

ECONOMICS OF MECHANISED FISHING UNITS ALONG TAMIL NADU COAST

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The main thrust in the marine fisheries sector during the first three Five Year Plan periods and the following three Annual Plans was in the motorisation of fishing Crafts existing at that period and introduction of new mechanised fishing boats. The export demand coupled with high unit value realisation of prawns added the speed of the growth of the mechanised fleets. The enhanced mobility of fishing crafts led to the exploitation of hitherto unknown and underexploited species of fish and induced many fishermen to shift from traditional to mechanised fishing. With the advent of mechanisation in the fisheries sector, development of diversified fishing methods in the artisanal fishery has also gathered momentum. Mechanisation not only led to intensification of fishing but also paved the way for the growth of an organised sea food export industry and consequent increase in employment opportunities. However, the mechanised fleets were highly depending on trawl fishing and prawn catches for their sustenance. Initially the 7.6 and 9.1 metre size boats were designed and introduced for gillnetting. But the high profitability of shrimp trawling led the fishermen to

use these boats also for trawling with slight modifications. Now a stage has been reached when we realised that the excessive trawling in some of the regions of our coastal waters led to over exploitation of resources and operating beyond maximum sustainable yield warranting regulatory measures for attaining better economic returns in the long run. The frequent clashes between the traditional and mechanised fishermen over the area of operation has also emerged as a serious problem emphasising the need for fishing regulations. In this context basic information on Catch Composition, Costs and earnings of different Craft-gear combinations is very much essential for policy decisions. The present study deals with the economics of trawlers and gillnetters operating at selected centres of Tamil Nadu coast.

The coastline of Tamil Nadu runs to about 1000 Kms, the second longest among the maritime States of India. There are about 352 landing centres along the coast having facilities to land mechanised boats at 23 centres. There are about 1 lakh fishermen engaged in active fishing spreading over 422 fishing villages.

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About 3000 mechanised boats operate in Tamil Nadu coast of which 90 percent are trawlers. About three fourth of the fish landings was accounted for by the artisanal sector till 1978. This pattern has been fast changing due to mechanised fishing and about 50 percent of the landings were accounted for by the mechanised sector in the eighties. In the first year of the first Five Year Plan (1951-52) the marine fish production in Tamil Nadu was 45,700 tonnes which increased to 2.81 lakh tonnes in 1983. With the increase in the fish production in the State over the successive plan periods, the exports and foreign exchange earnings have also correspondingly increased from 5,438 tonnes valued at Rs. 14.68 millions in 1967 to 6373 tonnes valued at Rs. 287.84 millions in 1982.

DATA AND METHODS

Since more than 60 percent of the mechanised catch along Tamil Nadu coast was contributed by six major centres such as pudumanikuppam in Madras District, Cuddalore Fisheries Harbour in South Arcot District, Nagapattinam in Thanjavoor District, Mandapam and Rameswaram in Ramana-thapuram District and Tuticorin Fisheries Harbour in Chidambaram District, these centres were purposely selected to study the costs and earnings of mechanised fishing units. In the Tamil Nadu coast, the most popular sizes of the fishing boats are 30' and 32' in length. As in other parts of the country the mechanised boats in Tamil Nadu use largely trawl nets mainly for shrimp fishing. The present study is confined to the boats of 32' size operating trawl nets at all the six major mechanised centres and gillnetters operating at Cuddalore and Nagapattinam Centres.

Two types of data have been used for the investigation namely, detailed fish landings data from the regular survey programme of the Central Marine fisheries Research Institute (CMFRI) and secondly, the data on cost of operation and price of fish collected at selected centres by direct enquiry. The C. M. F. R. I. collects regular data on fish landings and related aspects through a stratified multistage random sampling technique. The mechanised landings of 1985-86 for the selected centres published by the Institute were used for the study. Data on the initial investment of mechanised units at these centres were collected by interviewing the boat owners during 1985-86 with a specially designed schedule. The data on purchase price and present value of hull, engine and gears, seasonwise daily fuel expenses were recorded along with major repairing charges during its course of operation.

Unlike agricultural crops, marine fish production both quantity and quality is highly unpredictable and the risk involved is heavy. The prices appear to vary drastically between species and also from day to day because of the changes in the market demand as well as the highly independent supply of a perishable nature of the commodity. Because of the multippecies character of the fishes, the revenue from catch depends not on Price levels only but also on composition. Any study on cost and earning has to be viewed in this background. Normally the trawl catches were composed of prawns and a number of other varieties of fish. The common species of prawns caught by the trawlers along Tamil Nadu coast were *Penaeus Indicus*, *Penaeus monodon*, *Penaeus semisulcates*, *P. Stylifra* and *M. Dobsoni*. For the present analysis all these varieties were grouped together under the category

of penaeid prawns. The varieties of fish mentioned like Anchovies, Perches, Carangids and Flat fishes were constituted by various sub-species and the revenue realised by them was worked out on the basis of species composition and size of fish.

The actual number of annual fishing days of trawlers varied between 170 to 230 days for different units at the selected centres. Hence an average of 200 fishing days was uniformly considered for all the centres for the present study. Similarly the average number of annual fishing days for gillnetters was 100 at Cuddalore Fisheries Harbour and 120 at Nagapattinam.

Generally wages to the crew members were proportional to the monetary returns as sharing system was followed in these units. The income after deducting the running costs such as fuel expenses, auction charges, jetty rent and other day to day expenses was divided into three shares. The owner of the unit gets two shares for boat and net and the remaining was equally divided among the crew members as wages. The labour cost for the operation of trawlers and gillnetters was computed accordingly.

FINDINGS AND DISCUSSION MARINE FISH LANDINGS OF THE MECHANISED SECTOR IN TAMIL NADU

The marine fish landings from mechanised and non-mechanised boats and their percentage to the total landings of the State during the period 1976 to 1987 are given in Table-1.

The average landings from mechanised boats for the twelve year period 1976 to 1987 was estimated at 108057 tonnes per annum constituting about 43 percent of the total marine fish catch of the State.

It was noticed that while mechanised catch fluctuated between 50359 and 196249 tonnes, the landings from non-mechanised boats varied between 106002 and 102467 tonnes with an average of 140901 tonnes. The contribution of mechanised catch in total landings of Tamil Nadu coast steadily increased from 30 percent for the period 1976-78 to 45 per cent during 1979-81, 50 per cent during 1982-84 and 52 per cent during 1985-87.

CATCH AND REVENUE OF MECHANISED BOATS

The average species-wise catch per trawler per day at different centres of Tamil Nadu coast is given in Table-2. The catch per boat trip was 192 Kg at Pudumanaikuppam, 324 Kg at Cuddalore Fisheries Harbour, 293 kg at Nagapattinam 139 kg at Mandapam, 299 kg at Rameswaram and 324 kg at Tuticorin Fisheries Harbour. Although the trawlers were mainly directed to catch penaeid prawns, it constituted only 7 percent to 12 percent of the catch at various centres. Among the commercially important varieties of fish silver bellies accounted for the maximum catch ranging from 12 percent at Pudumanikuppam to 56 percent at Rameswaram. Anchovies constitutes a considerable portion of catch only at Nagapattinam and Tuticorin Fisheries Harbour.

The average catch and revenue realised per trip by gillnetters at Cuddalore Fisheries Harbour and Nagapattinam is given in Table-3. The catch per boat trip was 406 kg at Cuddalore Fisheries Harbour and 120 kg at Nagapattinam. Sharks (37%), Seer Fish (24%), Tunnies (16%) and Barracudas (13%) were the major varieties caught in the gill netters at Cuddalore Fisheries Harbour. The main varieties caught by gillnetters at Nagap-

attinam was perches (38%) Carangids (17%) and Seer fish (28%). The price per kg realised for different varieties of fish at Cuddalore Fisheries Harbour was comparatively less than the price at Nagapattinam. The gross revenue realised per gillnetter per day was Rs. 2,582 at Cuddalore Fisheries Harbour and Rs. 1,282 at Nagapattinam. About 46 percent of the revenue of gillnetters at Cuddalore and 45 percent at Nagapattinam were realised from the catches of seer fish.

The average daily revenue realised by trawlers at selected centres of Tamil Nadu coast is given in Table-4. The average revenue per trip of a trawler was Rs. 1,762 at Pudumanikuppam, Rs. 2,770 at Cuddalore Fisheries Harbour, Rs. 2,566 at Nagapattinam, Rs. 1,344 at Mandapam, Rs. 2,163 at Rameswaram and Rs. 2,842 at Tuticorin Fisheries Harbour. Penaeid prawns constituted 33 percent (Pudumanikuppam) to 62 percent (Tuticorin Fisheries Harbour) of the revenue realised by trawlers at various centres.

ANNUAL INCOME AND EXPENDITURE

The annual income and expenditure statement for trawlers operating at selected centres along Tamil Nadu coast and gillnetters at Cuddalore Fisheries Harbour and Nagapattinam is worked out and given in Table 5 and 6. Trawlers and gillnetters operating along Tamil Nadu coast were mostly purchased during the period from 1973 to 1985. Due to the cost escalation of fishing boats and continuous replacements of damaged parts by the fishermen in subsequent years there was not much difference in the purchase value and the present resale value of the boats. However the average value of the units at the time of observation was considered in working out the economics of fishing operations. The 32 ft. trawlers were fitted with Ruston

or Leyland engines having horse power ranging from 54 to 88. Each boat is having two nets one with a length of about 100 ft, breadth 42 ft and mesh size of 1 to 4 cm and the other 120 ft length, 50 ft breadth and the mesh size of 2 to 6 cm. As shown in Table-5, the average investment of a trawler ranged from Rs. 1 lakh at Mandapam to Rs. 1.35 lakhs at Cuddalore Fisheries Harbour. With regard to gillnetters the average investment was Rs. 25,000 at Nagapattinam and Rs. 1 lakh at Cuddalore Fisheries Harbour (Table-8).

The components of fishing costs are classified as variable cost and fixed costs. Those cost items which vary with the level of production are considered as variable costs and those which are not related to the level of production constitute the fixed costs. Fixed costs include depreciation of craft, gear and engine and the interest for the investment. Depreciation is worked out on the basis of the expected life of the fishing boat and accessories and the interest at the rate of 15 percent per annum. Even for own money invested, interest is included in the fixed cost as the opportunity cost of the capital. The average expected life of hull and engine of the selected units is considered 5 years and that of gears as 3 years. Depreciation is worked out on the basis of straight line method.

Annual fixed costs of trawlers worked out to Rs. 39,833 at pudumanikuppam, Rs. 48,683 at Cuddalore Fisheries Harbour, Rs. 46,833 at Nagapattinam, Rs. 36,333 at Mandapam, Rs. 45,083 at Rameswaram and Rs. 43,333 at Tuticorin Fisheries Harbour (Table-5). With regard to gillnetters the same being Rs. 37,677 at Cuddalore Fisheries Harbour and Rs. 32,417 at Nagapattinam (Table-6).

The day to day expenses incurred for the working of the boat is termed as operating expenses or variable costs. The expenses on fuel, wages to labour and repairing and maintenance are the major components of variable cost of a mechanised boat. Generally wages are proportional to returns as sharing system is followed in these units. The average annual operating cost of trawlers worked out at Rs. 2,48,800 at Pudumanikuppam, Rs. 3,60,400 at Cuddalore Fisheries Harbour Rs. 3,39,600 at Nagapattinam Rs. 1,90,000 at Mandapam Rs. 3,07,000 at Rameswaram and Rs. 3,91,000 at Tuticorin Fisheries Harbour (Table 5). 41 to 48 percent of the operational costs was constituted by fuel expenses for trawlers at the selected centres. Similarly labour expenses accounted 24 to 32 percent of the operating expenses at various centres.

With regard to gillnetters the operating costs worked out to Rs. 1,47,000 at Cuddalore Fisheries Harbour and Rs. 87,240 at Nagapattinam. The major operating expense for gillnetters was wages constituting about 45 percent of the variable cost in both the centres.

The total cost per annum (fixed + operating cost) for a trawler was worked out at Rs. 2.89 lakhs as against the gross revenue of Rs. 3.5 lakhs at Pudumanikuppam, Rs. 4.09 lakhs as against 5.64 lakhs at Cuddalore Fisheries Harbour, Rs. 3.86 lakhs as against Rs. 5.13 lakhs at Nagapattinam, Rs. 2.27 lakhs as

against Rs. 2.69 lakhs at Mandapam, Rs. 3.52 lakhs as against Rs. 4.33 lakhs at Rameswaram and Rs. 4.34 lakhs as against Rs. 5.68 lakhs at Tuticorin Fisheries Harbour. The operational cost alone constituted 84 to 90 percent of the total annual cost of trawlers operating along the selected centres of Tamil Nadu coast. The net operating income per annum (income over operating expenses) varied from Rs. 78,200 (Mandapam) to Rs. 1.94 lakhs (Cuddalore Fisheries Harbour) in these centres. The annual net profit was obtained by subtracting the total of fixed and variable costs from the gross income of a unit in a year. Minimum net profit of Rs. 41,867 was realised by the trawlers at Mandapam and maximum of Rs. 1.45 lakhs at Cuddalore Fisheries Harbour during 1985-86.

For gillnetters the total cost per annum worked out at Rs. 1.85 lakhs at Cuddalore Fisheries Harbour and Rs. 1.2 lakhs at Nagapattinam. The operational cost alone accounted 80 percent of the total cost at Cuddalore Fisheries Harbour and 73 percent at Nagapattinam. Gross revenue realised was Rs. 2.58 lakhs at Cuddalore and Rs. 1.54 lakhs at Nagapattinam, the net operating income being Rs. 1.11 lakhs and Rs. 66,600 in the former and latter places respectively. The annual net profit of a gillnetter worked out at Rs. 73,533 at Cuddalore and Rs. 34,183 at Nagapattinam.

COMPARATIVE ECONOMIC EFFICIENCY

To highlight the comparative economic efficiency of mechanised fishing units operating at different centres along Tamil

Nadu coast, some of the key economic indicators are worked out on the basis of costs and returns data and given in Table-7 and 8.

Capital turnover ratio indicates the rate at which income was generated for each rupee invested and it was found to be Rs. 2.68 to Rs. 4.73 for trawlers at different centres (Table-7). The same for gillnetters being Rs. 2.58 at Cuddalore Fisheries Harbour and Rs. 1.80 at Nagapattinam. The rate of return to capital for trawlers ranged 57 percent to 126 percent at various centres and for gillnetters it was 55 percent at Nagapattinam and 88 percent at Cuddalore Fisheries Harbour. The pay back period both for trawlers and gillnetters operating along Tamil Nadu coast was found to be less than 1.58 years at all the selected centres.

The expense income ratios are useful to measure the input-output efficiency of any business. They measure the margin by which the value of total production exceeds production costs. Operating cost ratio relates variable costs to gross income, fixed cost ratio relates fixed expenses to gross income and the gross ratio is composed of the fixed expenses plus the operating expenses divided by gross income. The operating cost ratio indicates that 66 to 71 per cent of the gross income of trawlers, at selected centres and 57 percent of the gross income of gillnetters at Cuddalore Fisheries Harbour and Nagapattinam were spent towards operating expenses. Simil-

arly the fixed ratio indicate that 7 to 14 percent of the gross income of trawlers and 15 to 21 percent of the gross income of gillnetters goes towards fixed expenses. It may be noted that in terms of input-output efficiency of trawlers, Cuddalore Fisheries Harbour ranks first followed by Nagapattinam, Tuticorin Fisheries Harbour, Ramoswaram, Pudumanduppam and Mandapam.

Labour efficiency is often measured by dividing total output by units of labour engaged. It may be seen that the average production per manday in terms of quantity ranged from 23 to 54 kg for trawlers fetching Rs. 224 to Rs. 474 and 20 to 68 kg for gillnetters realising Rs. 214 to Rs. 430 at various centres. Maximum wages of Rs. 111 per manday was earned by the labourers of gillnetters operating at Cuddalore Fisheries Harbour. For the operation of trawlers, the labourers received the maximum wages of Rs. 93 per day at Tuticorin and Cuddalore Harbours and minimum of Rs. 43 per day at Mandapam.

Break even point in terms of production and price is useful to determine the economic feasibility of any investment. Break even point is that point at which there won't be any loss or profit. The break even cost at the existing level of production for trawlers ranged from Rs. 6.9 to Rs. 8.2 at various centres, the actual price realised being in the range of Rs. 7.2 to Rs. 9.7. The cost of production

per kg of fish by gillnetters worked out to Rs. 4.54 at Cuddalore Fisheries Harbour and Rs. 8.30 at Naganattinam. The net profit per day of operation at different centres ranged from Rs. 209 to Rs. 725 for trawlers and Rs. 285 to Rs. 735 for gillnetters.

CONCLUSION

The study indicates that the contribution of mechanised boats in the total landings of Tamil Nadu Coast steadily increased from about 30 percent for the triennium of 1976-78 to 52 percent for 1985-87. The catch per boat trip during 1985-86 varied 139kg to 324 kg for trawlers and 120 kg to 406 kg for gillnetters at various centres. Penaeid prawns constituted only 7 to 12 per cent of the trawl catches realising 33 to 62 per cent of the gross revenue at various centres. The average annual cost of production of a trawler ranged from Rs. 2.27 lakhs to Rs. 5.68 lakhs and for a gillnetter from Rs. 1.2 lakhs to Rs. 1.85 lakhs for different centres in which the operational cost alone accounts 73 to 90 per cent. The gross revenue of trawlers during 1985-86 ranged from Rs. 2.69 lakhs to 5.68 lakhs realising the net profit of Rs. 41,867 to 1.45 lakhs at various centres. For gillnetters the gross revenue per annum (1985-86) ranged from Rs. 1.54 lakhs to 2.58 lakhs realising the net profit of Rs. 34,183 to Rs. 73,533. The cost of production per Kg of fish ranged from Rs. 5.9 to Rs. 7.5 for trawlers and Rs. 4.5 to Rs. 8.3 for gillnetters.

The man power employed in the mechanised sector in active fishing alone is estimated to be 20,000 in Tamil Nadu coast. On the basis of the present study the annual income generated by mechanised boats on the shore sides of Tamil Nadu works out to Rs. 1270 million during 1985-86. The diesel requirement for mechanised boats operating along Tamil Nadu coast works out at 4.5 lakhs litres per fishing day. The results revealed that the over dependence on prawn catches for the sustenance of trawlers is slowly being reduced in this region. The prawn catches contribute substantially in the revenue only during a few months of the year. It has almost come to a stage that trawler can survive even without prawn catch. It is ideal to diversify the fishing techniques to reduce the fishing pressure on prawns and aim more towards catching other varieties of quality fishes. Introduction of bigger boats with longer operational range will further help to avoid the conflict between the mechanised and traditional fishermen. The gillnetters are also found to be highly efficient in terms of productivity and profitability even with less number of fishing days. In this context, the conversion of few lesser size boats (30 ft and less) involved in shrimp trawling to efficient gillnetters with mechanised hauling system needs consideration. Pair boat trawling, purse-seining, long lining and trap fishing are other diversified methods which can be adopted by fishermen along Tamil Nadu coast. The fishing Harbours and landing facilities available are not

sufficient to meet the demand of about 3000 mechanised boats in operation in the state. In view of the enormous fishery resource potentialities in the wadge Bank and EEZ of Tamil Nadu Coast, introduction of deep sea vessels to be encouraged and the landing facilities for deep sea fishing vessels and small mechanised boats have to be enlarged.

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TABLE 1.

MARINE FISH LANDINGS BY MECHANISED AND NON-MECHANISED SECTORS IN TAMIL NADU (1976-1987)

Year	Fish landings (Tonnes)		Total
	Mech. Boats	Non-mech. Boats	
1976	63621 (28)	162457 (72)	226078 (100)
1977	50359 (24)	155687 (76)	206046 (100)
1978	81495 (38)	131404 (62)	212899 (100)
1979	101758 (43)	133250 (57)	235008 (100)
1980	94131 (43)	123263 (57)	217394 (100)
1981	106664 (48)	114632 (52)	221296 (100)
1982	127542 (52)	118419 (48)	245961 (100)
1983	146225 (52)	134514 (48)	280739 (100)
1984	116190 (46)	135930 (54)	252120 (100)
1985	95549 (48)	105002 (52)	200551 (100)
1986	117898 (49)	124143 (51)	242041 (100)
1987	195249 (59)	134214 (41)	329463 (100)

Note: Figures in brackets indicate percentage.

TABLE 2.

AVERAGE SPECIES-WISE DAILY CATCH OF A TRAWLER AT SELECTED CENTRES OF TAMIL NADU COAST (1985-86)

Name of Fish	Catch per unit per day (kg)					
	Pudumani-kuppam	Cuddalore	Nagapattinam	Mandapam	Rameswaram	Tuticorin
1. Sharks	11	—	—	—	—	—
2. Rays	6	—	13	7	27	—
3. Cat fishes	4	—	2	—	3	—
4. Anchovies	4	20	60	2	11	58
5. Lizard fishes	19	36	9	—	2	2
6. Thread fin breams	11	30	28	—	—	11
7. Other perches	28	10	14	4	9	6
8. Goat fishes	3	7	2	3	6	4
9. Thread fins	2	—	—	—	—	—
10. Croakers	4	25	29	7	14	16
11. Ribbon fishes	10	—	2	—	—	—
12. Carangids	8	1	7	1	2	26
13. Silver bellies	22	101	55	44	168	141
14. Pomfrets	2	—	1	—	—	—
15. Seer fishes	17	—	—	—	—	2
16. Tunnies	8	—	—	—	—	—
17. Barracudas	3	—	2	—	—	2
18. Flat fishes	1	—	10	1	2	—
19. Penaeid prawns	13	35	27	17	32	39
20. Crabs	2	48	14	4	5	1
21. Cephalopods	6	3	3	4	—	3
22. Others	18	8	15	49	18	13
Total	192	324	293	130	290	324

TABLE 3.

AVERAGE DAILY CATCH AND REVENUE (SPECIES-WISE) REALISED BY
A GILLNETTER AT CUDDALGRE AND NAOAPATTINAM (1985-86)

Name of Fish	Cuddalore		Nagapattinam	
	Catch (Kg)	Revenue (Rs.)	Catch (Kg)	Revenue (Rs.)
1. Sharks	152	608	7	42
2. Perches	—	—	46	414
3. Carangids	18	126	20	160
4. Sour fish	99	1188	33	581
5. Tunnies	65	325	—	—
6. Bill fishes	10	50	—	—
7. Barracudas	51	230	—	—
8. Flat fishes	—	—	7	35
9. Mackerels	4	20	—	—
10. Others	7	35	7	50
Total	406	2582	120	1282

TABLE 4.

AVERAGE DAILY REVENUE REALISED BY A TRAWLER (SPECIES WISE)
AT SELECTED CENTRES OF TAMIL NADU COAST 1953-56

Name of fish	Revenue per unit per day (Rs.)					
	Pudumani-kuppam	Cuddalore	Nagapattinam	Manapam	Samesaram	Tuticorin
1. Sharks	66	—	—	—	—	—
2. Rays	21	—	46	42	10	—
3. Cat fishes	19	—	10	—	14	—
4. Anchovies	19	77	255	7	35	192
5. Lizard fishes	87	158	40	—	—	9
6. Thread fin breams	70	192	179	—	9	70
7. Other perches	150	80	112	32	72	48
8. Goat fishes	12	27	8	12	25	16
Thread fins	16	—	—	—	—	—
10. Croakers	17	209	242	58	117	134
11. Ribbon fishes	40	—	8	—	—	—
1. Carangids	66	8	56	8	10	208
1. Silver bellies	44	202	110	88	336	282
14. Pomfrore	33	—	17	—	—	—
15. Seer fishes	300	—	—	—	—	36
16. Tunnies	50	—	—	—	—	—
17. Barracudas	27	—	18	—	—	19
18. Flat fishes	8	—	53	6	11	—
19. Penaeid prawns	585	1675	1215	765	1440	1755
20. Crabs	8	192	56	16	20	4
21. Cephalopods	60	30	30	40	—	30
22. Others	54	20	110	270	60	40
Total	1752	2770	2565	1344	2163	2842

AVERAGE ANNUAL INCOME AND EXPENDITURE STATEMENT OF TRAWLERS AT SELECTED
CENTRES OF TAMIL NADU COAST (1985-86)

Item	Pudumanikuppam	Cuddalore	Negapattinam	Mandapam	Rameswaram	Tuticorin
1. Initial Investment (Rs)						
a. Hull	30,000	40,000	40,000	30,000	40,000	35,000
b. Engine	70,000	85,000	80,000	60,000	75,000	75,000
c. Gears	10,000	10,000	10,000	10,000	10,000	10,000
Total	1,10,000	1,35,000	130,000	1,00,000	1,25,000	1,20,000
2. Annual Fixed Cost (Rs)						
a. Depreciation						
(i) Hull & Engine (20%)	20,000	25,000	24,000	18,000	23,000	22,000
(ii) Gears (33%)	3,333	3,333	3,333	3,333	3,333	3,333
b. Interest for investment	16,500	20,250	19,500	15,000	18,750	18,000
Total	39,833	48,583	46,833	36,333	45,083	43,333
3. Operating costs (Rs)						
a. Fuel	120,000	160,000	140,000	80,000	130,000	170,000
b. Labour	60,800	115,400	107,600	51,600	73,000	115,000
c. Auction commission	28,000	38,000	36,000	19,000	34,000	40,000
d. Repair & maintenance	24,000	37,000	42,000	25,000	40,000	50,000
e. Other expenses	16,000	10,000	14,000	15,000	30,000	16,000
Total	248,800	360,400	339,600	190,600	307,000	391,000
4. Total costs (Rs) (2+3)	288,633	408,983	386,433	226,933	352,083	434,333
5. Gross revenue (Rs)	350,400	554,000	513,000	268,800	432,600	568,400
6. Net operating income (Rs) (5-3)	101,600	193,600	173,400	78,200	125,600	177,400
7. Net profit (Rs) (6-2)	61,767	145,017	126,567	41,867	80,517	1,34,067

TABLE 6.

ANNUAL INCOME AND EXPENDITURE STATEMENT OF GILLNETTERS
ALONG TAMIL NADU COAST (1985-86)

Item	Cuddalore	Nagapattinam
1. Initial Investment (Rs)		
a) Hull	30,000	25,000
b) Engine	50,000	40,000
c) Gears	20,000	20,000
Total :	1,00,000	85,000
2. Annual fixed Cost (Rs.)		
a) Depreciation		
i) Hull & Engine (20%)	16,000	13,000
ii) Gears (33%)	6,667	6,667
iii) Interest for investment	15,000	12,750
Total :	37,667	32,417
3. Operating costs (Rs.)		
a) Fuel	32,000	24,000
b) Labour	66,400	39,240
c) Auction commission	12,000	4,800
d) Repair & Maintenance	22,000	12,000
e) Other expenses	15,000	7,200
Total :	1,47,000	87,240
4. Total costs (2+3) (Rs.)	1,84,667	1,19,057
5. Gross revenue (Rs.)	2,58,200	1,53,840
6. Net operating income (Rs.) (5-3)	1,11,200	60,000
7. Net profit (Rs.) (6-2)	73,533	34,183

TABLE 7-

KEY ECONOMIC INDICATORS (TRAWLERS)

	Pudu.	Cud.	Nag.	Man.	Ram.	Tuti.
1. Capital turn over ratio	3.18	4.10	3.95	2.68	3.46	4.73
2. Rate of return to capital (%)	81	1 22	1 12	57	79	126
3. Pay back period (years)	1.29	0.78	0.84	1.58	1.17	0.75
4. Operating ratio	0.71	0.65	0.66	0.70	0.70	0.69
5. Fixed ratio	0.11	0.09	0.09	0.14	0.11	0.07
6. Gross ratio	0.82	0.74	0.75	0.84	0.81	0.76
7. Average production per manday (Kg)	32	54	49	23	50	54
8. Value of production per mandy (Rs.)	292	462	428	224	361	447
9. Average wages per manday (Rs.)	51	96	90	43	61	96
10. Break even price (Rs/Kg)	7.5	6.3	6.6	8.2	5.9	6.7
11. Break even price to cover operating expenses (Rs/Kg)	6.5	5.6	5.8	6.9	5.1	6.0
12. Actual price realised per Kg of fish (Rs.)	9.1	8.5	8.8	9.7	9.2	11.8
13. Gross revenue per day (Rs.)	1752	2770	2585	1344	2103	2042
14. Net operating income per day (Rs.)	508	968	867	391	628	887
15. Net profit per day (Rs.)	308	725	633	209	403	670

TABLE B.

KEY ECONOMIC INDICATORS (GILLNETTERS)

Item	Cuddalore	Nagapattinam
1. Capital turn over ratio	2.58	1.80
2. Rate of return to capital (%)	88	55
3. Pay back period (years)	1.04	1.58
4. Operating ratio	0.57	0.57
5. Fixed ratio	0.15	0.21
6. Gross ratio	0.72	0.78
7. Average production per manday (kg)	68	20
8. Value of production per manday (Rs.)	430	214
9. Average wages per manday (Rs.)	111	65
10. Break even price (Rs/Kg)	4.45	830
11. Break even price to cover operating expenses (Rs/Kg)	3.62	0.00
12. Actual price realized per Kg of fish (Rs)	6.36	10.00
13. Gross revenue per day (Rs)	2582	1282
14. Net operating income per day (Rs)	1113	555
15. Net profit per day (Rs)	735	285