

CHAPTER - 5

ANALYSIS OF COST & REVENUE TRENDS AT CALCUTTA-HALDIA PORT

5.1 Introduction

Cost consciousness has become a byword in management literature. In discussions on financial management, the focal factors to growth, profitability and continued survival of any enterprise are cost and revenue. Profits - which may be described as the excess of revenue over cost - may be increased either by increasing revenues or by decreasing costs. If management strategy were to lead to simultaneous increase in costs and revenues, the latter would have to rise at a rate higher than costs in order to make rising profits possible. Since in many enterprises there are limitations on increase of tariffs, greater emphasis has come to be laid on cost reduction. Raj remarks that a prerequisite for effective financial management is a "clear understanding of costs and their behaviour".¹

In context of the financial management of ports, structures and behaviour of costs retain this importance. The revenues of ports may be stepped up in two ways i.e. by escalating tariffs and docking charges, and/or by attracting more traffic and rising port turnovers. Increase of tariffs may not be possible in cases where a number of ports lie in geographical contiguity and are in competition. The result of increased tariffs in one port would then reduce the volume of traffic it handles, eventually resulting in decline in revenue. The problem may be examined citing Calcutta-Haldia Port as an example. In respect to Calcutta-Haldia Port, the nearest port of Paradip is situated fairly close, at 380 kilometres from Calcutta and 280 kilometres from Haldia. The best way for the CHP to increase revenues would be through reducing, rather than raising tariffs, with the hope of capturing extra traffic from neighbouring ports. Other things being equal, a port with lower tariffs might expect to attract more traffic. This method could conceivably be feasible for commodities that handle more cheaply, so that the tariff-reduction benefit could be passed on to port-users. But the real danger would arise in case of commodities whose handling-costs might be so high that a reduction in charges would make their handling uneconomical.

From the above discussion, it is clear that of the two elements controlled internally by the port management to augment port surplus, i.e. tariffs and costs, the former could be increased only within limits. Cost reduction would thus appear as the best possible way to achieve financial objectives. The need for economies in costs becomes even more pronounced in context of the pressure of mobilising internal resources to the maximum extent possible for meeting port development expenditure. But it should also be noted that indiscriminate cost reduction may result in more harm than good. To examine this context, a study of cost structures and cost behaviour at Calcutta-Haldia port is being conducted here, over the period from 1980-81 to 1992-93.

5.2 The Structure of Costs

Port costs are broadly classified into operating costs and non-operating costs, in accordance with the Major Port Trust Act, 1963. Operating costs include costs of pilotage, dredging, berthing, cargo handling and storage, while non-operating costs cover interest charges on capital and property taxes not associated with port operations. Non-operating costs at the major ports are known as 'finance & miscellaneous cost'.

Cost structure at Calcutta Port over the period from 1980-81 to 1992-93 is presented in Table 5.1. A cursory glance at the table indicates the continuous increase in total port costs over the period, registering an index-increase of 196 points. Although operating costs increased in absolute terms from Rs.83.19 crores to Rs.237.17 crores, their percentage to total costs declined from 84.6 percent in 1980-81 to 81.6 percent in 1992-93, with the lowest percentage being recorded in 1991-92, at 78.5 percent. Although volumes were considerably lower, non-operating costs showed a sharper index-increase of 253 points over the period, from Rs.15.18 crores in 1980-81 to Rs.53.61 crores in 1992-93. The percentage share of these in total cost varied between 15.4 percent to 21.5 percent, but generally increased.

Table 5.1
Cost Structure of Calcutta-Haldia Port (1980-81 to 1992-93)

Year	Operating Cost			Non-operating Cost			Total Cost		
	Rs.crores	%	Index	Rs.crores	%	Index	Rs.crores	%	Index
1980-81	83.19	84.6	100	15.18	15.4	100	98.37	100	100
1981-82	90.44	83.5	109	17.87	16.5	118	108.31	100	110
1982-83	95.60	79.8	115	24.25	20.2	160	119.85	100	122
1983-84	100.76	82.9	121	20.82	17.1	137	121.58	100	124
1984-85	109.27	79.3	131	28.44	20.7	187	137.71	100	140
1985-86	123.73	83.3	149	24.72	16.7	163	148.45	100	151
1986-87	130.14	83.1	156	26.42	16.9	174	156.56	100	159
1987-88	142.90	79.1	172	37.73	20.9	249	180.63	100	184
1988-89	152.42	80.9	183	35.87	19.1	236	188.29	100	191
1989-90	165.32	83.1	199	33.59	16.9	221	198.91	100	202
1990-91	179.45	81.0	216	41.97	19.0	276	221.42	100	225
1991-92	202.00	78.5	243	55.36	21.5	365	257.36	100	262
1992-93	237.17	81.6	285	53.61	18.4	353	290.78	100	296

Source: Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

Examination of time-trends in the table shows that port costs at Calcutta Port have tended to increase sharply in recent years, and that one reason for this has been the sharp escalation in non-operating costs. Increases in these, in turn, have been particularly concentrated in two years, namely 1987-88 and 1991-92. This reflects the position observed in the previous chapter, regarding rising debt-servicing charges on borrowings for capital investment which account for the growth in non-operating costs at the Port. Operating costs too, which had grown at a more moderate rate in the earlier years, show an acceleration in the last five years of the study.

Table 5.2

Cost Structure of Selected Major Ports (1980-81 to 1992-93).

Year	Bombay				Madras				Visakhapatnam			
	op. cost	Non-op. cost	% of op. cost	% of Non- op. cost	op. cost	Non-op. cost	% of op cost	% of Non- op. cost	op. cost	Non-op. cost	% of op. cost	% of Non- op. cost
1980-81	57.88	14.58	79.88	20.12	26.01	12.93	66.80	33.20	29.16	13.42	68.48	31.52
1981-82	67.98	14.07	82.85	17.15	30.21	13.12	69.69	30.31	31.66	12.58	71.56	28.44
1982-83	78.35	9.14	89.55	10.45	35.46	7.30	82.93	17.07	34.06	12.89	72.55	27.45
1983-84	81.55	17.37	82.44	17.56	38.97	7.86	83.22	16.78	36.34	13.15	73.43	26.57
1984-85	97.27	37.43	72.21	27.79	46.35	9.45	83.06	16.94	40.57	14.13	74.17	25.83
1985-86	106.43	27.93	79.21	20.79	50.71	11.24	81.86	18.14	46.04	17.05	72.98	27.02
1986-87	116.80	24.38	82.73	17.27	55.34	13.62	80.25	19.75	54.38	20.11	73.00	27.00
1987-88	135.74	31.87	80.99	19.01	60.01	16.21	78.73	21.27	62.23	22.71	73.26	26.74
1988-89	149.18	39.91	78.89	21.11	66.21	16.48	80.07	19.93	72.82	24.75	74.63	25.37
1989-90	161.32	50.18	76.27	23.73	73.21	15.61	82.34	17.66	69.80	20.74	77.09	22.91
1990-91	170.91	33.99	83.41	16.59	79.35	17.78	81.59	18.41	80.60	24.87	72.42	23.58
1991-92	193.84	70.10	73.44	26.26	90.56	21.57	80.66	19.34	98.00	20.61	82.62	17.38
1992-93	219.68	85.58	71.79	28.21	NA	NA	73.04	26.96	NA	NA	76.29	23.71

Source : Compiled and calculated from Administration Reports and Annual Accounts of Bombay, Madras and Visakhapatnam Ports for the above years

A comparison of cost structures between major ports is provided by comparing figures and ratios for operating and non-operating costs for each selected port in Table 5.2. Comparison of ratios reveals that non-operating costs at Calcutta Port have been generally lower than at other ports under study, although tending to increase over time. The ratio of operating to non-operating costs at Calcutta Port in 1992-93 stood at 4.42:1, considerably higher than that for Bombay, Madras and Visakhapatnam Ports, and indicative of this relatively lower incidence of non-operating costs. The table also shows up the similarity between Bombay, Madras and Visakhapatnam Ports *vis-a-vis* their cost structures. Ratios of operating to non-operating costs at Bombay decreased from 3.97:1 in 1980-81 to 2.55:1 in 1992-93 because of sharp escalation in the latter due to payment of large sums as interest on loans. Over the same period however, the ratios for Madras Port changed in the opposite direction from 2.01:1 to 2.71:1. The picture at Visakhapatnam was similar, with the ratios increasing even more substantially from 2.17:1 to 3.22:1.

Considering time trends in these ratios, what are most observable are similarities between Calcutta and Bombay Ports which are both general ports, on the one hand, and between Madras and Visakhapatnam on the other. While ratios of operating to non-operating costs have declined at both Calcutta and Bombay, wider fluctuation is in evidence in the latter port. The principal reasons for fluctuations in operating and non-operating costs are the variability in contributions from current revenues to reserves for replacement, rehabilitation and modernisation of capital assets, the reserve for development, and repayment of interest/principal amounts against loans and other contingencies. For Madras and Visakhapatnam, the ratios of operating to non-operating costs have been increasing, but the increase in Visakhapatnam is steadier. Noting that non-operating costs at ports are in a large part composed of taxes and interest charges on capital investments, it would appear that these have escalated to a sharper degree at Calcutta and Bombay than at the ports at Madras and Visakhapatnam, and that improvement of operational performance at both later-named ports has been sharper.

Summing up, the differential patterns observed in the structure of capital would be explained by differences in indebtedness of ports. Bombay, Madras and Visakhapatnam Ports had higher debt obligations against capital projects and this entailed a relatively higher proportionate component of non-operating costs in their capital structure, on account of the obligatory interest payments. Calcutta Port, in comparison, had a capital structure less weighted by the burden of loans.

5.2.1 Operating Costs

Operating costs are further categorised into five subgroups based on functional classification. These functional subgroups separately cover costs attached to (a) port and dock facilities; (b) cargo handling and storage; (c) railway working; (d) rentable land and buildings; and (e) management and general administration.

The activity-wise breakup of operating costs at Calcutta Port over the study-period is shown in Table 5.3. At the commencement of the study in 1980-81, aggregate operating costs at the Port were of the order of Rs.83.19 crores. Of these, in order of magnitude, costs on port and dock facilities amounted to Rs.33.13 crores (39.82%); cargo handling and storage costs to Rs.21.47 crores (25.81%); costs on management and general administration to Rs.18.46 crores (22.19%); the costs associated with the working of port railways amounted to Rs.8.16 crores(9.81%); while maintenance and other costs on the Port's rentable land and buildings stood at Rs.1.97 crores (2.37%).

Table 6.3

Activity-wise Operating Cost of Calcutta-Haldia Port

(1980-81 to 1992-93)

(Rs. crores)

Year	Port and Dock Facilities			Cargo Handling and storage			Railway Workings			Rentable Land and buildings			Management and general Admn.			Total Operating Cost		
	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index
1980-81	33.13	39.82	100	21.47	25.81	100	8.16	9.81	100	1.97	2.37	100	18.46	22.19	100	83.19	100	100
1981-82	35.42	39.16	107	22.54	24.92	105	9.40	10.39	115	1.95	2.16	99	21.13	23.37	114	90.44	100	109
1982-83	35.21	36.83	106	23.96	25.06	112	11.95	12.50	146	2.19	2.29	111	22.30	23.32	121	95.60	100	115
1983-84	39.68	39.38	120	25.85	25.65	120	9.59	9.52	118	3.03	3.01	154	22.61	22.44	122	100.76	100	121
1984-85	42.13	38.56	127	26.47	24.22	123	11.00	10.07	135	3.05	2.79	155	26.62	24.36	144	109.27	100	131
1985-86	49.13	39.71	148	28.42	22.97	132	11.11	8.98	136	2.81	2.27	143	32.26	26.07	175	123.73	100	149
1986-87	51.70	39.73	156	29.06	22.33	135	11.62	8.93	142	4.28	3.29	217	33.48	25.72	181	130.14	100	156
1987-88	55.80	39.05	168	31.49	22.04	147	14.22	9.95	174	4.44	3.11	225	36.95	25.85	200	142.90	100	172
1988-89	57.41	37.66	173	35.32	23.17	164	13.81	9.06	169	4.57	3.00	232	41.31	27.11	224	152.42	100	182
1989-90	63.85	38.62	193	36.83	22.28	172	14.92	9.02	183	5.40	3.27	274	44.32	26.81	240	165.32	100	199
1990-91	66.04	36.80	199	42.30	23.57	197	14.45	8.05	177	6.22	3.47	316	50.44	28.11	273	179.45	100	216
1991-92	83.53	41.35	252	42.55	21.06	198	14.70	7.28	180	7.79	3.86	395	53.43	26.45	289	202.00	100	243
1992-93	105.93	44.66	320	47.24	19.92	220	17.03	7.18	209	8.45	3.56	429	58.52	24.68	317	237.17	100	285

Source: Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

Total operating costs at CHP increased uninterruptedly to Rs.237.17 crores in 1992-93, an overall increase of Rs.153.98 crores over the thirteen years of the study, with much of the escalation concentrated in the later period. The index-increase in just the last four years of the study by 86 index-points highlights this factor.

The sharpest increase in both absolute and proportionate terms has been in costs of port and dock facilities, the cumulative escalation over the study-period being Rs.72.80 crores, or 220 index-points, against index-increase in overall operating costs by 185 index-points. The share of these costs in total operating costs has also increased from an initial 39.82 percent in 1980-81 to 44.66 percent in 1992-93. Although cargo handling and storage costs have increased continuously by Rs.25.77 crores over a similar period, their index-increase is more moderate at 120 index-points, which has brought down their proportion in overall operating costs to 19.92 percent in 1992-93, from the initial 25.81 percent. This is because the rate of escalation in other operating costs outweighed increases in cargo handling and storage costs.

The share of costs on port railways in overall operating costs declined from 9.81 percent in 1980-81 to 7.18 percent in 1992-93 although they rose in absolute terms by Rs.8.87 crores, since the pace of their increase was slower than that of overall operating costs. The index-increase on this count was slower too, at 109 points. Costs on rentable land and buildings increased more than four-fold over the period from Rs.1.97 crores to Rs.8.45 crores, with index-increase of 329 points. However such costs have a modest share in overall operating costs at CHP and as such their share in total operating costs increased to 3.56 percent in 1992-93 from 2.37 percent in 1980-81. The time-trends in these two elements of operating costs *viz.* port railways and rentable properties, were also more variable than in those preceding.

A constantly occurring element of operating costs at ports arises from the costs of running and administering the port. Management and general administration costs at Calcutta Port escalated sharply to Rs.58.52 crores in 1992-93 from the initial Rs.18.46 crores in 1980-81, the cumulative increase in absolute terms being Rs.40.06 crores, and the index-increase standing at 217 points. However this escalation and the absolute magnitudes attached to it served to moderate the increase in the proportion of management and general administration costs to overall operating costs from 22.19 percent to 24.68 percent over the study-period. Management and general administration do not constitute a separate activity; rather, the costs under these are cumulative for all other port activities mentioned. Better comprehension of this characteristic pattern of management and general administration costs would obtain if they were apportioned in proportion with the activities from which they accrue, and this exercise is undertaken in the next chapter.

It is interesting to note on the whole that there has been broad stability in the operating cost structure of CHP over the major part of the study-period. This can be inferred from the fact that no significantly changed trends in the proportions within the operating cost structure exist. Costs of port and dock facilities for example oscillated around just over a third of total operating costs, increasing beyond this only in the last two years; cargo handling and storage costs were more variable around a fifth of total operating costs; railway working costs hovered around one tenth; costs on rentable land and buildings varied between 2 and 4 percent; and costs on management and general administration between 22 and 28 percent.

For purposes of comparative analysis, operating cost structures at other selected major ports are presented in Table 5.4. At Bombay Port the proportion of costs on port and dock facilities in

the total operating cost structure was more or less stable over the period under study; on the other hand, proportions of cargo handling and storage costs and of railway working showed marginal decline over time. Against this, the proportionate costs of rentable land and buildings, and management and general administration costs rose marginally.

Table 5.4
Operating Cost Structure in Selected Major Ports
(1980-81 to 1992-93)

Port/Year	Port and Dock Facilities (%)	Cargo Handling & Storage (%)	Railway Workings (%)	Rentable Land & Building (%)	Management & Gen. Admn. (%)
Bombay					
1980-81	21.85	47.10	8.64	6.10	16.31
1983-84	21.08	49.21	7.05	6.67	15.99
1986-87	22.20	49.04	6.53	5.89	16.34
1989-90	20.60	47.11	6.37	8.05	17.87
1991-92	21.74	44.34	6.11	8.80	19.01
Madras					
1980-81	18.68	48.91	6.35	1.26	24.80
1983-84	17.86	50.47	6.08	1.39	24.20
1986-87	18.85	43.82	8.19	1.19	27.95
1989-90	18.26	41.87	7.20	1.26	31.41
1991-92	17.59	41.08	7.94	1.08	32.31
Visakhapatnam					
1980-81	27.21	41.17	10.83	3.60	17.19
1983-84	26.75	39.16	10.90	4.32	18.87
1986-87	23.65	41.03	13.13	4.04	18.15
1989-90	25.92	32.66	16.32	4.77	20.33
1991-92	25.38	32.96	17.90	5.25	18.51

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Respective Ports for the above years

At Madras Port, proportionate costs on port and dock facilities, railway working and rentable land and buildings did not deviate much over the period. However, cargo handling and storage costs dwindled from 48.91 percent in 1980-81 to 41.08 percent in 1991-92, and costs of management and general administration rose in proportion from 24.80 percent to 32.31 percent. Visakhapatnam Port showed an almost similar pattern, with relatively stable proportions for costs on port and dock facilities, and rentable land and buildings. Management and general administration costs also maintained stability in proportions. Cargo handling and storage costs however gradually declined in relative terms from 41.17 percent in 1980-81 to 32.96 percent in 1991-92. On the other hand, railway working costs gradually increased from 10.83 percent of total operating costs to 17.90 percent over the same period.

The analysis here shows there is some uniformity in operating cost structure at the major ports selected for this study, which include Calcutta-Haldia Port. As is the case at CHP, costs of port and dock facilities, cargo handling and storage, and management and general administration are the major components in the operating cost structure of the other selected major ports. However, costs on port and dock facilities which alone contribute nearly 40 percent to operating costs at CHP, account for much lower proportionate shares at the other three major ports. A similar coalescing of Bombay, Madras and Visakhapatnam on the one hand, and variation at CHP on the other, is also found for cargo handling and storage costs. In terms of proportionate management and general administration costs, CHP resembles Madras more closely, while Bombay is placed similarly to Visakhapatnam.

5.2.1(i) Traffic and Operating Costs

Operating surplus is the excess of operating income over operating cost. If increases in cost are equi-proportionate to increase in traffic, this may have no adverse effect on operating surplus. Conversely, when cost increases are more than would be warranted by increased traffic, the operating surplus may decline. A study only of operating costs in isolation would therefore be partial. It has already been observed that operating costs had shown increasing trends over the study. These have now to be related to the volumes of traffic handled, in order to evaluate port operations in terms of their cost-efficiency. This phase of the present study might commence from the comparison of changes in operating cost to changes in traffic volume, shown in Table 5.5.

Table 5.5
Traffic and Operating Cost in Calcutta-Haldia Port
(1980-81 to 1992-93)

Year	Traffic (in million tons)	Op. Cost (Rs.crores)
1980-81	9.51	83.19
	100	100
1981-82	9.93	90.44
	104	109
1982-83	10.69	95.60
	112	115
1983-84	10.47	100.76
	110	121
1984-85	10.52	109.27
	111	131
1985-86	12.13	123.73
	128	149
1986-87	12.07	130.14
	127	156
1987-88	13.07	142.90
	137	172
1988-89	14.23	152.42
	150	183
1989-90	14.69	165.32
	154	199
1990-91	15.24	179.45
	160	216
1991-92	16.00	202.00
	168	243
1992-93	18.34	237.17
	193	285

Note : *Italic figures indicate indices*

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

Over the study-period, operating costs escalated from Rs.83.19 crores in 1980-81 to Rs.237.17 crores in 1992-93, registering close to three-fold growth against two-fold increase in traffic. It is interesting also, to note that even when traffic stayed almost equal between consecutive years, operating costs appreciated considerably. It can be seen from the table that the traffic volume at CHP has risen more substantially towards the end of the study-period, having remained relatively stable in the initial years. Against this, the trend for operating costs shows the earlier-remarked propensity for these to rise even when traffic was stable, and sharp escalation when traffic volumes began to increase.

It would however be erroneous to conclude from the preceding analysis, that mounting port costs are a phenomenon peculiar to Indian major ports alone. Costs of port operations have escalated everywhere and an observation made in this regard by the US Maritime Administration reflects in the case of American ports, too, that "costs of all elements of port planning, development, operation and maintenance have increased drastically in recent years"².

A fairly good comparative reflection of the above relationship can be obtained from considering the operating costs at CHP and the other major ports in tonnage-terms. Table 5.6 shows average operating costs per tonne of traffic handled at selected major ports over the period from 1980-81 to 1992-93. At Calcutta Port, average operating cost per tonne rose from Rs.87.48 at the start of the period to Rs. 129.32 per tonne in 1992-93. The respective increase in average operating costs was from Rs.34.09 to Rs.75.52 at Bombay, from Rs.25.06 to Rs.39.51 at Madras and from Rs.28.81 to Rs.46.60 at Visakhapatnam, over the equivalent period. The analysis identifies CHP as a high-cost port. Bombay, Madras and Visakhapatnam are much better-placed, with Madras Port showing the lowest averages in costs of traffic handled. Madras has furthermore maintained more stability in average costs over the period. Visakhapatnam and Bombay on the other hand show an increasing trend which is more substantial at Bombay. Cost increases at Bombay have tended to congregate in the later years of the study, while these are more evenly dispersed for CHP.

5.2.1.(ii) Operating Cost by Type

Previous analysis of growth trends in port costs in relation to changes in traffic has revealed the rapidity with which operating costs have increased. The next task for a port administration, logically, would be to redress this. It therefore becomes imperative for the present study to identify areas in port operations where cost control could be effectively exercised. With this purpose in mind, analysis is undertaken of operating costs by type i.e. wages and salaries, stores, fringe benefits to port employees, and general expenses.

A breakup of operating costs by type for Calcutta-Haldia Port between 1980-81 and 1992-93 is presented in Table 5.7. Salaries and wages are seen to have constituted the major component in operating costs, their share generally varying between 45 percent and 55 percent over the period of study, with lowered share after 1989-90. They are followed in proportionate magnitude by general expenses, and expenditure on stores, which fluctuated between 25 percent and 44 percent, and between 5 percent and 15 percent, respectively. It is interesting also to note the steady proportionate decline in expenditure on stores from 14.76 percent in 1980-81 to 5.89 percent in 1992-93.

Salaries and wages have earlier been identified as the principal component of port operating costs. At CHP, these were at the absolute level of Rs.44.85 crores in 1980-81, and rose by 139 percent to Rs.107.16 crores by the end of the study. Over the initial years, this escalation was relatively moderate,

Table 5.6

Cost Per Tonne of Traffic Handled in selected Major Ports (1980-81 to 1992-93)

Year	Calcutta Port	Bombay Port	Madras Port	Visakhapatnam Port.
	Rs.	Rs.	Rs.	Rs.
1980-81	87.48	34.09	25.06	28.81
1981-82	91.08	35.04	26.47	28.81
1982-83	89.43	33.76	29.38	33.33
1983-84	96.24	34.14	31.35	36.78
1984-85	103.87	36.11	32.80	36.62
1985-86	102.00	43.78	27.94	28.94
1986-87	107.82	46.57	27.98	36.16
1987-88	109.33	45.90	26.30	40.49
1988-89	107.11	50.85	27.75	35.75
1989-90	112.54	58.13	30.58	33.05
1990-91	117.75	59.14	32.13	41.50
1991-92	126.25	73.82	35.90	45.54
1992-93	129.32	75.52	39.51	46.60

Source: Compiled and Calculated from Administration Reports and Annual Accounts of respective ports for the above years

followed alternately by faster acceleration and then a slowdown in the mid-years, and then more rapid increase toward the end of the study. Much of such increase and particularly of the jumps therein was the effect of wage revisions and the payment of arrears on account. It need also be noted that in most years under review, expenditure on salaries and wages constituted more than half of the total operating costs. For CHP at least, this supports established opinion that Indian ports are labour-intensive.

Proportionate expenditure on the provision relating to the fringe benefits provided to port employees is observed to have remained almost static over the study, notwithstanding the moderate absolute increase of Rs.8.59 crores. This works out to the fast relative increase of 191 index-points which is higher than in the wages and salaries component. Considering that the two categories are related in terms of their common reference to the port workforce, this would serve to indicate that CHP has high and escalating labour-costs of operation, possibly in variance with other ports. This assumes greater significance in view of the finding (*in Ch. 3*) that payrolled staff at CHP have in fact declined over the study-period.

An exceptional trend is however shown in expenditure on port stores, where costs show a marked decline in percentage terms over the study-period. In absolute terms, these costs initially escalated but then fell to lower levels. It is however the behaviour of general expenses which is of major interest, since these pertain to non-workforce related components of operating costs. General expenses at CHP have increased phenomenally by Rs.81.38 crores or 377 percent, from the beginning of the study-period. Thus their proportionate share in the port's operating costs has also increased from around a quarter of total operating costs, to nearly half. It can also be observed in the table, that the increase has been concentrated in the latter part of the study-period, particularly since 1989-90. Considering the

Table 5.7

Operating Cost by Type of Calcutta-Haldia Port (1980-81 to 1992-93)

(Rs. crores)

Year.	Salaries & Wages			Stores			Fringe Benefits			General Expenses			Total Op. Cost		
	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index
1980-81	44.85	53.91	100	12.28	14.76	100	4.49	5.40	100	21.57	25.93	100	83.19	100	100
1981-82	46.70	51.63	104	15.28	16.89	124	4.35	4.82	97	24.11	26.66	112	90.44	100	109
1982-83	49.47	51.74	110	14.01	14.66	114	4.70	4.91	105	27.42	28.69	127	95.60	100	115
1983-84	50.43	50.04	112	17.06	16.94	139	4.33	4.30	96	28.94	28.72	134	100.76	100	121
1984-85	58.10	53.17	130	13.82	12.65	113	4.62	4.23	103	32.73	29.95	152	109.27	100	131
1985-86	63.05	50.96	141	15.31	12.37	125	7.22	5.84	161	38.15	30.83	177	123.73	100	149
1986-87	65.82	50.58	147	13.40	10.30	109	7.44	5.71	166	43.48	33.41	202	130.14	100	156
1987-88	74.62	52.22	166	11.84	8.29	96	7.39	5.17	165	49.05	34.32	227	142.90	100	172
1988-89	81.68	53.59	182	14.83	9.73	121	9.70	6.36	216	46.21	30.32	214	152.42	100	183
1989-90	90.32	54.63	201	12.61	7.63	103	8.73	5.28	194	53.66	32.46	249	165.32	100	199
1990-91	93.25	51.96	208	11.91	6.64	97	13.92	7.76	310	60.37	33.84	280	179.45	100	216
1991-92	97.34	48.19	217	12.73	6.30	104	10.60	5.25	236	81.33	40.26	377	202.00	100	243
1992-93	107.16	45.18	239	13.98	5.89	114	13.08	5.52	291	102.95	43.41	477	237.17	100	285

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

overall high-cost nature of the port, it can therefore be seen that high operating costs at CHP are related to both workforce and non-workforce related aspects of its operations. While the rise in the former has been high, a part of this has been the result of payscale revisions and the associated arrear payments. Although the port has accompanied this by an effort to trim its labour-force, a similar effort to control general expenses is not apparent. Thus the major operational area where cost-economy needs to be achieved is the latter class of expenditure.

5.2.2 Non-operating Cost

Non-operating costs at ports comprise mainly interest payable on loans, retirement gratuities, ex-gratia payments in lieu of bonuses and any book adjustments relating to previous years. Interest on loans include interest charges on all categories of Government loans, rupee loans, ways and means loans, and loans from the International Bank for Reconstruction and Development (IBRD), also called the World Bank. As such, all costs not directly incumbent to port operations fall within this category. Comment has already been made earlier that non-operating costs at Calcutta Port have assumed a greater proportion over time, rising at exorbitantly high rate particularly since 1987-88. Item-wise breakup of non-operating costs for Calcutta Port is now presented in Table 5.8, to identify particular areas where this exorbitant increase has taken place.

The table shows that retirement gratuities, ex-gratia payments and so on, which have risen considerably, have occupied a major share in non-operating costs from the commencement of the study-period. The quantum of such benefits payable to port employees increased continuously from Rs.8.71 crores in 1980-81 to Rs.20.23 crores in 1990-91, the rise of Rs.11.52 crores in absolute terms corresponding to the high index increase of 132 points. This has pushed up their relative share in total non-from around 35 percent to nearly half of total non-operating costs at the port. Over the equivalent period, the increase in interest payable on loans was Rs.2.91 crores, an index-increase of 37 points, while other non-operating costs rose by Rs.3.29 crores, or 43 points. Escalation in retirement and other benefits to employees is particularly marked towards the end of the study-period of the table, which is also borne out by reference to the schedules to the revenue accounts (Annual Accounts) of CPT, which show sufficient evidence of this peaking, both in gratuity payments and commuted pensions, particularly between 1989-90 and 1990-91, where the increase in payments on these two lumpsum heads alone was Rs.4.55 crores, or as much as 54 percent of the total increase in non-operating costs observed in the table.

Analysis of Revenue Receipts and Trends

5.3 Introduction

Major ports derive their revenues from the various services they provide to both cargo and ships. This income is dependent on two important variables, namely, rate structure of the port concerned, and quantum and composition of the traffic handled by it. Changes in these variables, either in isolation or combination, influence the flow of revenues.

Port services thus fall into the two categories of ship-related services and cargo-related services. Ship-related services include maintenance of accessible navigational channels through dredging operations (particularly at a riverine port like CHP), provision of buoys, pilotage, and the services of

Table 5.8

Item-wise Non-Operating Cost of Calcutta-Haldia Port (1980-81 to 1992-93)

Year										(Rs. crores)		
	Interest on Loans			Retirement Benefits			Others			Total Non-op. Cost		
	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index
1980-81	NA			NA			NA			15.18	100	100
1981-82	NA			NA			NA			17.87	100	118
1982-83	7.84	32.33	100	8.71	35.92	100	7.70	31.75	100	24.25	100	160
1983-84	8.09	38.86	103	7.82	37.56	90	4.91	23.58	64	20.82	100	137
1984-85	8.43	29.64	108	11.68	41.07	134	6.33	29.29	108	28.44	100	187
1985-86	8.70	35.19	111	10.65	43.08	122	5.37	21.73	70	24.72	100	163
1986-87	9.64	36.49	123	11.41	43.19	131	5.37	20.32	70	26.42	100	174
1987-88	9.85	26.11	126	11.34	30.05	130	16.54	43.84	215	37.73	100	249
1988-89	9.68	26.99	123	14.14	39.42	162	12.05	33.59	156	35.87	100	236
1989-90	9.98	29.71	127	15.47	46.06	178	8.14	24.23	106	33.59	100	221
1990-91	10.75	25.61	137	20.23	48.20	232	10.99	26.19	143	41.97	100	276
1991-92	NA	-	-	NA	-	-	NA	-	-	55.36	100	365
1992-93	NA	-	-	NA	-	-	NA	-	-	53.61	100	353

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

tugs, launches, etc. Cargo-related services include cargo handling, the provision of port labour, cranes, forklift trucks and other material-handling equipment, and storage services in the form of sheds and warehouses, etc.

For this underlying reason, port tariffs can also be classified into two broad groups, namely, charges levied on vessels, and charges levied on cargo. Income from vessels, is derived from port dues, pilotage charges, tug-hire and berthing charges and the like. Against cargo operations, income derives from the levy of wharfage charges, handling charges, and hire charges for cranes and other port-gear. Port dues and pilotage fees are levied under the Indian Ports Act, 1908. All the other charges on vessel and cargo are levied under provisions of the Major Port Trusts Act, 1963.

Most major ports like Calcutta, Bombay, Madras, Visakhapatnam, Paradip and Mormugao also operate port railways, thus providing railway facilities in the port area at their own cost. Against this, these ports receive terminal charges provision of terminal facilities and haulage charges for haulage by rail within the port area.

Port-pricing is one of the most important but so-far neglected problem-areas in the operation of a port³. Port charges constitute a major source for port income. Erroneous pricing policies will reflect inevitably upon most port operations. For instance, low storage charges might encourage port-users to keep their cargoes in storage at port warehouses for longer periods, thus leading to congestion of these facilities, to the detriment of the port. Conversely, unreasonably high and therefore uncompetitive storage charges might lead to a loss in traffic to nearby ports. Much care has therefore to be taken to set port tariffs at reasonable levels.

5.3.1 Revenue Structure : Operating & Non-Operating Categories

As is the case with port expenditure, port revenues can likewise be classified into operating and non-operating categories. Besides deriving income from the various port provided, major ports also generate revenue from non-traditional sources which bear no relation to operations. Thus while revenue realised from various services rendered to vessel and cargo traffic at a port is termed as operating income, revenue from non-port operations such as the interest-earnings on securities, and investments is classified as non-operating, or 'finance and miscellaneous' income.

Analysis of revenue structure at Calcutta Port for the period from 1980-81 to 1992-93 is made in Table 5.9, which reveals the relative extent to which CHP is dependent on operating and non-operating sources of revenue. It is clear seen that operating revenue has contributed the lion's share in port income over the period of study, ranging relatively, at between 84.93 and 95.78 percent of total port receipts. In absolute terms, the rise in operating revenue over the study-period has amounted to Rs.210.53 crores, an index increase of 218 points. However, in relative shares, the share of operating revenues has been more stable, in fact achieving a relative decline over the period in percentage terms. This marks, therefore, an increase in the relative contribution made by non-operating revenues to port income, the percentage contribution being credibly high in 1991-92 for reasons analysed later [*in Ch.6*]. Considering growth of operating and non-operating revenues, it is seen that operational performance has considerably improved in later years, as seen in the burgeoning of operating revenues, and improvement in the quantum of non-operating income has also taken place because of increasing interest receipts. On the whole, the revenue position of the port has improved considerably towards the end of the study. The cumulative improvement over the study-period, in index-terms, is of 230 points.

Table 5.9
Revenue Receipts : Operating & Non-operating at Calcutta-Haldia Port
(1980-81 to 1992-93)

Year	(Rs. crores)								
	Operating Revenue			Non-operating Revenue			Total Revenue		
	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index
1980-81	96.68	95.12	100	4.96	4.88	100	101.64	100	100
1981-82	109.12	95.32	113	5.36	4.68	108	114.48	100	113
1982-83	125.35	95.15	130	6.39	4.85	129	131.74	100	130
1983-84	113.41	95.78	117	5.00	4.22	101	118.41	100	116
1984-85	144.07	93.18	149	10.54	6.82	212	154.61	100	152
1985-86	136.67	93.27	141	9.86	6.73	199	146.53	100	144
1986-87	150.28	89.46	155	17.71	10.54	357	167.99	100	165
1987-88	154.20	92.02	159	13.38	7.98	270	167.58	100	165
1988-89	206.49	90.57	214	21.50	9.43	433	227.99	100	224
1989-90	223.57	90.39	231	23.78	9.61	479	247.35	100	243
1990-91	244.32	90.18	253	26.59	9.82	536	270.91	100	267
1991-92	256.62	84.93	265	45.52	15.07	918	302.14	100	299
1992-93	307.21	91.58	318	28.25	8.42	570	335.46	100	330

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

In comparison to operating revenue, non-operating revenues displayed a tendency to oscillation between a low of Rs.4.96 crores and a high value of Rs.45.52 crores. In index-terms, the overall increase over the time-frame of study has been 470 points, but the tendency towards fluctuation continues to prevail, with the highest index increase relative to the base-year at 818 points in the penultimate year 1991-92. The reason behind such increase, which has already been noted in the preceding paragraph, is an increase in interest receipts. However the fluctuation inherent in the series on non-operating revenues would also indicate instability of the investment flows that yield non-operating revenue. Peaking of interest receipts in particular years would imply a significant amount of short-term deposits in the CHP's investment portfolio. Another cause in peaking behaviour reflects book adjustments made in respect of revenue items relating to previous years.

A comparison of revenues at CHP with the pattern at other selected major ports over the study-period are presented in Table 5.10. Madras and Visakhapatnam resemble Calcutta Port in that these three ports all draw a relatively minor portion of their income from non-operating sources, despite the tendency for non-operating revenues to show more buoyancy in recent years, particularly at Madras. Percentage shares of operating revenue in total revenue at Madras Port varied between 73.70 percent and 95.25 percent, the declining percentages in later years occurring because of increased non-operating income from interest on port investments. At Visakhapatnam Port, the range of proportionate percentages was between 79.20 percent and 96.32 percent over the study-period. Compared to these two major ports, CHP percentages for operating revenues appear to have invariably been larger.

Table 5.10

Revenue Pattern in Selected Major Ports
(1980-81 to 1992-93)

Year	Bombay		Madras		Visakhapatnam	
	% of op. Revenue	% of Non- op. Revenue	% of op. Revenue	% of non- op. Revenue	% of op. Revenue	% of non- op. Revenue
1980-81	83.05	16.95	89.82	10.18	92.55	7.45
1981-82	81.00	19.00	92.93	7.07	94.53	5.47
1982-83	80.61	19.39	89.41	10.59	90.62	9.38
1983-84	78.74	21.26	90.13	9.87	93.78	6.22
1984-85	80.11	19.89	95.25	4.75	95.26	4.74
1985-86	79.01	20.99	92.39	7.61	96.32	3.68
1986-87	74.15	25.85	93.02	6.98	94.34	5.66
1987-88	75.95	24.05	90.28	9.72	87.24	12.76
1988-89	76.23	23.77	89.97	10.03	79.20	20.80
1989-90	78.16	21.84	88.33	11.67	94.04	5.96
1990-91	88.19	11.81	84.64	15.36	84.74	15.26
1991-92	80.60	19.40	80.54	19.46	85.87	14.13
1992-93	83.37	16.63	73.70	26.30	86.47	13.53

Source : Compiled and Calculated from Administration Reports and Annual Accounts of respective ports for the above years

However the port of Bombay has a significant proportion of non-operating revenues in total receipts over most years, the percentage share varying between 11.81 percent and 25.85 percent. Maximal shares occurred during the mid-years of the study, after which the percentage has tended to decline, unlike at other ports. Receipts of interest income from Government securities have been primarily responsible for the generally higher proportionate shares of non-operating revenues in the financial analysis for Bombay.

The analysis shows scope for improvement in non-operating income at Calcutta and Visakhapatnam ports, following the lead of Bombay and more recently, Madras. It might also be said that much of port revenue still derives from operations. More non-operating revenues would accrue to Calcutta Port if idle funds that may exist at any point of time were invested in securities and other short-term forms of investment.

5.3.1(i) Operating Revenue

The revenue originating from the operations at a port may be further subdivided into the four functional categories of

- i) port and dock charges;
- ii) cargo handling and storage charges;
- iii) railway earnings; and
- iv) estate rentals.

Table 5.11

Activity-wise Operating Income of Calcutta-Haldia Port
(1980-81 to 1992-93)

Year	Port and Dock charges			Cargo Handling and storage			Railway Earnings			Estate Rentals			Total Op. Revenue		
	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index	Rs.	%	Index
1980-81	33.87	35.03	100	53.79	55.64	100	3.74	3.87	100	5.28	5.46	100	96.68	100	100
1981-82	39.13	35.86	116	58.43	53.55	109	4.63	4.24	124	6.93	6.35	131	109.12	100	113
1982-83	37.16	29.65	110	75.22	60.01	140	6.66	5.31	178	6.31	5.03	120	125.35	100	127
1983-84	36.79	32.44	109	63.30	55.82	118	7.29	6.42	195	6.03	5.32	101	113.41	100	117
1984-85	43.47	30.17	128	86.95	60.35	162	5.91	4.10	158	7.74	5.38	147	144.07	100	149
1985-86	49.35	36.11	146	71.62	52.40	133	6.54	4.79	175	9.16	6.70	173	136.67	100	141
1986-87	51.94	34.56	153	82.32	54.78	153	7.34	4.88	196	8.68	5.78	164	150.28	100	155
1987-88	61.52	39.90	182	73.72	47.81	137	9.95	6.45	266	9.01	5.84	171	154.20	100	159
1988-89	61.78	29.92	182	124.24	60.17	231	9.53	4.62	254	10.94	5.30	207	206.49	100	214
1989-90	63.67	28.48	188	136.00	60.83	253	10.40	4.65	278	13.50	6.04	256	223.57	100	231
1990-91	70.07	28.68	207	146.26	59.86	272	12.07	4.94	323	15.92	6.52	302	244.32	100	253
1991-92	79.69	31.05	235	142.98	55.72	266	14.48	5.64	387	19.47	7.59	369	256.62	100	265
1992-93	105.90	34.47	313	157.76	51.35	293	17.99	5.86	481	25.56	8.32	484	307.21	100	318

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

An activity-wise breakup of operating income for Calcutta Port over the study-period is presented in Table 5.11. Cargo handling and storage charges are seen to have contributed over half of the total operating revenues accruing to the Port, except for one exception in the year 1987-88 when the percentage had fallen to 47.81, reflecting a decline of Rs.8.60 crores. In absolute terms, earnings from this area of port activity has risen almost three-fold by Rs.103.97 crores, with great acceleration particularly after 1988-89. Prior to this, greater instability had existed in the quantum of revenues realised.

Revenues related to cargo operations are followed in importance by port and dock charges which have generally accounted for just under a third or more of total operating revenues for CHP. The absolute trend has been steadier than that of cargo handling and storage charges, with uniform increase after 1983-84. The total magnitude of increase has been Rs.72.03 crores over the study-period, or 213 index-points, which is faster than in the previous category. The sharpest annual increase by Rs.26.21 crores in realisations is noticed in the final year of the study, which however is not reflected as much in percentage terms because of parallel increase in other operating revenues.

Estate rentals and railway earnings respectively occupy third and fourth place in order of importance, although not much separates them. Income from estate rentals has increased sharply by Rs.20.28 crores from Rs.5.28 crores in 1980-81 to Rs.25.56 crores in 1992-93, with the index-increase being 384, but their share in total operating revenue has risen only from 5.46 percent to 8.32 percent in relative terms. The increase in railway earnings over the same period has been by Rs.14.25 crores, reflected in index-increase of 381, which is thus almost of the same degree. The increase has been strongest in 1992-93.

Comparing all revenue items for CHP, the increase in revenues derived from port and dock charges, estate rentals, and railway earnings is seen to have outstripped that of cargo handling and storage related revenues, resulting in a decline in the relative share of the latter from 55.64 percent to 51.35 percent. It may also be noted that sustained absolute increase of earnings from the category is of more recent origin vis-a-vis the study-period, having occurred after the year 1987-88. Before that year, the revenues under this head show marked oscillations.

In sum, cargo handling and storage charges at CHP continue to provide a dominant share of port income, despite the decline over time in their proportion. Port and dock charges also contribute a significant part of total operating income - the two functional categories together accounting for more than 88 percent of the cumulated income from operating revenues over the 13-year period of study. The remaining 11.51 percent of the port's operating income is from railway earnings and estate rentals, where there has been a mild increase over time in the annual proportions.

Coming now to trends in the gross figures for operating income in the table, these are also seen to have increased, except for slumps in 1983-84 and in 1985-86 when they decreased by Rs.11.94 crores and Rs.7.4 crores respectively, relative to the immediately preceding year. Operating income has risen more than two-fold over the study-period, with the quantum of increase at Rs.210.53 crores, or 218 index points.

The spasmodic nature of the rise is also to be noted. Between 1980-81 and 1987-88, the increase was around 59 index-points over seven years, from Rs.96.68 crores to Rs.154.20 crores. But in the very next year, this shot up by 55 points to Rs.206.49 crores. The increase thereafter has been by large leaps and bounds till the final year of the study, because of increased traffic at both CDS and HDC.

Table 5.12
Composition of Operating Income in Selected Major Ports
(1980-81 to 1992-93)

Port/Year Facilities. (%)	Port and Dock and Storage (%)	Cargo Handling (%)	Railway Earnings Rentals (%)	Estate
Bombay				
1980-81	14.29	71.97	1.95	11.79
1983-84	14.56	63.29	1.26	20.89
1986-87	16.52	66.33	1.17	15.98
1989-90	16.66	78.09	1.01	4.24
1991-92	16.74	75.69	1.00	6.57
Madras				
1980-81	15.82	77.37	6.17	0.64
1983-84	17.84	75.77	5.71	0.68
1986-87	16.37	76.05	7.25	0.33
1989-90	15.09	74.77	9.03	1.11
1991-92	19.02	69.54	10.15	1.29
Visakhapatnam				
1980-81	20.46	71.60	5.35	2.59
1983-84	17.34	70.06	6.31	6.29
1986-87	18.82	68.02	9.11	4.05
1989-90	20.87	65.63	10.64	2.86
1991-92	19.88	62.57	15.00	2.55

Source : Compiled and Calculated from Administration Reports and Annual Accounts of respective ports for the above years.

Comparison with other selected major ports in terms of the structure of operating revenue is presented in Table 5.12. The share of cargo handling and storage revenues is over a third of total operating revenues for all such ports, which is relatively greater than their share at CHP. A decrease in percentage trend, which is sharper than that at Calcutta, is noticed for Madras and Visakhapatnam ports. The relative contribution of cargo handling and storage charges at Bombay, although fluctuating, shows more constancy. Receipts from port and dock charges have increased at Bombay and Madras ports, although their relative contribution is much lower than at CHP. The trend for Madras shows the sharpest proportionate rise, in marked contrast to Visakhapatnam where the relative share, although high, oscillates rather than decreasing. Revenues from cargo handling and storage, and from port and dock facilities, taken jointly, show declining percentage trends at Madras and Visakhapatnam, similar to the trend at CHP, with sharpest proportionate decline at Madras. At Bombay, the joint share has tended to increase. As a result, earnings from port railways and estate rentals have jointly increased in proportionate terms at all three ports. The share of railway earnings is highest at Visakhapatnam and has been growing, as at Madras and CHP, although Bombay shows a very marginal decline. Estate rentals, which expanded rapidly in relative terms at CHP, also show marginal proportionate rise at Madras. At Visakhapatnam and Bombay ports, these have tended to decline, with the decline at Bombay being very marked, compared to the very high percentage contributions in the initial years.

As far as the structure of operating revenue is concerned therefore, all four major ports selected for study by and large appear to have shown similar patterns. Cargo handling and storage charges have been the major constituent of operating income and their share was more than 70 percent in 1980-81 except in case of CHP where it was 55.64 percent for that year. Similarly, income from port and dock charges occupy second position within operating income at all four major ports. These two categories of revenue together constituted more than 80 percent of total operating income throughout

the entire period, reaching 90 percent in peak years. Relative contributions from railway earnings occupy third position at all ports except at Bombay, where the contribution of these to total port revenues has remained marginal. Income from estate rentals, which has traditionally been considerable at Bombay and is increasing at CHP, is found to be insignificant for the other two ports.

5.3.1(ii) Traffic and Operating Revenue

The continuous increase over the period of study in operating income at CHP has already been commented upon. However, better insight into revenue trends at the port would be gained if these were studied in relation to the traffic handled. Towards this purpose, volumes of traffic handled and total operating income at Calcutta Port between 1980-81 to 1992-93 are presented in Table 5.13 below.

Table 5.13
Traffic and Operating Revenue in Calcutta-Haldia Port
(1980-81 to 1992-93)

Year	<i>Traffic</i>		<i>Op. Revenue</i>	
	<i>million tonnes</i>	<i>Index</i>	<i>million Rs.</i>	<i>Index</i>
1980-81	9.51	100	966.8	100
1981-82	9.93	104	1091.2	113
1982-83	10.69	112	1253.5	127
1983-84	10.47	110	1134.1	117
1984-85	10.52	111	1440.7	149
1985-86	12.13	128	1366.7	141
1986-87	12.07	127	1502.8	155
1987-88	13.07	137	1542.0	159
1988-89	14.23	150	2064.9	214
1989-90	14.69	154	2235.7	231
1990-91	15.24	160	2443.2	253
1991-92	16.00	168	2566.2	265
1992-93	18.34	193	3072.1	318

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

Generally speaking, operating income is expected to vary directly with changes in the volume of traffic handled, provided port tariffs remain constant and there is no change in the composition of traffic in favour of either high-rated or low-rated commodities. Given these favouring conditions, more traffic at a port will augment operating revenues, and vice-versa. At Calcutta Port however, although there had been more or less continuous growth in operating income except in 1983-84 and 1985-86 when traffic decreased marginally, the operating income of the port rose by Rs.210.53 crores or 218 percent over the period of study, against the considerably lower increase in the physical volume of traffic handled by 8.83MT, or just 93 percent. In the two years when traffic registered a fall, this was not associated with any consequent reduction in operating revenue. For instance, in 1986-87, when traffic declined by 0.06MT over the previous year, operating income at CHP rose by Rs.13.61 crores.

The rapid escalation of operating revenues at the port would therefore appear to be explained by changes in traffic structure in favour of high-rated cargo, and changes in the tariff structure itself, rather than in terms of increase in traffic alone. This appears especially to have been the principal reason behind the phenomenal growth in operating income after 1985-86, and is further explored below. The increase in tonnages handled has been much steadier, except for the leap of 2.34MT seen in the last year of study. In index-terms, against the increase of tonnages over the 13 years of the study by 93 points, operating income at CHP has increased by 218 points, of which as much as 177 point growth is concentrated in the eight-year period between 1985-86 and 1992-93. Over the same eight-year period, the growth in tonnages is by only 65 index-points.

To facilitate analysis of the above variational trends in terms of per-unit earnings, and to enable comparison of these between ports, the average operating revenues per tonne of traffic handled in selected major ports over the study-period are presented below in Table 5.14.

Table 5.14
**Revenue Per Tonne of Traffic Handled in
selected Major Ports (1980-81 to 1992-93)**

Year	Calcutta		Bombay		Madras		Visakhapatnam	
	Rs.	Index	Rs.	Index	Rs.	Index	Rs.	Index
1980-81	101.66	100	52.50	100	38.09	100	36.23	100
1981-82	109.89	108	53.73	102	37.77	99	36.31	100
1982-83	117.26	115	53.21	101	39.30	103	40.07	111
1983-84	108.32	106	51.95	99	41.33	109	44.12	122
1984-85	136.95	135	56.32	107	57.63	151	53.84	149
1985-86	112.67	111	67.26	128	50.24	132	43.43	120
1986-87	124.51	122	65.48	125	49.06	129	51.89	143
1987-88	117.98	116	60.93	116	44.54	117	52.67	145
1988-89	145.11	143	75.94	145	51.00	134	52.67	145
1989-90	152.19	150	80.50	153	54.72	144	57.98	160
1990-91	160.31	158	81.24	155	58.56	154	60.90	168
1991-92	160.39	158	97.35	185	64.13	168	62.70	173
1992-93	167.51	165	125.61	239	74.67	196	72.27	199

Source : Compiled and Calculated from Administration Reports and Annual Accounts of respective ports for the above years

The table reveals that of all selected major ports, CHP had the highest operating revenue yield per tonne of traffic. Average realisation had risen from Rs.101.66 in 1980-81 to Rs.167.51 in 1992-93, registering escalation by 64.77 percent over the 13-year period of study. Bombay Port occupied second place in terms of the magnitude of operating revenue per tonne of traffic handled but also recorded the highest percentage rate of increase of 139.26 percent, with average revenue realisation rising from Rs.52.50 per tonne in 1980-81 to Rs. 125.61 in 1992-93. Greatest escalation in average tonnage-rates is observed in 1988-89 (Rs.15.01) and 1992-93 (Rs.28.26). CHP also shows a coincident maximal increase in 1988-89 (Rs.27.13). Madras and Visakhapatnam Ports also showed increasing trends in average operating revenue realisation per tonne over the study-period, and overall escalation

of 96.04 percent (Madras) and 99.48 percent (Visakhapatnam) over the 13-year period from 1980-81 to 1992-93. Compared to CHP and Bombay which handle general cargo, however, the rate of escalation in average tonnage rates at visakhapatnam and Madras was more moderate.

The reason just stated for high rates of operating revenue per tonne of traffic handled at CHP and Bombay port is because of considerably higher proportion general cargo in the cargo structure at these two ports, which fetches them more revenue than bulk cargo. As such they are able to generate higher operating revenue per tonne of traffic. It is to be noted here that at Falta and Kulpi, free-trade zones [FTZ] were envisaged which would attract more industrial units to the port, and would ultimately lead to growth of traffic at CHP.

Table 5.16
Revenue from Cargo Handling and Storage per tonne of Traffic Handled
at Calcutta-Haldia Port during 1980-81 to 1992-93

Year	Cargo Handling & Storage (Rs. crores)	Traffic (million tons)	Revenue per tonne (Rs.)
1980-81	53.79 100	9.51 100	56.56 100
1981-82	58.43 109	9.93 104	58.84 104
1982-83	75.22 140	10.69 112	70.36 124
1983-84	63.30 118	10.47 110	60.46 107
1984-85	86.95 162	10.52 111	82.65 146
1985-86	71.62 133	12.13 128	59.04 104
1986-87	82.32 153	12.07 127	68.20 121
1987-88	73.72 137	13.07 137	56.40 100
1988-89	124.24 231	14.23 150	87.31 154
1989-90	136.00 253	14.69 154	92.58 164
1990-91	146.26 272	15.24 160	95.97 170
1991-92	142.98 266	16.00 168	89.36 158
1992-93	157.76 293	18.34 193	86.02 152

Source : Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Haldia Port for the above years

Table 5.15 makes a comparison of cargo-handling and storage revenues (in both total and average terms) vis-a-vis traffic handled for CHP. The table amply demonstrates that increasing revenue trends are much ahead of the increase in traffic, leading to the overall growth in average tonnage-rates realised. Over the 13-year period of study, index-increase in cargo-handling and storage revenues has been by 193 index points, against a 93 point index increase in traffic handled, leading to a 52 point increase in terms of average revenues per tonne of traffic. It is also noted that whereas cargo-handling and storage revenue figures tended to oscillate somewhat in the initial years, they are seen to be consistently increasing in the later period. Traffic increase is on the other hand consistent throughout the period.

5.4 The Analysis of Trends

Although port profits could theoretically be increased either by increasing revenues or by decreasing costs, in practice, there are limitations on increase of tariffs and greater emphasis must be placed on cost reduction. Revenues of ports could be stepped up by escalating tariffs and docking charges, and/or by attracting more traffic and rising port turnovers. For CHP to increase revenues, the best way would be through reducing, rather than raising tariffs, in order to capture extra traffic from neighbouring ports. Indiscriminate cost reduction can however result in more harm than good.

Port costs at CHP have tended to increase sharply, with steep escalation in non-operating costs, even though these have been lower than at other major ports. What are most observable are similarities between Calcutta and Bombay, as general ports, on the one hand, and between Madras and Visakhapatnam on the other. Differential patterns observed in the structure of port capital are attributable to differences in indebtedness-levels. With Bombay, Madras and Visakhapatnam Ports having higher interest repayments against capital projects, non-operating costs contributed a higher component to their capital structure, while CHP had a capital structure less weighted by interest outgo.

Operating cost structure of CHP has more or less been stable. Costs of port and dock facilities, cargo handling and storage, and management and general administration contribute a major part to the operating cost structure of major ports. However mounting port costs are a worldwide phenomenon. In the years under review, salaries and wages comprised more than half of port operating costs, showing that CHP operations are labour-intensive. The overall high-cost nature of the port is related to both workforce and non-workforce related operations.

Port services comprise ship-related services and cargo-related services. Most major ports also operate port railways, and receive terminal charges and haulage charges in return. Port charges contribute a major component of port income, but port-pricing is still a neglected problem-area. With reference to non-operating income, peaking of interest receipts indicates a significant presence of short-term deposits in the CHP's investment portfolio, and partially, book adjustments made in respect of revenue items relating to preceding years. There is scope for improvement in non-operating income at CHP, following the lead of Bombay. Much of CHP revenue still derives from operations, but more non-operating revenues would accrue to the Port if idle funds were invested in securities and other short-term instruments.

Cargo handling and storage charges and port and dock charges provide a dominant share of CHP operating income. The remainder is from railway earnings and estate rentals. Of all selected major ports, CHP had the highest operating revenue yield per tonne of traffic, followed by Bombay, because of the considerably higher proportion of general cargo handled which yields higher revenue than bulk

cargo. Traffic increase is consistent throughout the period.

Taking account of the trends observed, it would be meaningful to explore the relationships that relate port revenues to port costs. As implied by this analysis, much of the linkage is through the capital structuring of a port, keeping in mind that a port is extremely capital-intensive in operation, and creation of port assets absorbs large doses of loan-capital, leading to an escalating burden of interest charges within port expenditure. Thus the cost-revenue relationship will be explored in the next chapter, both from the viewpoint of operating and non-operating components.

References:

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