and Cultural Change. Vol. XXVII, No. I, pp. 61-73.
2. Ibid.
3. Ibid. pp. ~~65~~ 70
4. For instance, Michael (1962) analysis the impact of commodity concentration and geographic concentration on foreign trade of countries. Massell (1970) in his study, brings out the importance of the above economic variables on exports. Similarly Halder and Richards (1973) in their study examines the effects of India's trade dependence on small number of goods and countries.

CHAPTER 5KERALA'S EXPORT PERFORMANCE AND IMPACT

In this chapter, we will try to examine, Kerala's performance in the export of marine products and examine its impact on primary producers (i.e. fishermen), the entrepreneurs in the export industry and on local fish consumption.

Discussions in the present chapter pertain to the period from 1960 to 1985.

Real Increase in Earnings from Exports

As we saw earlier (refer Table 3.5) the phenomenal

TABLE 5.1

Real Price of Prawn Exported from Kerala (1960-1985)
- (Select years)

Year	Total Quan- tity	Frozen Prawn Quantity	Value of Frozen Prawn			
			Rs/ tonne	Index (current)	\$/ tonne	Index (current)
1960-61	5797	1050	4800	100	1006	100
1967-68	14625	10870	11200	233	1478	145
1973-74	31274	27146	18500	385	2357	234
1977-78	31962	30764	26200	546	3082	306
1982-83	34118	33085	43000	896	4374	438
1984-85	30683	29297	49500	1031	4605	458

Source: Quantity figures compiled from various issues of "Report of Cochin Chamber of Commerce". Rs/tonne obtained by dividing total value realised for frozen prawn by quantity of frozen prawn exported. \$/tonne arrived at by converting Rs. into dollar terms by multiplying with exchange rate of respective years.

increase in total value earned from marine products exports was due to the enhancement of prawn price in the international markets. On the other hand, real price of prawn also had increased. Between 1960-61 and 1984-85, real price of prawn quadrupled.

Analysis of Share of Prawn Catch vis-a-vis Total Catch of Fishermen

During the period under consideration, only a small percentage of Kerala's fish catch was exported. But in value terms, it was a very significant share, due to the tremendous rise in export value realised.

TABLE 5.2

Share of Prawn Catch in Total Catch of Fishermen

(1961 to 1985) Q (tonnes); V(000's Rs)

(Select years)

Year	Prawn Catch				Total Catch			
	Q	(%)	V	(%)	Q	(%)	V	(%)
1961	20627	8	2979	9	268624	100	35043	100
1967	27164	7	26629	25	364129	100	105681	100
1971	31294	7	56434	19	445347	100	292954	100
1975	78000	19	323311	44	421000	100	739731	100
1981	22428	8	253885	48	274395	100	528210	100
1984	31139	7	420376	43	424718	100	986256	100

Source: 1. Government of Kerala: "Integrated Fisheries Development Project for Kerala: Summary Statements and Common Statements".

2. State Planning Board - Economic Review (various issues).

As is seen from the above table, between 1961 and 1984 in terms of quantity, when the contribution of prawn in total catch of fishermen grew by 2 percent, in terms of value, it increased by more than 500 percent. This more than proportionate increase in value earned from prawn was due to the increase in export value of prawn which increased from Rs.4800 per tonne in 1960-61 to Rs.46800 per tonne in 1984. The reasons of this are discussed below:

(B) Trends in Ratio of Shore Price to Export Price

Fishermen have been getting an increasing share of the export value realised from prawn. The ratio of shore price to export price increased from 5 percent in 1960-61 to 29 percent in 1984 (See Table below).

TABLE 5.3

Trends in Shore Price to Export Price of Prawn
(1960-1984) - (Select years)

Year	Shore Price		Export Price		Ratio of Shore Price to Export Price
	Rs/Kg	Index (current)	Rs/Kg	Index (current)	
1960-61	0.26	100	4.8	100	5
1967	1.00	285	11.6	242	9
1973	3.00	1754	17.8	371	17
1977	7.80	3000	27.6	575	28
1982	12.65	4865	42.5	885	30
1984	13.50	5195	46.8	975	29

Source: 1. State Planning Board - Economic Review, 1960-61
2. Department of Fisheries - Administrative Reports (various issues).

But, during the above period, when the shore price per kg of prawn increased by 51 times, export price per Kg of prawn increased only 10 fold.

This increase in shore price over the export price, can be explained in terms of the growing competition in processing this commodity on the one hand and limited supply on the other hand. Between 1960 and 1982, when the increase in number of firms primarily involved in frozen prawn was 37 fold, the production of penaeid prawn increased only two fold. Two distinct phases emerge from the table below:

TABLE 5.4

Growth in Number of Firms Exporting Frozen Prawn and Production of Penaeid Prawns in Kerala -- 1960-1982
- (Select years)

Year	No. of Export firms (cumulative)	Index	Production of Prawns Quantity (tonnes)	Index
1960	6	100	12606	100
1966	27	450	28100	223
1972	83	1383	35800	284
1973	117	1950	84700	672
1977	194	3233	40324	320
1981	221	3683	22300	177
1982	224	3733	26772	212

- Source:
1. Sebastian Mathew: "Growth and Changing Structure of the Prawn Export Industry in Kerala, 1953-83, Table 4.4. pp.47.
 2. Report of the National Commission on Agriculture, 1976, Appendix 39.4-Statement V, Kerala, pp.227.

First is the period between 1960 and 1973, when production of prawn increased with an increase in the number of firms. But in the second period (i.e. 1974-1982), when number of export firms showed a further increase, the production of prawn declined substantially. This also points towards the reasons of increase in the share of "export value realised" accruing of fishermen over time.

Now, we will examine the share of total value of output from prawn catch accruing to the fishermen and how it is apportioned between the mechanised and the traditional sectors.

(i) Differential Benefits of Increase in Income from Prawn to Fishermen in Mechanised and Traditional Sectors:

It is the fishermen working on the mechanised boats who have cornered (especially after 1970) the greater share of the increase in "export value realised" from prawn. Almost all crew of mechanised boats are drawn from the traditional sector. By custom, they get 30 percent of the total earnings from the catch of the boats they man. We see from the table below (table 5.5) that, the value of output of workers in the mechanised boats as well as the traditional sector has increased. But, the value of output of workers in the mechanised boats has grown much faster

than that of the workers in the traditional sector. When value of output of Mechanised sector increased by more than 200 times, in the traditional sector it increased only 10 times.

TABLE 5.5

Total Value of Output and Differential Benefits from Prawn Catch Accruing to Workers in the Mechanised and Traditional Sectors - 1960-1984 - (Select years)

Year	Total Value of Output(Rs!000)					
	Mechanised sector	(%)	Index (current)	Traditional sector*	(%)	Index (current)
1960-61	503.5	(16)	100	2667.0	84	100
1969	5570.0	14	1104	33270.0	86	1247
1975	90505.0	81	17975	21631.0	19	811
1980	138510.0	63	27509	82050.0	37	3076
1982	82829.0	57	16451	62567.0	43	2346
1984	117734.0	81	23383	27932.0	19	1047

* - Total value of Traditional sector

(ii) Income to Entrepreneurs

Entrepreneurs in the prawn export industry are the boat owners and the processing sector.

(a) Boat Owners

The boat owners have got a better deal of the increase in "Export value realised" from prawn export.

In the mechanised sector, boat owners get 70 percent of the gross earnings. During the period under consideration, share of value of output from prawn catch accruing to boat owners has risen more than 100 times (see Table 5.6 below).

TABLE 5.6

Value of Output from Total Prawn Catch Accruing to the Boat Owners - 1961 to 1984

- (Select years)

Year	Value of Output (Rs.000')	Index (current)
1961	2085.0	100
1966	17447.0	837
1972	48240.0	2213
1975	226320.0	10853
1980	323190.0	15498
1982	193269.0	9268
1984	274711.0	13178

(b) Processing Sector

During 1969 and 1982-83, the turn over per firm increased from Rs.2.67 million to Rs.9.93 million, and the export sector was controlled through out the period by firms with turn over above Rs.10 million. Their share in the total value of exports increased from 44 percent in 1969 to 84 percent in 1982-83. Further, during this period, the

turn over per firm of this group doubled, from Rs.14 million in 1969 to Rs.28 million in 1982-83^{1/}. This shows that turn over per firm as well as the concentration of prawn exports in the hands of a few exporters have increased over time. This points towards high profit in this sector, though highly skewed. But estimates of profitability available are unreliable. These studies showed a loss of nearly 2 percent for frozen prawn export.^{2/}

Impact on Local Consumers

Here, we would discuss

- (i) whether the marine products exports from Kerala fits the "poor feeds the rich" trend observed in world food trade and, further tries to find out,
- (ii) the effect of marine products exports on local fish availability and prices.

(i) Debate on "Poor feeds the Rich" through International Food Trade

The impression that has gained general acceptance regarding the pattern of international food trade is that the developed countries feed the hungry of the world. But when we closely examine the pattern of distribution of food trade, we find that, in the case of primary commodities like

food grains and fish products, it is the developing countries that feed the developed countries ^{3/}. For instance, in 1976, when developed countries exported 11.9 percent (14750 million US dollars) of the total food traded to the developing countries it imported 20.2 percent (25020 million US dollars) from them ^{4/}.

In the case of fish products, developed countries are the major importers in the world (e.g U.S.A. and Japan). And they import most of the fish products from countries of low levels of economic development such as India, Thailand, Indonesia, Malaysia etc." A major characteristic of global trade pattern is that, like other primary products, fish in the international market tends to flow from less developed to more developed countries. This is demonstrated by the fact that most countries purchase their fish imports from countries of low levels of development than those to which they send their fish exports".^{5/} It is often quoted that " a substantial part of the shrimp catch of India is not used to feed its own hungry but is frozen by private enterprise for export to US and Europe"^{6/} This view does not hold true in the context of shrimp exports from Kerala because, shrimp which is the main item of export forms only less than 10 percent (refer table 5.2) of the total fish production of the state. But recently, locally consumed species of

fishes (in the form of frozen fish) also has started appearing in the product basket of Kerala's marine products exports. If this trend continues the above statement will hold good in the case of Kerala's marine products exports, in future.

- ii) Does prawn production for export, affect availability and price of fish for local market ?

Production of prawn for export, can affect availability of fish for local consumption, if the method of fishing adopted for catching prawn affects fishing for local consumption and if increase in price of prawn leads to an increase in price of other varieties of fish.

In Kerala, there are numerous reasons to believe that , fishing for prawn has affected fishing for local consumption. This is mainly due to the shift in operation of mechanised boats primarily meant for fishing prawns to the relatively inshore areas, thereby resulting in competition with traditional crafts for space^{7/}. Destructive nature of fishing by trawlers also affects fishing for local consumption because, trawlers rake the sea bottom and cause severe ecological damage by disturbing the nursery grounds of various species of juvenile fishes and also by destroying fish eggs and larvae on a large scale.

The changes in price of locally consumed varieties of fish are influenced by a different set of factors from those species that are exported. Increase in price of prawn is primarily due to the increasing demand for prawn in the international markets, on the demand side, and due to drastic decline in production on the supply side. While, increase in price of locally consumed varieties of fish is influenced by a set of totally different factors such as increase in population and per capita income of the state, on the demand side and decline in output on the supply side. Moreover, for a period between 1964-66 to 1974-76, it has been found that 90 percent of the increase in current value of output was due to rise in unit prices of all varieties of fish. Whereas, changes in volume and species mix together explained only 10 percent of the increase in price.^{8/}

Summary.

During the period under analysis, there has been a real increase in earnings from export of prawn. In Kerala's total fish catch, prawn in terms of quantity formed only a small percentage. But in terms of value, prawn's share was very high, mainly due to the phenomenal rise in shore price. Increase in shore price of prawn was due to the growing competition for processing this product, coupled with the

decline in supply. Fishermen have benefitted much from the increase in export value realised. But within this, the fishermen working on mechanised boats have taken the major share. Boat owners and the processing sector also have got a better deal from the increase in value realised from prawn export. Increase in price of prawn did not affect price of locally consumed varieties but fishing for prawn was affected, fishing for local consumption.

FOOT NOTES AND REFERENCES

- (1) M. Sebastian - " Growth and Changing Structure of Prawn Export Industry in Kerala - 1953-83" pp (M.Phil thesis unpublished) CDS, 1986.
- (2) Gopalakrishnan & Co (1981) - " Report of Cost Study Marine Products 1980-81" and MPEDA -"A Status Report of the Marine Products Processing Industry in Kerala (unpublished).
- (3) Kent, George - " Food Trade - The Poor Feed the Rich " - pp. 232-239. The Ecologist - Vol.15, No.5/6, 1985.
- (4) Ibid. pp.237. Fig.1
- (5) Kent, George - " The Politics of Pacific Island Fisheries", pp.87 - Chapter-6.
- (6) Kent, George - " Food Trade - The Poor Feed the Rich" - pp.233 - The Ecologist. Vol-15, No15/6, 1985.
- (7) K.H.Mohamed in his paper on "Penaeid Prawn resources in India", pointed towards a shoreward movement in the operation of mechanised boats in the late sixties. The Kalawar Committee also noted that the traditional boats had to compete with mechanised boats especially in the inshore areas (Ref.K.H.Mohamed - "Penaeid Prawn Resources in India" - In proceedings of the symposium of Living Resources of the Seas Around India, Central Marine Fisheries Research Institute, Cochin and "Report of the Export Committee on Marine Fisheries in Kerala - Kalawar et al, 1985, pp.380).

- (8) Kurien, John - " Towards an Understanding of the Fish Economy of Kerala State ", pp.55. Working Paper number 68. CDS, June, 1978.

CHAPTER 6SUMMARY AND CONCLUSIONS

In this study we have attempted to trace the growth of marine products exports from Kerala, giving special emphasis to changing composition, trends and performance, during the period 1840 - 1985. Marine products being a primary commodity, we have identified certain supply and demand factors which affect the flow of trade in these commodities between countries. The changing scenario of marine products exports in the pre and post independence periods have been analysed by examining the changes in the supply and demand factors. Further, we have tried to assess the impact of growing exports on the different sectors of the industry, viz. primary producers, entrepreneurs, and local consumers. Such a study assumes importance in the context of the increasing contribution made by marine products exports to the country's foreign exchange earnings and also, in the light of growing questions being raised from different quarters regarding over exploitation of the resource and its impact on availability of fish for local consumers.

To get a historical perspective of the marine products exports, we started our discussion with a brief history of marine products exports from the region that forms present day Kerala, for the period 1840 to 1950. During this period, we found that, product mix of marine products exports consisted of products exported for human consumption such as salt/dried fish, dried prawns, shark-fins, as well as, products exported for Industrial purposes such as fish guano and fish oil. Markets of these products were mainly London, Burma, Sri Lanka and Japan. A large group of enterprising traders who were responsive to demands in the international markets were found to be involved in trade, even during this period. The factors which boosted the marine products export trade during the colonial period were the abundance of the resource and the policies of the British who ruled Malabar, which formed the major portions of the present day Kerala during that period. On the other hand, poor purchasing power of the buyers, low quality of products exported and violent fluctuations in total catch were the main reasons which prevented the smooth growth of export trade in marine products, during the pre-independence period.

We continued our discussion on the growth pattern of marine products exports (for the post independence period

i.e. 1950 - 1985) in the next chapter by dividing the whole period into pre and post devaluation periods.

The pre devaluation period (essentially 1950 to 1966) saw the beginnings of a 'pink gold rush'. New markets emerged as a result of changing food preferences increase in levels of prosperity and scarcity of marine products in these new markets. New technologies in the sphere of harvesting as well as processing the resource were introduced through foreign assistance mainly to cater to the needs of the newly emerged markets. Discovery of rich prawn grounds in the inshore waters off Kerala, as a result of the initiative taken by the Indo Norwegian Project (INP) also triggered the growth of marine products exports from Kerala. The entry of a new class of profit motivated merchant capitalists from outside the fishing community into both the harvesting and processing activities gave a further impetus to the growth of marine products exports from Kerala. As a result, the product mix of exports started showing signs of change and a new products- namely frozen prawn, replaced traditional items (dried products) as the major item of export. By the end of the period, USA was the major market of Kerala's marine products importing 66 percent in terms of quantity and 67 percent in terms of value of the total exports of marine products from the state.

The post devaluation period (1967-1985) witnessed a stagnation and then a decline, in terms of quantity of marine products exported, while in terms of value, it was still a growth phase. In 1971, Japan, which entered the trade in 1962, emerged as a major market of Kerala's marine products exports pushing USA to the second place. Share of Japan which was 46 percent in value terms by the end of the early period increased to 54 percent by 1984-85. The shift in favour of frozen prawn which appeared in the earlier period, became very prominent. On the other hand, export of traditional items (such as dried products) got phased out completely. The enhancement of prawn price in the international markets attracted large number of exporting investments both in harvesting and processing sectors. But, this did not bring about any increase in quantity of marine products exported and instead, it showed signs of stagnation in late seventies and decline in the beginning of eighties.

Active encouragement of the state, and phenomenal increase in price of prawn in the international markets were found to be the main reasons for the growth of marine products exports during the post-devaluation period. While, bad quality of products exported, increasing competition from other countries, and fluctuations in total catch of

prawn affected the smooth growth of trade in this period. By 1985, frozen prawn emerged as the major item contributing more than 90 percent in terms of quantity and value of total marine products exported from Kerala. While , more than 80 percent of total marine products exported were to two markets mainly USA and Japan.

In the next chapter, we examined the changes in levels of instability in export earnings and quantities of marine products exported from Kerala and found that, instability in quantity exported has declined, while that of value earned increased in the latter period (after the emergence of Japan as the major market). It was also found that the major source of instability in earnings of marine products exports was due to a combination of both demand and supply factors. Commodity concentration and geographic concentration were the two important economic variables which had led to an increase in instability of value earned.

To conclude, we have tried to weigh the performance of marine products exports from Kerala with the biases it had shown towards different sectors involved in this industry (such as primary producers and entrepreneurs); and its impact on the local consumers. We saw that the real price of prawn has increased during the period under consideration. Quantity wise prawn formed only a small percentage of the

states fish production, but value wise, its contribution was very high, as a result of the tremendous rise in the shore price. This increase in shore price of prawn was in turn found to be due to growing competition for processing this product in a situation of limited supply. Further, fishermen were found to benefit from the increase in export value realised. But, the major share within this was taken by fishermen working on the mechanised boats. Boat owners and the processing sector also were found to have benefitted from the increase in value earned from prawn export. Increase in price of prawn was found to have no effect on the price of locally consumed fishes. While, fishing for prawn due to the ecological imbalances caused by the destructive nature of fishing, has affected fishing for local consumption.

KERALATOTAL EXPORTS OF MARINE PRODUCTS (1963-83)

Quantity(tonnes); Value (lakhs)

Year	Quantity	Value	AUV
1963-64	8238.7	383.61	4.60
1964-65	9742.4	504.35	5.17
1965-66	10308.7	548.14	5.32
1966-67	13560.7	1263.15	9.31
1967-68	16288.4	1671.91	10.26
1968-69	18382.3	2023.02	11.00
1969-70	21608.2	2648.24	12.25
1970-71	23305.9	2684.47	11.52
1971-72	21870.5	3369.44	15.41
1972-73	25709.5	4196.88	16.32
1973-74	31506.5	5771.89	18.32
1974-75	24932.9	3951.47	15.85
1975-76	31664.0	6761.43	21.35
1976-77	31595.0	9011.68	28.52
1977-78	29818.0	7444.62	24.96
1978-79	32301.0	9399.51	29.10
1979-80	30534.0	10393.08	34.04
1980-81	29148.0	9534.0	32.71
1981-82	32006.0	12513.0	39.09
1982-83	32525.0	14149.0	43.50

Source: Compiled from various issues of Administrative Reports of the Kerala State Fisheries Department.

KERALAEXPORTS OF FROZEN PRAWNS (1963-83)

Quantity(tonnes); Value (lakhs)

Year	Quantity	Value	AUV
1963-64	4304.0	210.23	4.88
1964-65	6072.3	351.19	5.78
1965-66	8649.4	379.63	4.38
1966-67	9490.9	1111.80	11.36
1967-68	10955.8	1250.28	11.41
1968-69	14557.3	1596.32	10.96
1969-70	18216.0	2234.73	12.26
1970-71	17642.3	1978.30	11.21
1971-72	18859.3	2919.54	15.48
1972-73	22069.3	3620.37	16.40
1973-74	26646.9	4866.58	18.26
1974-75	22697.8	3448.24	15.19
1975-76	28966.0	6020.5	20.78
1976-77	28965.0	8394.4	28.98
1977-78	26931.0	7048.31	26.17
1978-79	25816.0	8104.4	31.39
1979-80	26047.0	9237.20	35.46
1980-81	24481.0	8427.00	34.42
1981-82	26007.0	10852.00	41.72
1982-83	26914.0	12608.00	46.84

Source: Compiled from various issues of Administrative Reports of the Kerala State Fisheries Department.

INDIAEXPORTS OF MARINE PRODUCTS (TOTAL) (1963-83)

Quantity (tonnes); Value (lakhs)

Year	Quantity	Value	AUV
1963-64	19057.0	608.72	3.19
1964-65	21122.0	714.88	3.38
1965-66	15295.0	706.32	4.62
1966-67	21116.0	1736.85	8.22
1967-68	21907.0	1971.71	9.00
1968-69	26811.0	2469.71	9.21
1969-70	31695.0	3345.79	10.56
1970-71	35883.0	3507.37	9.77
1971-72	35523.0	4454.69	12.54
1972-73	38903.0	5972.00	15.35
1973-74	52279.0	8951.00	17.12
1974-75	45099.0	6840.89	15.17
1975-76	54463.0	12452.92	22.86
1976-77	66750.0	18911.70	28.33
1977-78	65967.0	18095.05	27.43
1978-79	86894.0	23462.27	27.00
1979-80	86401.0	24882.40	28.80
1980-81	75591.0	23484.26	31.07
1981-82	70105.0	28600.54	40.80
1982-83	78175.0	36136.13	46.27

Source: From 1963-64 to 1980-81 Table B I pp.27 - "Year wise Trends in Exports of Marine Products, Quantity exported, Foreign exchange earning and unit value realised- 1961-62 to 1980-81 - Hand book of Fisheries Statistics, 1981. Dept.of Ag. & Co.Op. Ministry of Agriculture, Govt.of India, New Delhi. For 1981-82 and 1982-83 from Indian Marine Products Exports - 1984-85 Tables MPEDA.

INDIAEXPORTS OF FROZEN PRAWNS (1963-83)

Quantity (tonnes); Value (lakhs)

Year	Quantity	Value	AUV
1963-64	4485.0	229.32	5.11
1964-65	6350.0	361.14	5.69
1965-66	8975.0	436.22	6.25
1966-67	9838.0	1117.66	11.36
1967-68	11856.0	1332.62	11.24
1968-69	21150.0	2591.54	12.25
1970-71	22135.0	2453.34	11.08
1971-72	24952.0	3709.93	14.87
1972-73*	30550.0	5088.42	16.65
1973-74@	35895.0	6581.21	18.33
1974-75	35139.0	5867.38	16.70
1975-76	46489.0	11057.55	23.78
1976-77	49375.0	16798.57	34.02
1977-78	50067.0	15830.20	31.62
1978-79	51162.0	19478.49	38.07
1979-80	51068.0	21124.83	41.37
1980-81	51358.0	20178.44	41.04
1981-82	52180.0	24794.58	47.52
1982-83	55002.0	31615.17	57.48

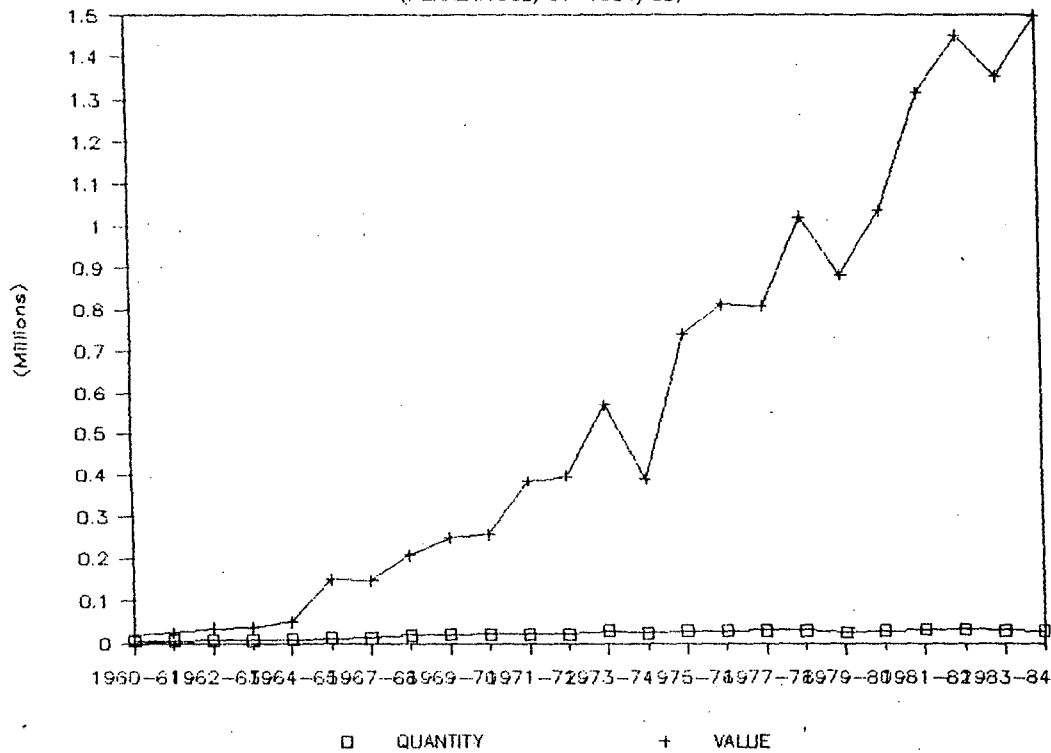
* 1972 only, @ 1973 only

Source: From 1963-64 to 1970-71 from Table I.2 page 29 of Marine Products Export Promotion Council - Marine Products Export Review, 1971-72, MPEPC (Marine Products Export Promotion Council). From 1974-75 to 1982-83 Table II of Indian Marine Products Exports: 1984/85 (tables) MPEDA. For 1972 & 1973, Table 3 pp.3 of Statistics of Marine Products Exports, 1975, MPEDA.

GRAPH-3

TOTAL EXPORTS OF MARINE PRODUCTS

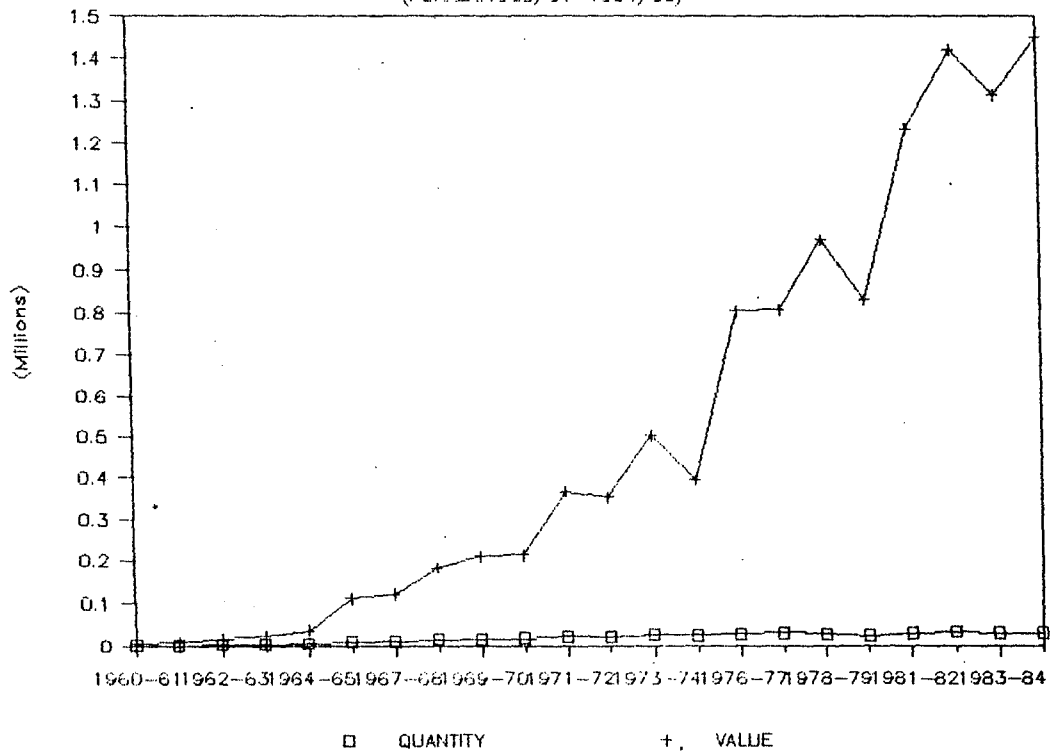
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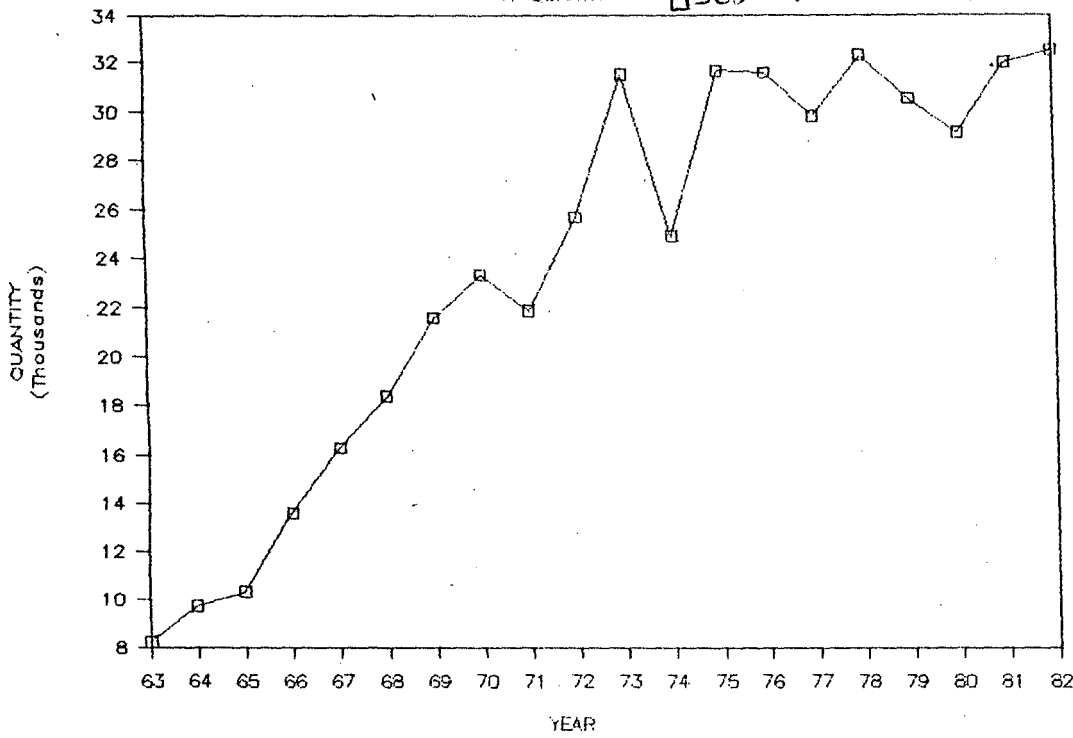
GRAPH-4

TOTAL EXPORTS OF FROZEN PRAWN

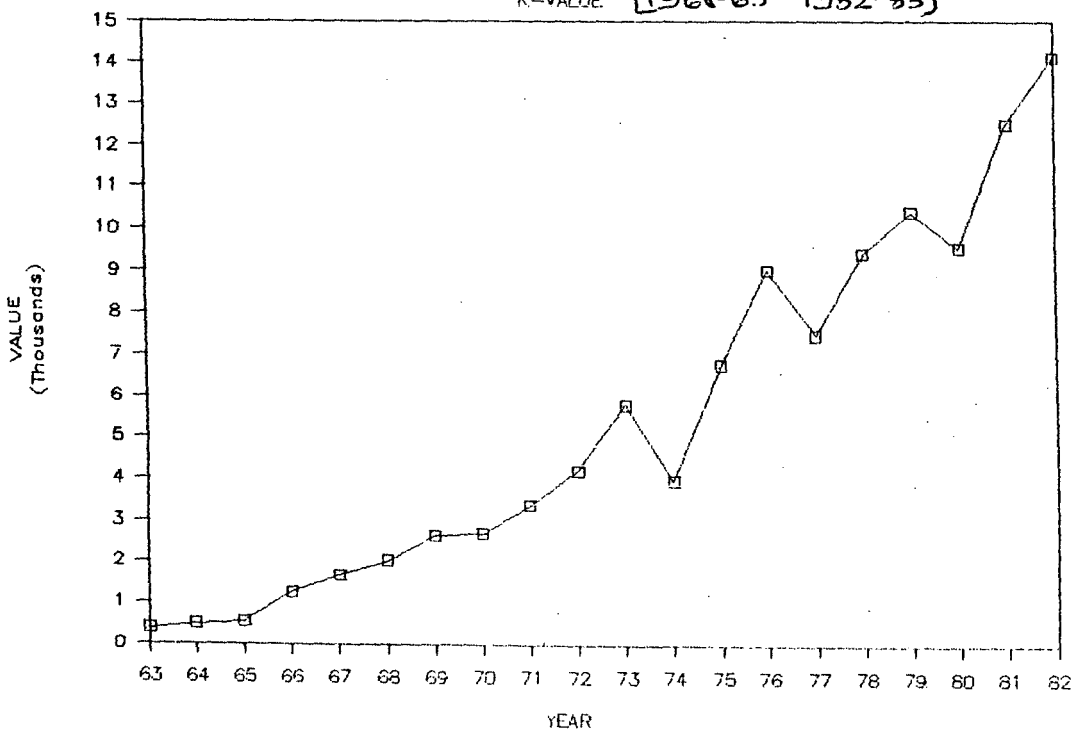
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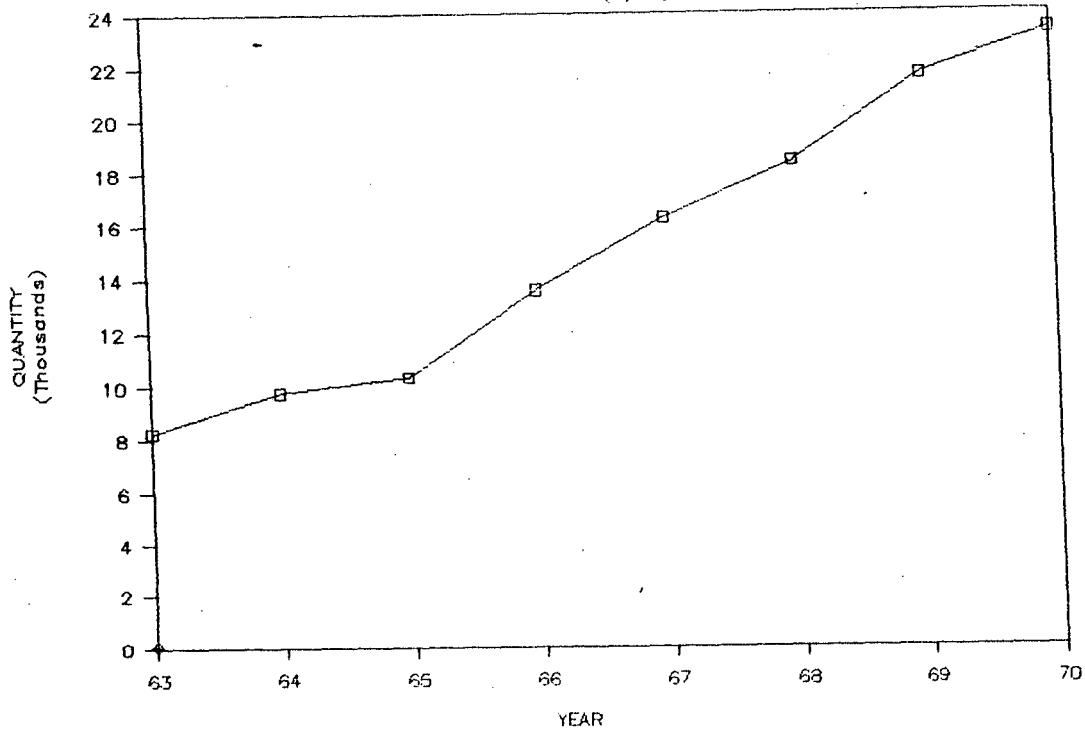
GRAPH-5
K-QUANTITY [1963-64 to 1982-83]



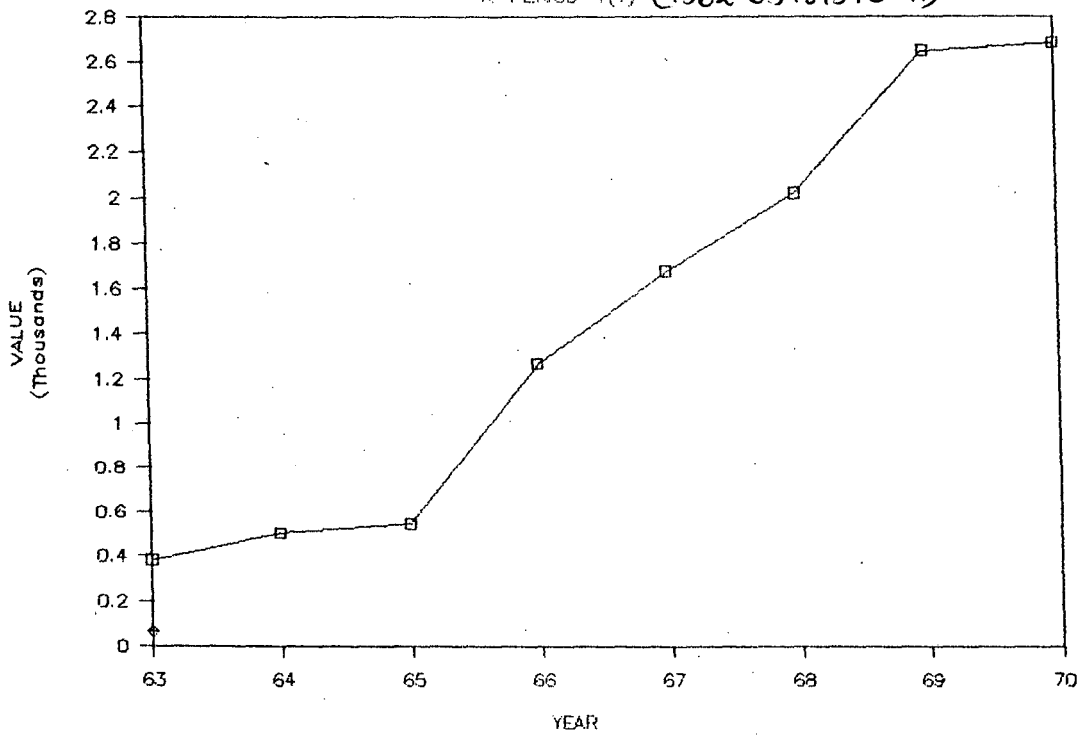
GRAPH-6
K-VALUE [1963-63 - 1982-83]



GRAPH-~~B~~7
K-PERIOD-1(Q) (1962-63 to 1970-71)

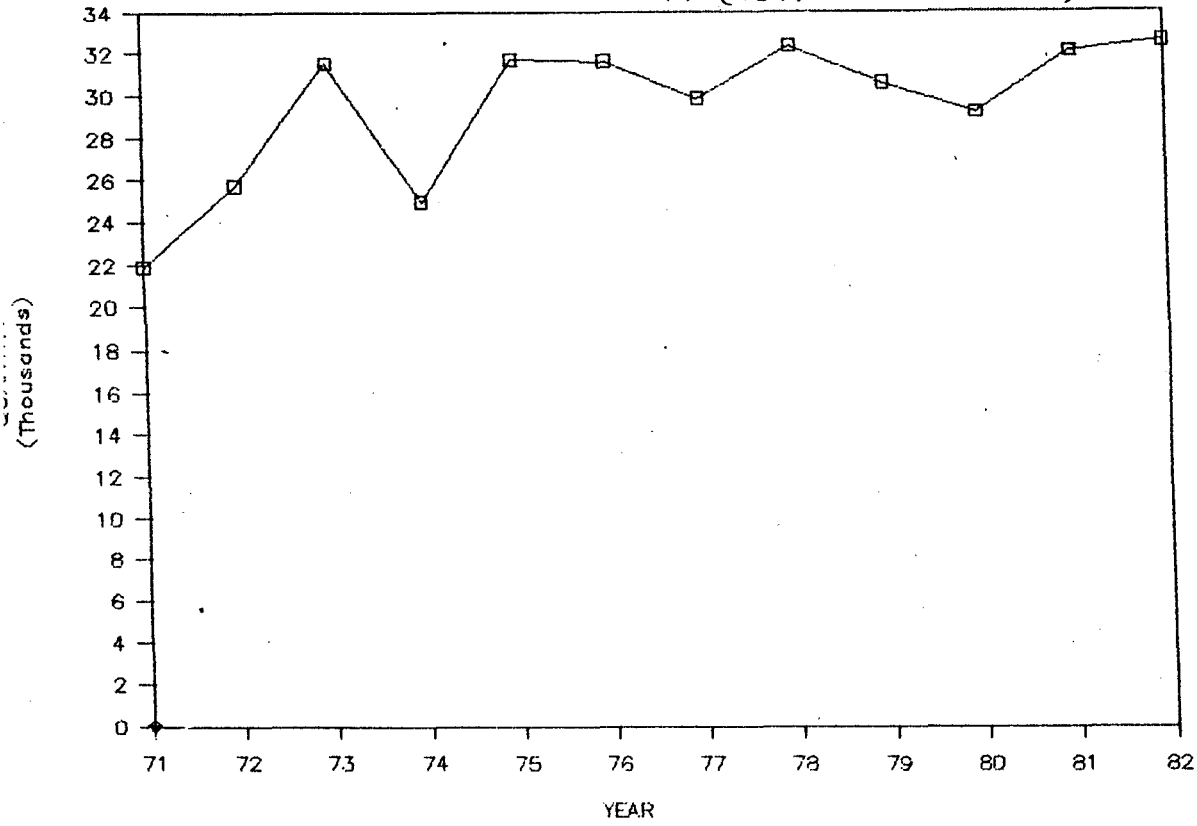


GRAPH-8
K-PERIOD-1(V) (1962-63 to 1970-71)



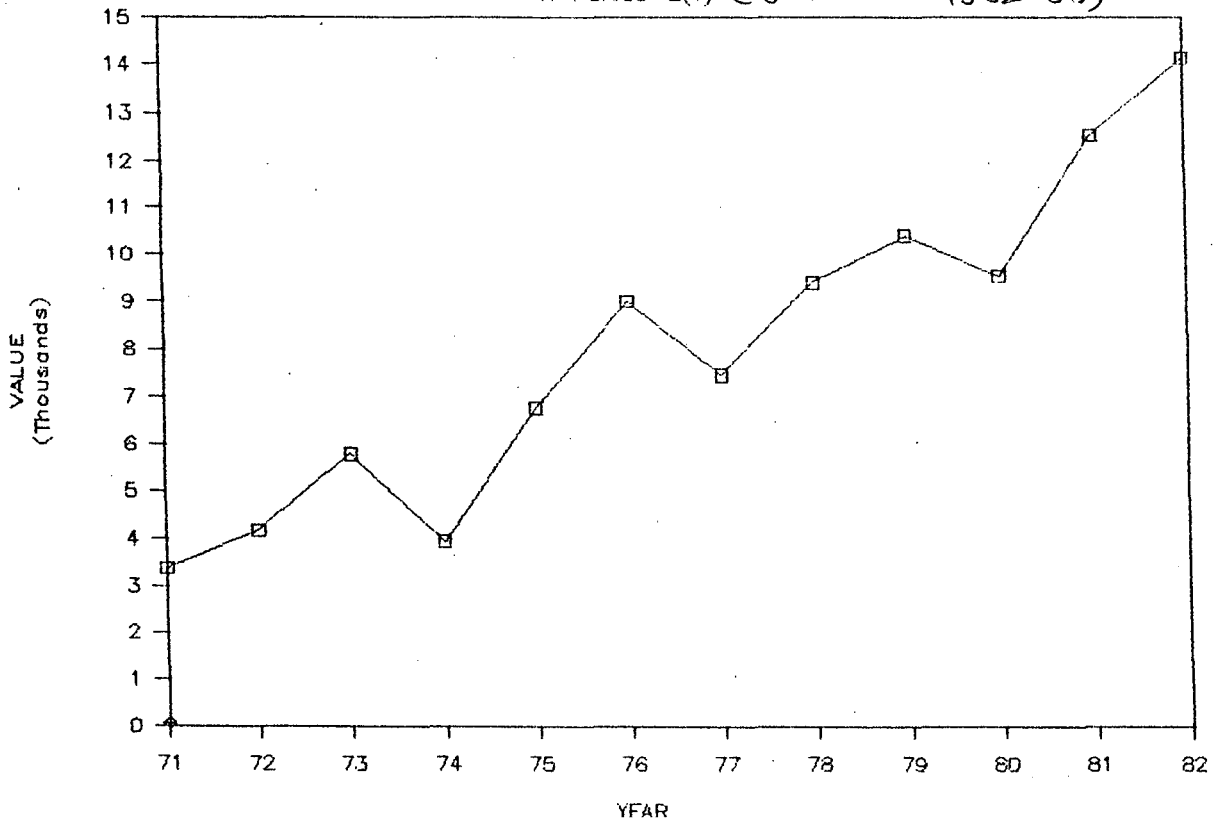
GRAPH-9

K-PERIOD-2(Q) (1971-72 to 1982-83)



GRAPH-10

K-PERIOD-2(V) (1971-72 to 1982-83)



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