

## CHAPTER - 7

### OPERATIONAL PERFORMANCE & PROFITABILITY AT CALCUTTA-HALDIA PORT

#### 7.1 Port Operations & Returns

As mentioned earlier in chapter 2, the Major Ports Commission (1970) had recommended a minimum return to be earned on capital deployed at the major ports, although for a long time the established practice was to match revenue with costs, thus earning negligible returns. The recommendation reflected a realisation that ports should function as viable commercial undertakings and should generate their own revenues to finance at least a part of their growing development and replacement needs. It was also suggested that the ports earn adequate net surpluses to make timely payment of interest charges on the large Government loans secured by them, and to be able to repay the loan principal at maturity without default.

Operational performance and profitability at selected major ports form the focus of the present chapter, with a view to identifying the financial strengths and weaknesses at major ports and their underlying reasons, and to offer remedial suggestions.

#### 7.2 Financial Performance

Analysis of financial performance is made as a first step, of data pertaining to the consolidated financial results of all major ports and the share of Calcutta-Haldia Port in these between 1975-76 to 1992-93, followed by analysis of operating and non-operating incomes, expenditures and surplus at selected major ports between 1980-81 and 1992-93.

Analytical interpretation of the figures is made by recourse to the following standard financial ratios:

- i) operating ratio;
- ii) return on capital employed;
- iii) net surplus margin;
- iv) capital employed turnover;
- v) fixed assets turnover

The above ratios are defined and explained below for clarity:

The *operating ratio* indicates the percentage of operating income consumed by operating cost. Viewed alternately, it is an indicator of the implicit proportion of the port's non-operating costs like interest on loans, property taxes and port development expenses and financial needs. The ratio is computed by dividing operating cost by operating income to yield operating cost per unit income. A high operating ratio is undesirable as it would leave too meagre an amount of operating income to cover non-operating cost and would, consequently, render impossible the accumulation of internal resources. A

low operating ratio on the other hand, would leave a considerable operating surplus to meet interest obligations, etc. and still provide for residual internal resource accumulation.

The *return on capital employed* makes reference to net surplus earned as a proportion of capital funds applied at the port. Alternatively, it can be defined as the ratio of net port surplus to working capital plus assets. Capital funds applied at a port include loan capital from all sources, internally-sourced capital funds, and accumulated debt-servicing charges which represent funds owed but not repaid which are therefore channelled into port operations. As such, the ratio shows the efficiency of capital-use by a port. A high ratio indicates fruitful application of capital funds to both working capital and to asset acquisition and use. Conversely, a low ratio indicates infructuous use.

The *net surplus margin* establishes a relationship between the port's net surplus - which is the excess of port income over expenditure - and total income, and indicates port efficiency in terms of *port-profitability in relation to total port income*. The ratio is computed by dividing net surplus by total income, and thus measures the ability of the port to turn each rupee of total income into net surplus. If the net surplus margin is not adequate, the port will not be able to achieve a satisfactory return on capital employed.

The *turnover on capital employed* assesses income of a port on the basis of its investment of capital, and can be computed by dividing total port income by capital employed at the port. The ratio is a measure of how effectively capital employed has been utilised in generating income, and thus indicates the rate at which the port generates income for every rupee of capital employed. The higher this turnover ratio, the more efficient the utilization of capital funds placed at the disposal of the port may be deemed to have been.

The *turnover on fixed assets* is a ratio that measures the degree of efficiency with which fixed assets are employed at a port. Fixed assets are generally those assets acquired for use over relatively long periods of time and not ordinarily for resale, for example, land, buildings, plant, machinery, patents and copyrights. A high turnover ratio on these indicates a high degree of efficiency in asset utilization. Computation of this ratio is made by dividing operating income by the value of gross fixed assets at a port. A point to be noted here is that when fixed assets at a port are old and therefore depreciated, turnover ratios on fixed assets tend to be high because the denominator in the ratio - i.e. value of fixed assets - is very low.

In the analysis below, ratios for return on capital employed, and turnovers on capital employed and fixed assets employed are indicated and analysed only for Calcutta-Haldia Port. Data on these ratios were not available for Bombay, Madras and Visakhapatnam ports. The other ratios i.e. operating ratios and net surplus margins, and analyses thereof pertain to all selected major ports. Breakup figures between Calcutta and Haldia are identified under CDS and HDC.

## 7.2.1 Financial Results

Table 7.1 presents financial results for all selected major ports for the period from 1975-76 to 1992-93, along with the computed shares of CHP relative to consolidated financial figures for all major ports. Consolidated income for all major ports is seen to have risen more sharply than expenditures, the index increase for the former being 888 points over the 18-year period, relative to index increase by 715 points in the latter. It is seen also that gross surplus of all major ports has increased 21-fold over the

**Table 7.1**  
**Financial Results of all Major Ports and the Share of**  
**Calcutta-Haldia Port from 1975-76 to 1992-93**

*(Rs. crores)*

Year	Income				Expenditure				Surplus/Deficit	
	All Major Ports	Index	Cal. Port	Index	All Major Ports	Index	Cal. Port	Index	All Major Ports	Cal. Port
1975-76	179.72	100	55.68 30.98	100	155.20	100	54.02 34.81	100	24.52	1.66 6.77
1976-77	198.02	110	59.15 29.87	106	173.29	112	55.64 32.11	103	24.73	3.51 14.19
1977-78	226.27	126	59.33 26.22	107	223.76	144	65.06 29.08	120	2.51	-5.73
1978-79	263.74	147	71.46 27.09	128	244.13	157	74.66 30.58	138	19.61	(-)3.20
1979-80	334.24	186	96.20 28.78	173	283.20	182	86.39 30.50	160	51.04	9.81 19.22
1980-81	381.22	212	101.65 26.66	183	337.05	217	98.38 29.19	182	44.17	3.27 7.4
1981-82	433.17	241	114.48 26.43	206	370.72	239	108.31 29.22	200	62.45	6.17 9.88
1982-83	497.67	277	131.74 26.47	237	391.46	252	119.85 30.62	222	106.21	11.89 11.19
1983-84	494.97	275	118.41 23.92	213	417.45	270	121.58 29.12	225	77.52	-3.17
1984-85	681.98	379	154.61 22.67	278	512.24	330	137.71 26.88	255	169.74	16.90 9.96
1985-86	702.74	391	146.53 20.85	263	561.65	362	148.44 26.43	275	141.09	-1.91
1986-87	777.72	433	167.96 21.60	302	616.63	397	156.58 25.39	290	161.09	11.38 7.06
1987-88	821.38	457	167.59 20.40	301	694.02	447	180.64 26.03	334	127.36	-13.05
1988-89	1050.74	585	227.99 21.70	409	757.30	488	188.29 24.86	349	293.44	39.70 13.53
1989-90	1141.63	635	247.37 21.67	444	851.97	549	198.92 23.35	368	289.66	48.45 16.73
1990-91	1258.19	700	270.92 21.53	487	929.86	599	221.42 23.81	410	328.33	49.50 15.08
1991-92	1447.38	805	302.14 20.87	543	1099.56	708	257.36 23.41	476	347.82	44.78 12.87
1992-93	1775.27	988	335.46 18.90	602	1264.42	815	290.78 23.00	538	510.85	44.68 8.75

**Note** : *Italic Figures indicate percentages*

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

ii) *Major Ports of India : Statistical Profile of different years*

eighteen years, from Rs. 24.52 crores in 1975-76 to Rs. 510.85 crores in 1992-93. Taking 1980-81 as the base year (as in tables included in the preceding chapters), consolidated port surpluses over the reduced period of thirteen years also show a large increase by 1056 index points. Steady growth and acceleration in port revenues ahead of the rate at which port expenditure has grown, reflecting good port management, is the primary reason behind this and is a good indicator of the progress of the port sector in India.

Shifting focus now to CHP, it is seen that net surplus balance at the port also increased by Rs.43.02 crores or 2592 index points between 1975-76 and 1992-93, which is greater than the recorded increase of net surplus balances at all major ports. Although such large growth in net surplus balances may appear quite commendable, comparative growth at CHP relative to other major ports in percentage terms appears less satisfactory, the reason being that port income for CHP has increased more slowly than at all major ports, relative to port expenditure. Index figures indicate index increase of 502 points in port income at CHP against a comparable figure of 888 points for all major ports.

Percentage share of surplus at CHP relative to the consolidated surpluses of all major ports, which stood at 6.77 percent in 1975-76 rose to 8.75 percent in 1992-93. In 1992-93, the share of income at CHP relative to that of all major ports was 18.9 percent, against 23.0 percent share of consolidated port expenditure. It may also be noted that percentage share of income at CHP has declined continuously relative to income of all major ports, from 30.98 percent in 1975-76 to only 18.9 percent in 1992-93. Since out of the total income of CHP, the maximum contribution originates from Haldia Port, this would place CDS in an even worse position.

Trends in revenues and costs and cost-revenue relationships for main port activities at selected major ports had been studied separately in chapters 5 and 6. Assessment of operational performance and profitability may now commence with a brief review of the overall performance at selected major ports. To fully understand the financial situation of major ports, it proves helpful to examine data on operating income, port expenditure against this and the resultant operating surplus or deficit, as well as non-operating income, port expenditure against this and non-operating surplus or deficit.

### 7.2.2 Operational Performance

Operating incomes and expenditures, and resulting operating surpluses and deficits at the four selected major ports are presented in Table 7.2. The general pattern of port operations as seen in the table show operating incomes exceeding operating expenditure at all major ports over the study-period. Growth in operating income was also faster than that of operating expenditure. As a result, all ports generated growing surplus balances. In 1980-81, CHP stood third after Bombay and Madras ports in terms of operating surplus, this relative position being retained in 1992-93 also. However, although Calcutta-Haldia Port increased operating surpluses from Rs.13.49 crores to Rs.70.04 crores over the period of study, the magnitude generally remained behind operating surpluses at Bombay and Madras ports.

Operating surpluses were however subject to frequent fluctuations at all major ports except at Madras, where such fluctuations existed only in the initial years. The reasons behind the fluctuations were a steady increase in operating expenditure on the one hand, and alternating decrease or minimal increase in operating income on the other.

Table 7.2

## Operating Results of Selected Major Ports (1980-81 to 1992-93)

(Rs.crores)

Year	Operating Income				Operating Expenditure				Operating Surplus/Deficit			
	Calcutta Port	Bombay Port	Madras Port	Vizag. Port	Calcutta Port	Bombay Port	Madras Port	Vizag. Port	Calcutta Port	Bombay Port	Madras Port	Vizag. Port
1980-81	96.68 <i>100</i>	89.14 <i>100</i>	39.54 <i>100</i>	36.66 <i>100</i>	83.19 <i>100</i>	57.88 <i>100</i>	26.01 <i>100</i>	29.16 <i>100</i>	13.49 <i>100</i>	31.26 <i>100</i>	13.53 <i>100</i>	7.50 <i>10</i>
1981-82	109.12 <i>113</i>	104.24 <i>117</i>	43.10 <i>109</i>	39.91 <i>109</i>	90.44 <i>109</i>	67.98 <i>117</i>	30.20 <i>116</i>	31.66 <i>109</i>	18.68 <i>138</i>	36.26 <i>116</i>	12.90 <i>95</i>	8.25 <i>110</i>
1982-83	125.35 <i>130</i>	123.49 <i>139</i>	47.44 <i>120</i>	40.95 <i>112</i>	95.60 <i>115</i>	78.35 <i>135</i>	35.46 <i>136</i>	34.06 <i>117</i>	29.75 <i>221</i>	45.14 <i>144</i>	11.98 <i>89</i>	6.89 <i>92</i>
1983-84	113.41 <i>117</i>	124.12 <i>139</i>	53.07 <i>134</i>	43.59 <i>119</i>	100.76 <i>121</i>	81.55 <i>141</i>	38.97 <i>150</i>	36.34 <i>125</i>	12.65 <i>94</i>	42.57 <i>136</i>	14.10 <i>104</i>	7.25 <i>97</i>
1984-85	144.07 <i>149</i>	151.72 <i>170</i>	81.43 <i>206</i>	59.65 <i>163</i>	109.27 <i>131</i>	97.27 <i>168</i>	46.35 <i>178</i>	40.57 <i>139</i>	34.80 <i>258</i>	54.45 <i>174</i>	35.08 <i>259</i>	19.08 <i>254</i>
1985-86	136.67 <i>141</i>	163.51 <i>183</i>	91.18 <i>231</i>	69.09 <i>188</i>	123.73 <i>149</i>	106.43 <i>184</i>	50.71 <i>195</i>	46.04 <i>158</i>	12.94 <i>96</i>	57.08 <i>183</i>	40.47 <i>299</i>	23.05 <i>307</i>
1986-87	150.28 <i>155</i>	164.22 <i>184</i>	97.05 <i>245</i>	78.04 <i>213</i>	130.14 <i>156</i>	116.80 <i>202</i>	55.34 <i>213</i>	54.38 <i>186</i>	20.14 <i>149</i>	47.42 <i>152</i>	41.71 <i>308</i>	23.66 <i>315</i>
1987-88	154.20 <i>159</i>	180.18 <i>202</i>	101.62 <i>257</i>	80.96 <i>221</i>	142.90 <i>172</i>	135.74 <i>235</i>	60.01 <i>231</i>	62.23 <i>213</i>	11.30 <i>84</i>	44.44 <i>142</i>	41.61 <i>308</i>	18.73 <i>250</i>
1988-89	206.49 <i>214</i>	222.81 <i>250</i>	121.69 <i>308</i>	107.29 <i>293</i>	152.42 <i>183</i>	149.18 <i>258</i>	66.21 <i>255</i>	72.82 <i>250</i>	54.07 <i>400</i>	73.63 <i>236</i>	55.48 <i>410</i>	34.47 <i>460</i>
1989-90	223.57 <i>231</i>	223.39 <i>251</i>	131.01 <i>331</i>	122.45 <i>334</i>	165.32 <i>199</i>	161.32 <i>279</i>	73.21 <i>281</i>	69.80 <i>239</i>	58.25 <i>432</i>	62.07 <i>199</i>	57.80 <i>427</i>	52.65 <i>702</i>
1990-91	244.32 <i>253</i>	234.79 <i>263</i>	143.59 <i>363</i>	118.26 <i>323</i>	179.45 <i>216</i>	170.91 <i>295</i>	78.79 <i>303</i>	80.59 <i>276</i>	64.87 <i>481</i>	63.88 <i>204</i>	64.80 <i>479</i>	37.67 <i>502</i>
1991-92	256.62 <i>265</i>	255.64 <i>287</i>	160.65 <i>406</i>	134.93 <i>368</i>	202.00 <i>243</i>	193.84 <i>335</i>	89.94 <i>346</i>	98.00 <i>336</i>	54.62 <i>405</i>	61.80 <i>198</i>	70.71 <i>523</i>	36.93 <i>492</i>
1992-93	307.21 <i>318</i>	364.51 <i>409</i>	189.15 <i>478</i>	164.55 <i>449</i>	237.17 <i>285</i>	219.16 <i>379</i>	100.07 <i>385</i>	106.11 <i>364</i>	70.04 <i>519</i>	145.35 <i>465</i>	89.08 <i>658</i>	58.44 <i>779</i>

Note : *Italic figures indicate indices*Source : *Compiled and Calculated from Administration Reports and Annual Accounts of Respective Ports for the above years*

Bombay Port is observed to have been most consistent in recording large operating surpluses. Operating income at this port increased by 309 index points from Rs.89.14 crores in 1980-81 to Rs.364.51 crores in 1992-93, against a 279 point index increase in operating cost from Rs.57.88 crores to Rs.219.16 crores over the identical period. As a result, operating surplus rose nearly five-fold from Rs.31.26 crores in 1980-81 to Rs.145.35 crores in 1992-93. For comparison, index increase in the CHP's operating income was 218 points, against the 185 index point increase in operating costs over an identical period.

Observing the growth of operating variables in all selected major ports over the study-period, it is thus found that operating incomes have tended to rise faster generally than operating costs, leading to the rising surpluses seen in the table. However, in index terms, although the strongest growth in operating income has been at Madras (378 points), followed by Visakhapatnam (349 points) and Bombay (309 points), Madras, Bombay and Visakhapatnam, in that order, have also recorded the greatest increases in operating costs at 285 points, 279 points and 264 points, respectively. By comparison, index increase in operating costs at CHP was much lower at 185 points. Increases in operating incomes at all selected major ports accelerated considerably after 1987-88, while operating cost increases were more concentrated towards the last years of study.

The net result of the pattern just commented upon was that CHP showed the most consistent trend of increasing surpluses, with surpluses at other major ports tending to fluctuate more. In absolute terms, Madras and Visakhapatnam Ports also showed steady growth of operating income from Rs.39.54 crores to Rs.189.15 crores, and from Rs.36.66 crores to Rs.164.55 crores, respectively, over the period of study. As a result, operating surplus increased from Rs.13.53 crores to Rs.89.08 crores at Madras Port, and from Rs.7.50 crores to Rs.58.44 crores at Visakhapatnam Port over the study-period.

### 7.2.3 Non-operational Performance

Non-operating incomes and expenditure, and the resultant surplus/deficit for the selected major ports over the study-period are shown in Table 7.3. Non-operating expenditure generally exceeded non-operating income at all major ports except Bombay, where non-operating deficits were found only in the concluding years of this study. By contrast, Calcutta, Madras and Visakhapatnam ports showed deficit balances for the non-operating side throughout almost the entire period of study. Thus only the performance of Bombay Port might be considered satisfactory because of the surpluses it achieved until 1989-90. Maximum non-operating surplus of Rs.32.87 crores was earned by this port in 1986-87.

In relative terms, the sharpest increases in non-operating incomes occurred at Madras, followed by Visakhapatnam and then CHP. Bombay showed a relatively smaller index increase of 300 points, compared to CHP's 470 points. The trend at CHP also presents the most consistent growth in non-operating costs. Overall increase in non-operating expenditures was sharpest at Bombay (491 points), followed by CHP (253 points), Madras (183 points) and Visakhapatnam (146 points). In consequence, the patterns of non-operating surpluses which were negative in most years except at Bombay, indicate that the major ports were generally in deficit on the non-operating head. CHP had a far more adverse deficit than the three other major ports included in the study.

Madras and Visakhapatnam ports showed deficit balances in non-operating revenues except for the few years towards the end of study. Madras Port started to show a non-operating surplus only from 1989-90 onwards. In 1992-93, the surplus for Madras Port was Rs. 30.91 crores, against the non-operating deficit of Rs.7.43 crores occurring at Visakhapatnam. Visakhapatnam Port generally recorded

Table 7.3

## Non-operating Results of Selected Major Ports (1980-81 to 1992-93)

(Rs. crores)

Year	Non-Operating Income				Non-Operating Expenditure				Non-Operating Surplus/Deficit			
	Calcutta Port	Bombay Port	Madras Port	Vizag. Port	Calcutta Port	Bombay Port	Madras Port	Vizag. Port	Calcutta Port	Bombay Port	Madras Port	Vizag. Port
1980-81	4.96 <i>100</i>	18.19 <i>100</i>	4.48 <i>100</i>	2.95 <i>100</i>	15.18 <i>100</i>	14.58 <i>100</i>	12.93 <i>100</i>	13.42 <i>100</i>	-10.22	3.61	-8.45	-10.48
1981-82	5.36 <i>108</i>	24.45 <i>134</i>	3.28 <i>73</i>	2.31 <i>78</i>	17.87 <i>118</i>	14.07 <i>97</i>	13.13 <i>102</i>	12.58 <i>94</i>	-12.51	10.38	-9.85	-10.28
1982-83	6.39 <i>129</i>	29.70 <i>163</i>	5.62 <i>125</i>	4.24 <i>144</i>	24.25 <i>160</i>	9.14 <i>63</i>	7.30 <i>56</i>	12.89 <i>96</i>	-17.86	20.56	-1.68	-8.65
1983-84	5.00 <i>100</i>	33.51 <i>184</i>	5.81 <i>130</i>	2.89 <i>98</i>	20.82 <i>137</i>	17.37 <i>119</i>	7.86 <i>61</i>	13.15 <i>98</i>	-15.82	16.14	-2.05	-10.26
1984-85	10.54 <i>212</i>	37.66 <i>207</i>	4.06 <i>91</i>	2.97 <i>100</i>	28.44 <i>187</i>	37.43 <i>257</i>	9.45 <i>73</i>	14.13 <i>105</i>	-17.90	0.23	-5.39	-11.16
1985-86	9.86 <i>199</i>	43.44 <i>239</i>	7.51 <i>168</i>	2.64 <i>90</i>	24.71 <i>163</i>	27.93 <i>192</i>	11.24 <i>87</i>	17.05 <i>127</i>	-14.85	15.51	-3.73	-14.41
1986-87	17.71 <i>357</i>	57.25 <i>315</i>	7.28 <i>162</i>	4.68 <i>159</i>	26.44 <i>174</i>	24.38 <i>167</i>	13.62 <i>104</i>	20.11 <i>150</i>	-8.73	32.87	-6.34	-15.43
1987-88	13.38 <i>270</i>	57.05 <i>314</i>	10.94 <i>244</i>	11.84 <i>401</i>	37.74 <i>249</i>	31.87 <i>219</i>	16.21 <i>125</i>	22.71 <i>169</i>	-24.36	25.18	-5.27	-10.87
1988-89	21.50 <i>429</i>	69.47 <i>382</i>	13.56 <i>303</i>	28.17 <i>955</i>	35.87 <i>236</i>	39.91 <i>274</i>	16.48 <i>127</i>	24.75 <i>184</i>	-14.37	29.56	-2.92	3.42
1989-90	23.78 <i>479</i>	62.41 <i>343</i>	17.31 <i>386</i>	7.76 <i>263</i>	33.59 <i>221</i>	50.18 <i>344</i>	15.61 <i>121</i>	20.74 <i>155</i>	-9.81	12.23	1.70	-12.98
1990-91	26.59 <i>536</i>	31.44 <i>173</i>	26.05 <i>581</i>	21.28 <i>721</i>	41.96 <i>276</i>	33.99 <i>233</i>	17.78 <i>138</i>	24.87 <i>185</i>	-15.37	-2.55	8.27	-3.59
1991-92	45.52 <i>918</i>	61.54 <i>338</i>	38.82 <i>867</i>	22.20 <i>753</i>	55.35 <i>365</i>	71.10 <i>481</i>	21.57 <i>167</i>	20.61 <i>154</i>	-9.83	-8.56	17.25	1.59
1992-93	28.25 <i>570</i>	72.71 <i>400</i>	67.50 <i>1507</i>	25.65 <i>869</i>	53.61 <i>353</i>	86.11 <i>591</i>	36.59 <i>283</i>	33.08 <i>246</i>	-25.36	-13.40	30.91	-7.43

Note : Italic figures indicate indices.

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

non-operating deficits throughout the study-period, except for surplus balances of Rs.3.42 crores and Rs.1.59 crores respectively, recorded in 1988-89 and 1991-92.

Calcutta-Haldia Port, in this respect, was not satisfactorily placed in terms of non-operating activity, showing non-operating deficits without exception throughout the study-period. This deficit, moreover, rose from Rs.10.22 crores in 1980-81 to Rs.25.36 crores in 1992-93. Such large deficits were attributable to huge interest payments on Government loans, and payment of retirement benefits, especially to employees opting for voluntary retirement.

#### 7.2.4 Operating Ratios

Computed operating ratios at the selected major ports between 1980-81 to 1992-93 are presented in Table 7.4. The ratio declined at all major ports, except at Visakhapatnam, over the period under study, decreasing from 86.0 percent to 77.2 percent at CHP, from 64.9 percent to 60.1 percent at Bombay, and from 65.8 percent to 52.9 percent at Madras between 1980-81 and 1992-93. Operating ratios at Calcutta and Bombay were highest at 92.7 percent and 75.4 percent, respectively, for 1987-88, compared to other years of the study. In 1988-89 however, the ratios fell to respective levels of 73.8 percent and 66.9 percent. The decline followed revision of port charges, which also affected the operating ratios of Madras and Visakhapatnam ports, which declined from 59.0 percent to 54.4 percent at Madras and from 76.9 percent to 67.9 percent at Visakhapatnam.

Table 7.4  
Operating Ratio at Selected Major Ports (1980-81 to 1992-93)

Year	Cal. Port %	Bom. Port %	Mad. Port %	Vizag. Port %
1980-81	86.0	64.9	65.8	79.5
1981-82	82.9	65.2	70.1	79.3
1982-83	76.3	63.4	74.7	83.2
1983-84	88.8	65.7	73.4	83.4
1984-85	75.8	64.1	56.9	68.0
1985-86	90.5	65.1	55.6	66.6
1986-87	86.6	71.1	57.0	69.7
1987-88	92.7	75.4	59.0	76.9
1988-89	73.8	66.9	54.4	67.9
1989-90	73.9	72.2	55.5	57.0
1990-91	73.5	72.8	54.9	68.1
1991-92	78.7	74.4	56.0	72.6
1992-93	77.2	60.1	52.9	64.5

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

Timely enhancements of tariffs, accompanied by efforts towards the diversification of cargo in favour of general cargo to raise port incomes, and economies in important cost items like stores and wages to lower port costs would help major ports to tide over the present financial crisis and improve their operating ratio.

### 7.2.5 Return on Capital Employed

Huge sums are spent year after year, particularly since the advent of planning, for development of major ports. However, besides serving as gateways to increasing foreign trade, ports are also expected to earn adequate returns on capital so as to finance at least a part of their development, replacement and modernisation needs from internal sources, thus relieving Government of a part of the responsibility of providing funds for port development. Hence, it would be of great interest of study the profitability of ports in relation to investments on them.

Table 7.5  
'Return on Capital Employed' in Calcutta-Haldia Port  
(1980-81 to 1992-93)

Year	(Rs. crores)		
	Net Surplus	Cap. Employed	Ratio(%)
1980-81	3.27	460	0.71
1981-82	6.17	477	1.29
1982-83	11.89	511	2.33
1983-84	(-)3.17	542	(-)0.58
1984-85	16.90	593	2.82
1985-86	(-)1.91	632	(-)0.30
1986-87	11.38	681	1.67
1987-88	(-)13.05	716	(-)1.82
1988-89	39.70	774	5.13
1989-90	48.45	858	5.65
1990-91	49.50	956	5.18
1991-92	44.78	NA	-
1992-93	44.68	NA	-

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

Computed ratios for return on capital employed at CHP between 1980-81 to 1990-91 are presented in Table 7.5. Uptil 1987-88 the return on capital employed at CHP was very low, standing for example, at (-)1.82 percent of capital employed in 1987-88. This then started to increase, reaching levels of 5.13 percent (1988-89) and 5.65 percent (1989-90). A marginal decline to 5.18 percent then took place in 1990-91. Increases in the return on capital employed depend on net surplus balances

earned at a port. Low levels of the ratio are attributable on the one hand, to continuous growth in capital employed, and on the other, to substantial decline in net surplus.

It had been stated earlier that the Major Ports Commission(1970) had recommended a minimum rate of return of 12 percent on capital employed, at a time when the rate of interest on Government loans was 6 percent. Subsequently, this interest rate had risen gradually to 9 percent, as a result of which major ports would have been enjoined to earn a 15 percent return on capital employed over the period of study. For Calcutta-Haldia Port, not only has the rate of return realised been much less than the recommendation, but also the gap between recommended and realised rates of return has been very wide. Port rates have undergone periodic revision to raise returns on capital employed to levels prescribed by the Major Ports Commission. Still, despite such revision, the rate of return on capital employed realised by CHP fell way below recommended levels. Non-realisation of traffic in the expected volume and delays in revision of port tariffs are to some extent, contributory to this situation. Port traffic capacity utilisation at CHP in 1992-93, for instance, varied between 87% (CDS) and 78% (HDC). Against these, traffic capacity utilisation at Bombay was 108%, 115% at Madras and 101% at Visakhapatnam for the same year.<sup>1</sup>

### 7.2.6 Net Surplus Margin

The net surplus margin reflects the capacity of a port to withstand unfavourable financial conditions. A port having high net surplus margins would be better able to cope with rising operational costs or declining traffic without jeopardising financial performance, than a port with low net surplus margin. Similarly, a port with a high net surplus margin would capitalise internal profits more effectively in favourable conditions like falling operating costs or increasing volume of traffic.

Table 7.6  
Net Surplus Margin at Selected Major Ports  
(1980-81 to 1992-93)

Year	Cal. Port %	Bom. Port %	Mad. Port %	Vizag. Port %
1980-81	3.22	32.49	11.54	(-)7.50
1981-82	5.39	36.24	6.58	(-)4.78
1982-83	9.03	42.89	19.41	(-)3.89
1983-84	(-)2.68	37.24	20.47	(-) 6.48
1984-85	10.93	28.87	34.73	12.65
1985-86	(-) 1.30	35.08	37.23	12.05
1986-87	6.78	36.25	33.90	9.95
1987-88	(-) 7.79	29.35	32.28	8.47
1988-89	17.41	35.31	38.86	27.97
1989-90	19.59	26.00	40.12	30.47
1990-91	18.27	23.04	43.07	24.42
1991-92	14.82	16.79	44.10	24.51
1992-93	13.32	NA	47.11	26.40

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

Net surplus margins at selected major ports over the study period are presented in Table 7.6. The net surplus margin at CHP was very low over the initial years of study, but started to reflect an improved position from 1988-89, with ratios of 17.41 percent and 19.59 percent in 1988-89 and 1989-90. From 1990-91 onwards however, the ratio declined once more to 18.27 percent, 14.82 percent and 13.32 percent in 1990-91, 1991-92 and 1992-93 respectively.

Bombay Port generally displayed much better placement until 1986-87 but net surplus margin tended to decline thereafter, reaching a low of 16.79 percent in 1991-92 compared to the initial 32.49 percent in 1980-81. Highest net surplus margin observed at Bombay was 42.89 percent in the year 1982-83.

Madras Port stood in reverse to Bombay Port, presenting low net surplus margins in the initial years, followed by steady increase. The net surplus margin rose to 47.11 percent in 1992-93, against only 6.58 percent in 1981-82. Compared to other selected major ports, the placement of Madras Port was therefore quite satisfactory from this standpoint. Visakhapatnam Port also showed better placement beginning from 1988-89 when net surplus margin was 27.97 percent. By 1992-93 this had risen to 26.40 percent, compared to the deficit ratio of (-)7.50 percent in 1980-81. The highest net surplus margin recorded at the port was 30.47 percent in 1989-90.

Analysis of net surplus margins reveals that the placement of CHP was worst amongst the major ports under study. This highlights the urgent need for the Port to adopt measures that would increase operating income and decrease operating costs in order to improve financial performance.

### 7.2.7 Turnover on Capital Employed

Table 7.7 shows turnover on capital employed at CHP between 1980-81 to 1992-93. The turnover ratio increased from 0.221 to 0.283 over the period, with the highest level being 0.295 in 1988-89, a jump from 0.234 in 1987-88. This was attributable to a large increase in total port income for CHP. Conversely, in certain other years the turnover ratio had fallen because of substantial growth in capital employed at the port, against a slowed increase in total port income.

### 7.2.8 Turnover on Fixed Assets

Turnover ratios on fixed assets reflect the efficiency of a port in utilising investments in fixed assets such as land, buildings, plant and machinery, cargo handling equipment, berths, etc. Ports acquire such fixed assets in order to extend their services to both cargo and shipping, and in turn, receive revenues as operating income against various port services delivered. Hence, the efficiency of fixed assets should be gauged in relation to operating income, which is accomplished by means of the turnover ratio. The turnover ratio on fixed assets is computed by dividing total port income by the port's total investment on fixed assets.

The turnover of fixed assets at CHP over the study-period forms the subject of Table 7.8. The turnover on fixed assets at CHP stood at 0.272 in 1980-81 and showed increasing trends throughout the period of study, reaching a level of 0.462 in 1990-91. The maximum value observed for the ratio was 0.467 in 1988-89. Improvement in the fixed asset turnover ratio stems from the rise in operating income, which in turn depends on tariff revisions and additional port traffic. For instance, in 1988-89 the

turnover ratio increased to 0.467 from 0.359 in 1987-88 because of the rise in operating income from Rs.154.20 crores to Rs.206.49 crores over the two years.

**Table 7.7**  
**Capital Employed Turnover in Calcutta-Haldia Port**  
**(1980-81 to 1992-93)**

(Rs.crores)

Year	Total Income	Cap. Employed	Ratio
1980-81	101.65	460	0.221
1981-82	114.48	477	0.240
1982-83	131.74	511	0.258
1983-84	118.41	542	0.218
1984-85	154.61	593	0.261
1985-86	146.53	632	0.232
1986-87	167.96	681	0.247
1987-88	167.59	716	0.234
1988-89	227.99	774	0.295
1989-90	247.37	858	0.288
1990-91	270.92	956	0.283
1991-92	302.14	NA	-
1992-93	335.46	NA	-

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

**Table 7.8**  
**Fixed Assets Turnover at Calcutta Port**  
**(1980-81 to 1992-93)**

(Rs.crores)

Year	Operating Income	Gross Fixed Assets	Ratio
1980-81	96.68	356	0.272
1981-82	109.12	350	0.312
1982-83	125.35	362	0.346
1983-84	113.41	377	0.301
1984-85	114.07	392	0.367
1985-86	136.67	403	0.339
1986-87	150.28	421	0.357
1987-88	154.20	430	0.359
1988-89	206.49	442	0.467
1989-90	223.57	485	0.461
1990-91	244.32	529	0.462
1991-92	256.62	NA	-
1992-93	307.21	NA	-

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

### 7.3 Physical Performance

Having discussed the ratio-indicators that reflect the financial performance of selected major ports, the analysis now turns to physical indicators which have a profound influence on the profitability at ports. These are, namely, the number of ships calling on a port, which is an indicator of the commercial attractiveness of a port; the average duration of pre-berthing detention, ship turn-round, and the ratio of idle to working time, which are all disincentive-indicators that reduce the commercial attractiveness of a port; and the rate of output per ship berth-day, which is a productivity indicator. Analysis is made of each of these in the discussion to follow.

#### 7.3.1 Number of Vessels Sailing

Table 7.9 shows the number of vessels sailing from selected major ports in 1992-93. Vessels are classified into four classes, namely, dry bulk, tankers, break-bulk and containers. Bombay Port occupied first place among the four selected major ports (2124 vessels sailing) in terms of this performance aspect, and the second, third and fourth positions were occupied, respectively, by CHP (1434), Madras (1397) and Visakhapatnam (932). Analysing the breakup for these figures by nature of ship, Haldia is seen as being specialised towards receiving tankers and dry-bulk vessels; CDS towards break-bulk vessels and tankers; Bombay Port towards tankers, break-bulk vessels and container ships; while Madras and Visakhapatnam ports are specialised towards tankers and dry-bulk vessels. Port specialisations of such nature have evolved according to the needs of local industrial facilities and the port hinterlands. Considering the relative shares of individual major ports among vessels berthing, CHP accounted for around 14 percent of the vessels sailing from all major ports. The maximal percentage share was for tankers, at 17.19 percent of the tankers calling at all major ports.

Port Performance Indicators  
Table 7.9  
Number of Vessels Sailed at Selected Major Ports  
(1992-93)

Types of Vessels	HDC	CDS	Total	Bombay Port	Madras Port	Vizag. Port	All Major Ports Total	% of CHP to all Ports
i) Dry-bulk	228	36	264	147	354	430	2262	11.67
ii) Tankers	412	217	629	668	477	350	3659	17.19
iii) Break Bulk	19	339	358	651	311	103	2208	16.21
iv) Container	48	135	183	658	255	49	1915	9.56
v) All Types	707	727	1434	2124	1397	932	10044	14.28

Source : Basic Port Statistics of India, Indian Ports Association, 1992-93

A time-series on ship calls at CDS and HDC is next presented in Table 7.9.1, which brings out the relative importance of the two port complexes in attending to ships calling at CHP. It is seen from the table that although CDS still received a larger number of vessels till the end of the study, its share in the number of ships calling at CHP has declined steadily, while that at HDC has been rising.

Table 7.9.1  
Number of Ship Calls at Calcutta-Haldia Port

Year	CDS	HDC	Total
1983-84	810	410	1220
1984-85	761	455	1216
1985-86	896	557	1453
1986-87	928	570	1498
1987-88	934	566	1500
1988-89	840	591	1431
1989-90	808	585	1393
1990-91	781	585	1366
1991-92	703	629	1332
1992-93	780	703	1483

Source : Facts and Figures, Calcutta Port Trust, 1994

### 7.3.2 Average Pre-berthing Detention

Average pre-berthing detention means the time lost on account of a ship being required to wait at sea before berthing because the port has remained otherwise engaged over the duration. Table 7.10 presents figures on average pre-berthing detention periods at selected major ports in the year 1992-93. The position of CDS was clearly better than that of the other major ports in this performance aspect because, on an average over all types of vessels, detainment was less than 24 hours, against detention periods respectively for HDC, Bombay, Madras and Visakhapatnam ports of 2.0 days, 2.3 days, 2.1 days, and 1.8 days, and the average detention period over all major ports of 1.9 days. Among the various vessel-types calling at CDS, dry-bulk carriers experienced the maximum pre-berthing detention of 1.7 days. At HDC, with a fairly low average pre-berthing detention period of 2.0 days, container vessels encountered detainments for the least time i.e. 0.2 days. The maximal detention period at HDC was 2.7 days for break-bulk carriers.

Table 7.10  
Average Pre-Berthing Detention of Ships at Selected Major Ports (1992-93)

Types of Vessels	(days)					
	HDC	CDS	Bombay	Madras	Vizag.	All Ports
i) Dry Bulk	1.9	1.7	8.7	3.2	2.7	3.0
ii) Tankers	2.2	0.6	2.4	2.1	0.9	1.8
iii) Break Bulk	2.7	0.9	1.8	2.4	1.9	2.0
iv) Containers	0.2	0.5	1.3	0.4	0.3	0.8
v) All Types	2.0	0.8	2.3	2.1	1.8	1.9

Source : Basic Port Statistics, 1992-93, Indian Ports Association, New Delhi

**Table 7.10.1**  
**Average Pre-Berthing Detention of Ships**  
**at Calcutta-Haldia Port**

Year	(days)	
	CDS	HDC
1983-84	1.19	2.40
1984-85	0.82	2.70
1985-86	1.88	1.56
1986-87	0.65	1.19
1987-88	0.61	1.16
1988-89	0.44	1.60
1989-90	0.72	1.59
1990-91	1.11	1.66
1991-92	0.88	1.53
1992-93	0.94	2.00
1993-94	1.02	1.61

Source : *Facts and Figures, Calcutta Port Trust, 1994*

**Table 7.11**  
**Commodity-wise Average Pre-berthing Time at Selected Major Ports**  
**(1992-93)**

(days)

Commodity	CDS	HDC	Bombay	Madras	Vizag.	All Ports
POL	0.51	2.35	2.59	2.31	0.99	2.03
Iron Ore	-	-	-	0.62	1.37	0.94
Coking Coal	-	1.95	-	-	4.19	2.95
Thermal Coal	-	1.02	-	1.54	0.70	1.04
Fertilisers	2.04	3.63	26.76	10.12	4.04	6.83
F.Raw Materials	2.04	4.60	6.80	3.42	3.79	5.26
Other Dry Bulk	1.20	2.40	11.42	5.62	2.43	3.76
General Cargo	0.77	2.37	1.79	2.12	1.66	1.87
Containers	0.51	0.24	1.34	0.31	0.27	0.87
Other Liquid Bulk	1.68	0.79	1.66	0.30	0.54	1.00
<b>Total</b>	<b>0.75</b>	<b>1.99</b>	<b>2.32</b>	<b>2.04</b>	<b>1.78</b>	<b>1.92</b>

Source : *Indian Ports Association, Basic Port Statistics of India, 1992-93*

At Bombay Port by contrast, although the average pre-berthing detention in 1992-93 was only 2.3 days, dry-bulk carriers were detained for a maximal 8.7 days prior to berthing. Detainments at Madras and Visakhapatnam were generally not too lengthy, except for dry-bulk carriers which lost an average of 3.2 days and 2.7 days, before berthing at the respective ports. It may be noted however that detention periods for this category of vessels was also high at all major ports, at 3.0 days.

Time-series figures on pre-berthing detention at CHP and its constituents are indicated in Table 7.10.1. While it is seen that detainment times at CDS have remained low and generally steady, what emerges clearly is the decline in detention time at HDC. Keeping in mind that the number of vessels calling at HDC have been increasing while the number of vessels calling at CDS has been decreasing, as shown previously in Table 7.9.1, this is an indicator of creditable progress at HDC.

Commodity-wise pre-berthing detention periods at selected major ports in 1992-93 are shown in Table 7.11. Calcutta and Haldia ports are generally seen to be favourably placed, except in case of fertiliser raw materials at HDC for which average detention time was 4.6 days. Bombay Port showed maximum detention times for fertiliser (26.76 days), dry-bulk (11.42 days), and fertiliser raw materials (6.8 days). At Madras the maximal detention time was for fertiliser (10.12 days), while at Visakhapatnam, maximum pre-berthing detention periods were for coking coal (4.19 days) and for fertiliser (4.04 days).

### 7.3.3 Average Turn-Round Time

Among the most important indices of a port's operational efficiency is average turn-round time. The turn-round time for a ship is the time interval between the ship's arrival at a port and its sailing again, excluding any time spent by the ship in dry-docking repairs.<sup>2</sup> Lower average turn-round times indicate greater operational efficiency, and conversely. Other things being equal, lower turn-round times at a port offer an incentive for ships to berth there and lead therefore to favourable traffic trends and increasing traffic at the port. Ports with higher turn-round times would, besides losing traffic, also contribute to losses of foreign exchange in the form of demurrage and detention charges.

The four major constituents of turn-round time are times spent by a ship at anchorage, in 'inward' movement, at berth, and in 'outward' movement. Time spent on shifting vessels from one berth to another is also sometimes included within average turn-round time.

Average turn-round times at selected major ports over the period between 1989-90 to 1992-93 are presented in Table 7.12. The table also shows breakup of turn-round time for vessels by type at all major ports. Average turn-round time varies significantly between ports and, even at a single port, between years. Thus in 1992-93, HDC had the lowest turn-round time of 6.7 days for all types of ships, as against 10.4 days at CDS, 8.6 days at Bombay Port, 7.1 days at Madras and 7.3 days at Visakhapatnam. In 1989-90, lowest turn-round time had been observed at Visakhapatnam Port (5.9 days), which was slightly higher than that at Haldia (6.1 days). Considering the breakup on vessels, Haldia showed highest turn-round time over all years of 23.5 days in 1990-91 for break-bulk carriers. At CDS, the highest overall turn-round time of 20.4 days was observed in the year 1992-93 for dry-bulk vessels and lowest turn-round time of 4.5 days in the same year for liquid-bulk vessels. At Bombay Port, highest and lowest turn-round times observed were 43.3 days in 1989-90 for dry-bulk vessels, and 4.6 days in 1992-93 for container vessels. At Madras Port, turn-round time was as high as 12.4 days in 1992-93 for dry-bulk vessels and as low as 2.1 days in 1989-90 for containers. The highest and lowest turn-round

times at Visakhapatnam Port of 11.7 days and 1.7 days were observed in 1990-91 for dry-bulk vessels, and in 1991-92 for container vessels, respectively.

**Table 7.12**  
**Average Turn-Round Time of Ships at Selected Major Ports**  
**By Type (1989-90 to 1992-93)**

Types of vessels	Year	(days)				
		HDC	CDS	Bombay	Madras	Vizag.
i) Dry-Bulk :	1989-90	10.0	19.9	43.3	11.3	8.9
	1990-91	11.9	22.3	31.2	11.7	11.7
	1991-92	9.8	17.5	20.3	9.1	8.4
	1992-93	11.3	20.4	27.7	12.4	10.6
ii) Liquid-Bulk :	1989-90	3.6	5.0	5.8	3.9	2.5
	1990-91	3.9	5.2	5.9	4.5	2.7
	1991-92	4.2	4.9	5.6	4.4	2.9
	1992-93	4.3	4.5	5.6	3.9	3.1
iii) Break-Bulk :	1989-90	19.4	14.9	17.9	10.3	6.5
	1990-91	23.5	15.4	14.5	10.8	6.2
	1991-92	5.9	14.2	10.2	8.5	6.0
	1992-93	12.8	14.2	11.5	9.9	10.5
iv) Containers :	1989-90	4.1	5.4	8.1	2.1	1.8
	1990-91	4.6	5.6	7.1	2.7	2.4
	1991-92	3.2	5.9	4.7	2.6	1.7
	1992-93	2.7	7.4	4.6	2.3	1.8
v) All Types :	1989-90	6.1	11.7	13.5	6.5	5.9
	1990-91	6.5	11.9	10.8	7.2	7.1
	1991-92	6.0	10.9	7.6	6.0	5.6
	1992-93	6.7	10.4	8.6	7.1	7.3

Source : Basic Port Statistics of India, 1992-93, Indian Ports Association, New Delhi

The turn-round time of a ship at port primarily depends on factors such as the nature of cargo and its condition, type of packaging, parcel-size, methods of cargo loading/unloading and general waiting time of a vessel at anchorage. Government policies relating to major ports and differences in computation systems, etc. may also influence this. How such factors affect the turn-round time has been analysed below.

With the implementation of various plan programmes and port development activity in general, some of the major ports have been enabled to handle cargoes at faster rates through introduction of modernised cargo-handling equipment. This has contributed to a decline in berthing time on account of higher loading/unloading rates. Since berthing time constitutes nearly 80 percent of average turn-round time, this decline in turn leads to lowered turn-round time.

The cargo-mix also influences average turn-round time of ships at port. For instance, cargoes like cement, steel structurals, pig-iron, etc. require comparatively longer times for loading or discharge, compared to bulk cargoes like mineral ores, fertilizers, foodgrains, zinc concentrates etc. Thus, changes in the cargo-mix handled by a port contribute to either an increase or decrease in average turn-round time.

Government policies may also sometimes influence average turn-round time. If, for instance, Government takes a decision to divert cargo from a congested port where such congestion is on account of labour unrest, bunching of vessels and so on, to some other port, this would influence average turn-round times at both ports from and to which traffic is diverted. Divergence in turn-round times could also arise due to differences in the underlying computational concepts. For example, some ports include repairing i.e. dry-docking time in calculating average turn-round times, while others exclude it.

Adoption of the following measures might reduce turn-round times at CHP:

- (i) speedy removal of cargo from wharves;
- (ii) nurturing of a disciplined and trained labour force;
- (iii) modernisation of methods of cargo handling; and
- (iv) planning of port facilities commensurate with latest traffic trends.

#### 7.3.4 Rates of Idle-time to Time at Working Berth

Table 7.13

Idle Time to Time at Working Berth at Selected Major Ports (1992-93)

Types of Vessels	HDC %	CDS %	Bombay %	Madras %	Vizag. %	All Ports %
i) Dry Bulk	42.1	50.1	34.2	37.2	20.9	30.6
ii) Tankers	40.5	50.1	42.6	30.4	28.9	35.2
iii) Break Bulk	44.7	48.2	41.4	45.2	22.0	41.7
iv) Containers	45.8	29.1	31.1	48.8	21.1	34.8
v) All Types	42.0	46.2	38.3	39.8	22.3	35.6

Source : Basic Port Statistics, 1992-93, Indian Ports Association, New Delhi

Percentage rates of idle time to total working time at berth are a performance indicator for major ports, derived from the period for which a ship is at berth. Idle time represents time lost and is therefore a waste. The rates for selected major ports are presented in Table 7.13 for the year 1992-93. It is observed from the table that ships of all types lost more time at CDS compared to the other selected major ports in India. The table also shows that more than 50 percent of total working time was lost as idle time at CDS in the case of dry-bulk and tanker vessels, while for break-bulk and container vessels, the ratio of lost time was 48.2 percent and 29.1 percent, respectively. Idle time for all categories of vessels averaged 46.2 percent. Idle time rates at HDC were also not satisfactory. The percentage idle time to time at working berth was 42.0 percent for all categories of vessels. Minimum levels for idle time for all categories of vessels were recorded at Visakhapatnam (22.3 percent). Bombay and Madras ports

recorded the average rates at 38.3 percent and 39.8 percent, respectively. The important reasons behind high rates of idle time at Calcutta and Haldia ports have mainly been labour unrest and, to some extent, the lack of sound management. Labour unrest at these ports, which has been created due to non-realisation of employee demands, has alternately taken the form of outright strikes, or 'go-slow' movements by port-labour unions, which resulted in loss of working hours at CHP to the tune of 53,679 man-days in 1992-93, and 48,835 man-days in 1993-94.<sup>1</sup>

### 7.3.5 Output per Ship Berth-Day

The ratio for port output per ship berth-day is also a useful performance indicator which ultimately reflects upon the profitability of a port. Table 7.14 shows figures on port output per ship berth-day for the selected major ports in the year 1992-93. For all categories of vessels, the maximum rate of output, i.e. loading/unloading of 5336T per ship berth-day has been achieved by HDC. The output per ship berth-day at Visakhapatnam, Madras and Bombay was 5247T, 4296T and 2611T, respectively. Figures for CDS are considerably lower. Output per day for a ship at berth was only 777T by all categories of vessel in 1992-93. Considering now the breakup for vessel-categories, the highest ratios of output per ship-berth day were achieved for tanker vessels at all the selected major ports; these were 13983T at Haldia, 3010T at Calcutta, 13120T at Bombay, 13998T at Madras and 12638T at Visakhapatnam ports. Tankers showed maximum output ratios too, for all major ports. The next-highest output ratios were achieved for break-bulk vessels, at 609T at HDC, at 399T at CDS, at 480T at Bombay, at 607T at Madras, and at 1005T at Visakhapatnam. The corresponding figure for all major ports was 558T.

Table 7.14

Output Per Ship Berth Day (tonnes) at Selected Major Ports (1992-93)

Types of Vessels	(tonnes)					
	HDC	CDS	Bombay	Madras	Vizag.	All Ports
i) Dry Bulk	3323	497	897	4512	4799	3806
ii) Tankers	13983	3010	13120	13998	12638	12554
iii) Break Bulk	609	399	480	607	1005	558
iv) Containers	1320	1437	1853	2612	1185	1788
v) All Types	5336	777	2611	4294	5247	3647

Source : Basic Port Statistics, 1992-93, Indian Ports Association, New Delhi

## 7.4 A Review of the Evidence

The focus of the present chapter has been on operational performance and profitability at selected major ports, with a view to identifying relative strengths and weaknesses and suggesting remedial action. Analysis has been carried by applying standard financial ratios to the special context provided by port data. Of these, the operating ratio relates operating income to operating costs; the return on capital employed relates net port surplus to working capital plus assets; and the net surplus margin relates net port surplus to total port income, reflecting port-profitability. In addition, use has been made of turnover

ratios of total port income on total port capital employed and on total asset investment at the port, which are indicators of investment intensity and efficiency.

Gross surpluses of all major ports have risen considerably over the last eighteen years. Acceleration in port revenues ahead of port expenditure is a reflection of good port management in the port sector in India. At CHP, this increase in net port surplus is largely drawn from HDC and CDS is in a more adverse position. In terms of operating variables, operating incomes have risen faster than operating costs, with this trend most consistent at CHP. However, the major ports and particularly CHP run large deficits on the non-operating head, mainly because of the burden of huge interest payments on loan-capital and outgo on employee-benefits.

The rates of return realised by CHP have been much less than the recommendation of the Major Ports Commission, despite occasional revision in port rates. Analysis of net surplus margins reveals that the placement of CHP is worst amongst the major ports. Non-realisation of targeted traffic, and procedural delay in revision of tariffs contribute to this situation. A case therefore exists for timely revision of tariffs, and diversification of cargo operations in favour of high-value general cargo in order to raise port incomes. Improvement in the fixed asset turnover ratio would also depend on the rising operating income that is drawn on revised tariffs and additional traffic. This would however have to be accompanied by cost-economies in port-stores and wages to lower costs overall.

Physical factors too have a profound influence on port profitability. CHP accounted for around 14 percent of the vessels sailing from all major ports, with the maximal share being for tankers. CDS share in the number of ships calling has declined steadily, even as that for HDC is increasing. Pre-berthing detention at CDS is however less than at other major ports. Creditable progress has been made in HDC too in this respect, where detention time has declined even as the number of vessels calling has risen. Recent commodity-wise pre-berthing detention periods also show relatively better placement for CHP.

A port's operational efficiency is also reflected in average turn-round time, which has been declining at HDC with the development of its operations, but has however been high at CDS, partly because of the general cargo character of the port. Ships of all types lost more time on berth at CDS compared to the other Indian major ports. Idle time rates at HDC were also not satisfactory. The important reasons behind this have mainly been labour unrest and, to some extent, the lack of sound management. The ratio for port output per ship berth-day is also a useful performance indicator which ultimately reflects upon the profitability of a port. For all categories of vessels, the maximum rate of output, achieved by HDC.

It is now time to review the analyses made in different elements of this study and consolidate these into a set of conclusions and summary recommendations. After a review of all financial activity at major ports, this will be addressed in the last chapter

## References

1. Basic Port Statistics of India, 1992-93.
2. Srinivasan, R.; *Report on Operational Norms for Evaluation of monitoring port performance*; Indian Ports Association; New Delhi; 1981.
3. Indian Ports, Jan. 1995, vol.xxvi, no.3, p.11.