FINANCIAL MANAGEMENT IN PORTS: A STUDY WITH SPECIAL REFERENCE TO CALCUTTA-HALDIA PORT

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Santu Kumar Bose.

(SANTU KUMAR BOSE)

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ABBREVIATIONS USED IN THE THESIS

AG	Auditor General
CAG	Comptroller and Auditor General of India
CDS	Calcutta Dock System
CE	Chief Engineer
CHE	Chief Hydraulic Engineer
CHP	Calcutta-Haldia Port
CITU	Confederation of Indian Trade Unions
CME	Chief Mechanical Engineer
CMM	Chief Materials Manager
CMO	Chief Medical Officer
CPSMU	Calcutta Port Shore Mazdoor Union
CPT	Calcutta Port Trust
CVO	Chief Vigilance Officer
DCI	Dredging Corporation of India
DMD	Director of Marine Department
DWT	Dead Weight Tonne
FACAO	Financial Adviser & Chief Accounts Officer
FCI	Food Corporation of India
HDC	Haldia Dock Complex
IBRD	International Bank for Reconstruction and Development
ICC	Indian Chamber of Commerce
ICMA	Institute of Costs and Management Accountants
IDBI	Industrial Development Bank of India
IFCI	Industrial Finance Corporation of India
IIPM	Indian Institute of Port Management
INTUC	Indian National Trade Union Congress
IOC	Indian Oil Corporation
IPA	Indian Ports Association
JNPT	Jawarharlal Nehru Port Trust
KGD	King George's Dock
KPD	Kidderpore Dock

LA	Legal Adviser
LAIRO	Labour Adviser & Industrial Relations Officer
LM	Land Manager
MPRC	Major Ports Reforms Committee
MPT	Major Port Trust
MT	Million Tonne
NIO	National Institute of Oceanography
NIPM	National Institute of Port Managament
NSD	Netaji Subhas Dock
NUWWI	National Union of Water-front Workers of India
POL	Petroleum Oil and Lubricants
PSU	Public Sector Undertakings
R&D	Research and Development
ROI	Return on Investment
RPT	Rendell Palmer Tritton
SAIL	Steel Authority of India Limited
SCI	Shipping Corporation of India
TEU	Twenty Equivalent Unit
TISCO	Tata Iron and Steel Company
TM	Traffic Manager
TNEB	Tamil Nadu Electricity Board
TRT	Turn Round Time
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
VRS	Voluntary Retirement Scheme
WBIDC	West Bengal Industrial Development Corporation
WBIIDC	West Bengal Industrial Infrastructure Development Corporation

CHAPTER - I

AN INTRODUCTION TO THIS STUDY

1.1 Definitions of the Scope of Financial Management

In corporate management, the most vital and critical area involves the management of corporate capital. As money is only a medium of exchange and is a surrogate for the real resources of an economy, it is obvious that the basic concern of financial management or money management ought to be with getting the best out of the resources deployed within the corporate firm. These resources are men, money, machines, materials and methods. All these are inputs from which the outputs (goods and services) of enterprise are derived, and are commanded through a single resource, namely, money. Therefore, one of the most crucial managerial tasks within a corporation is financial management. Effective financial management results in securing the greatest possible return from every unit of capital deployed within the firm.

At higher levels of corporate management, almost every decision becomes a financial decision. "Decisions taken on production, marketing, personnel and industrial relations have financial implications, which in turn affect the profitability of the enterprise"[1]. Financial Management may thus be defined as "the managerial activity which is concerned with the planning and controlling of the firm's financial resources"[2]. Howard & Upton define financial management as "that administrative function in an organisation which has to do with the management of flow of cash so that the organisation will have the means to carry out its objectives as satisfactorily as possible and at the same time meet its obligations as they become due"[3].

Financial Management involves the resolution of the three major decisions, namely an investment (or asset-mix) decision; a financing (or capital-mix) decision and a dividend (or profit-allocation) decision. Capital investment, which is a major aspect of this coordinated decision, is the allocation of capital to investment proposals whose benefits are to be realized in the future. In making the second major managerial decision i.e. the financing decision, the financial manager is concerned with the determining the financing mix or capital structure of the corporate firm. The dividend decision decides the proportion of earnings to be paid to stockholders as cash dividends, the stability of absolute dividends about a trend, stock dividends and splits, and repurchase of stock.

To quote Ezra Solomon, "....the function of financial management is to review and control decisions to commit or recommit funds to new or ongoing uses. Thus, in addition to raising funds, financial management is directly concerned with production, marketing and other functions within an enterprise whenever decisions are made about the acquisition or distribution of assets"[4]. Standard approaches to the scope and functions of financial management may be grouped into two broad variants:

i) the 'Traditional' approach, and
ii) the 'Modern' approach

The traditional approach to financial management functions makes reference to subject-matter classed under it in the academic literature at the initial stages of its evolution as a separate branch of academic study. The approach thus confines the scope of financial management and the role of the financial manager to the raising of corporate funds.

The modern approach alternatively views financial management in its broader sense and provides a conceptual and analytical framework to financial decision-making. According to this, the finance function covers both acquisition of funds and their allocation. "In this broader view, the central issue of financial policy is the wise use of funds, and the central process involved is a rational matching of advantages of potential uses against the cost of alternative potential sources so as to achieve the broad financial goals which an enterprise sets for itself"[5]. Financial management is seen to be considered here as a vital and integral component of overall corporate management.

In summary, it might be remarked that effective financial management is a *sine qua non* for any organisation, irrespective of size, nature of ownership and control and of whether it is a manufacturing or service organisation. For the achievement of success in the complex business environments of the present day, a sound knowledge and understanding of financial management principles has become essential to managerial executives. When and if the matters relating to the important areas within financial management are neglected, overall corporate results are adversely affected.

Ports are in no way an exception to the above observation. They are giant enterprises, usually organised along trust-lines, rather than corporate lines, but except for this exception, are engaged in providing saleable services to sea and riverine transport, for which vast prior infrastructural investment has been necessary, and for the continuance of which a continuous expenditure of men, materials and methods is essential. Effective financial management thus becomes a must in case of ports too, in order to provide them the sound financial base which would enable the port administration to maintain all port facilities at high technical and operating levels, and to render efficient and economically-viable services to port-users. Thus the ultimate consequence of sound financial management in ports is increased volume of trade, increase in the export of goods, and opening up of future development opportunities by the goods in question becoming more competitive and attractive to international markets.

1.2 The Maritime Geography of India

An assessment of the maritime geographical position of India would be relevant to any detailed study in context of the ports in India. Since early ages, the barriers of high mountains and large oceans stemmed external aggression and formed natural boundaries for a country. Nevertheless, the existence of an ocean barrier also brought the peoples of the world together through commercial and cultural contacts, and through the wars inevitable to history. The development of commerce in any nation has depended on foreign trade. This, in turn, has been primarily dependent on the development of sea transportation, because of its economy compared to any other mode of transportation. India's geographical position affords natural advantages for attaining maritime dominance. India, as a maritime country, is a peninsula surrounded by a vast expanse of seas, and considers the sea as vital to its landmass.

The strategic geographical position of the Indian subcontinent on the world's maritime map is obvious. From its vantage point in peninsular South Asia, India overlooks the expanse of the Arabian Sea, the Indian Ocean and the Bay of Bengal, which is crisscrossed by numerous shipping routes

between the Middle East and Africa in the west, and South East Asia and Australasia in the east. The geographical configuration of the Indian Ocean itself lends it prominence in the southern hemisphere. It washes the major part of the African East Coast to one side, and the Indonesian archipelagoes and Australia to the other, lapping the shores of 30 littoral nations and stretching far south to the Antarctic, while forming a confluence with the Arabian Sea and the Bay of Bengal to the north. The Arabian Sea touches the coastlines of western peninsular India, Pakistan, Iran, and the countries of the Arab Middle East, and is traversed by oceanic routes which are nearly 3000 years old. The Bay of Bengal which lies between eastern coastal India, Bangladesh, Burma, Malaysia and Singapore, and the Straits of Malacca leading to the archipelagoes, has played an important part in the penetration by colonial power into the East and Far East. The fact of the Indian Ocean being the only ocean in the world that is named after a country, is a historical indicator of Indian mercantile predominance over this ocean.

Geography thus places India in a favourable situation. Of all oceans in the world, the Indian Ocean is the most 'land-locked'. The location of India in this oceanic expanse favours international commerce as well as foreign relations. India thus has great potential to develop through maritime trade and transportation. The gateways to this i.e. the ports of India, form a focus for the present study.

1.3 **Major, Intermediate & Minor Ports**

The operational classification of ports in India is based on their degree of importance from the national point of view. Presently, 11 ports are classified as *major ports* in India, 23 as *intermediate ports* and 141 as *minor ports*[6].

Article 364(2)(a) of the Constitution of the Republic of India defines a major port as "a port declared to be a major port by or under any law made by Parliament or any existing law and includes all areas for the time being included within the limits of such port". A port may be declared as a major port under provisions of Section 3(8) of the Indian Ports Act (1908). No specific criteria which would entitle a port to be regarded as a major port are laid down by the said Article, except that a port so declared comes under the directly responsibility of the Union Government for its development. According to the Ports *(Technical)* Committee of India (1948) however, facilities at a major port should include an all-weather sheltered harbour, modern berths which can take alongside steamers of at least 9.14 metre draft, as also direct road and rail linkages with the port-hinterland[7].

A quantitative sub-classification of ports, under the category of minor ports, has been suggested by Nanjundiah(1951)[8]. Under this, ports handling an annual cargo-volume of 1 lakh (=100,000) tonnes or more, or ports that are otherwise important, could be classed as intermediate ports. Other ports with annual cargo-volumes below this figure but not below 1500 tonnes, or those which were important for other reasons such as passenger amenities, customs or naval requirements, etc., could be classed as minor ports. The remaining ports would be classed as 'sub-ports' or 'petty-ports'. Cargo tonnages of 5 lakh tonnes *per annum* should be the minimum requisite volume that would entitle an intermediate port for consideration of development into a major port.

1.4 **The Major Ports of India & their Historical Background**

Major Ports in India have developed over a long sequence of time. Some of them started

as riverine wharfages or natural harbours that later grew into importance with the growth of trade. Some of them were established by intent as a part of Government's maritime and economic policy. The chronological development of these ports is briefly examined below.

The ports of Bombay, Calcutta and Madras came into existence during the rule of the East India Company[9]. These ports were governed by individual Acts, i.e. the Bombay Port Trust Act (1879), the Calcutta Port Trust Act (1890) and Madras Port Trust Act (1905). In 1921, they were declared Major Ports. Visakhapatnam and Cochin ports joined them as Major Ports *vide* similar declarations in 1925 and 1936, respectively.

At the time of Indian Independence, major ports in the country were in a poor and dilapidated state because of intensive overuse, lack of proper maintenance and inadequacy of port-assets during the wartime period when they were of considerable importance to the eastern theatre of World War II. The port of Karachi which had to a large extent served the needs of the hinterland areas now covered by the states of Punjab, Haryana, Jammu & Kashmir, Rajasthan, Uttar Pradesh, Madhya Pradesh and Gujarat, had now become a part of Pakistan. The major ports remaining in India i.e. those at Calcutta, Bombay, Madras, Cochin and Visakhapatnam were not in a position to cope with the existing traffic volume. To correct this imbalance, port development received continuous attention in determination of intersectoral investment allocations by the Government of India, with the object of meeting an evergrowing demand for port facilities.

At the commencement of the First Five-Year Plan in 1951, there were only five major ports sited at Calcutta, Bombay, Madras, Visakhapatnam and Cochin. Over the planning period since, new major ports have been developed at Kandla, Mormugao, Paradip, Mangalore, Tuticorin and Nhava-Sheva.

Before declaration as a major port, Kandla was a small port in the erstwhile state of Kutch, built largely for handling the export of (sea) salt to Calcutta. With the loss of Karachi to Pakistan in 1947 the need was keenly felt for a major port in this area to serve the growing requirements of northern India. Construction at Kandla Port commenced in 1952 and, with the construction of four deepwater berths together with ancillary structures, was completed in 1957. By 1959 the Port was fully equipped with requisite facilities and uplinked by metre-gauge railway to enable transportation of cargo to the North Indian States. The rail-link was upgraded to broad-gauge in 1969. Mormugao was declared a major port in 1963, after liberation of Goa from Portuguese control. This port which is a natural harbour permitting access to the navigable waters of Mandovi and Zuari rivers, had been historically important to the institution and development of Portuguese trade with India.

There was no port of any consequence along the long eastern stretch of coastline between Calcutta and Visakhapatnam of 840 kilometres till the construction of Paradip Port in 1962. Construction at Paradip was initially started by the state government of Orissa. Subsequently, the Government of India declared Paradip a major port in 1965 and took over. The Port was commissioned in 1966. New Mangalore and Tuticorin, with newly-constructed harbours and modern facilities, were declared as major ports in 1974, and opened to traffic in 1975.

Because of the upriver character of Calcutta Port, a search had been on in the 50s, for a suitable location for a port down the estuary of the Hooghly river which would not have problems of navigability and would provide adequate draft for large vessels. Haldia, situated nearer the sea and 104 kilometres downriver from Calcutta, did not suffer these constraints and was commissioned in 1977,

after the construction of harbour facilities, as an integral part of Calcutta Port. The Nhava-Sheva Port Trust was constituted by the Government of India in 1982, which sanctioned construction of the new port. This port, which became the eleventh major port of India, was inaugurated in 1989 and is now known as Jawaharlal Nehru Port.

1.5 Major Ports over the Planning Period

Economic development in independent India started through the plan process. An integrated framework for allround development of the country through the Five-Year Plans. Within the transport sector, the plan related the development of ports and shipping to growth patterns in imports and exports. Basic infrastructure at the ports was to be planned in keeping with the requirements of overseas traffic. Thus, for an appreciation of the present position of ports in India, this growth and interrelation should be studied since the inception of the First Five-Year Plan.

The main emphasis over the first two plans (1951-56 & 1956-61) was on rehabilitation and modernisation of existing facilities at the major ports and augmentation of their berthing capacities[11]. Despite such efforts, the ports remained substandard in many respects. Draft limitations, for example, precluded handling of modern bulk carriers and tankers, the size of which had grown beyond the drafts available at ports. Loading and unloading operations were still manual in nature, as the ports were not equipped with mechanical facilities. All this caused unnecessary delays to shipping, and mounted congestion at the ports.

To improve port conditions and bring relief to portusers, concerted effort was made in the Third Plan (1961-66) to create new capacity and modernise existing facilities[12]. The effort included modernisation and expansion of Bombay Port, construction of a deep-draft port at Haldia to serve as a satellite to the port at Calcutta, and the development of Mangalore and Tuticorin into major ports. Emphasis on improvement of port facilities continued to be a priority in the formulation of the three subsequent Annual Plans (between 1966-69) which, accordingly, incorporated development of a number of port projects, including the Madras Outer Harbour Project for handling large-sized oil tankers and ore carriers, Visakhapatnam Outer Harbour Project for handling iron ore, and dredging of the main harbour channel at Bombay Port.

The programme for port development in the Fourth Plan (1969-74) focused mainly on completion of ongoing projects, particularly the Haldia Dock, expansion of cargo-handling capacities at Tuticorin, Mangalore, and the outer harbours of Visakhapatnam and Madras, and improvement of ore handling facilities at Paradip and Mormugao[13]. Two new items added to the port development programme were the establishment of a Central Dredging Organisation to build dredging capabilities, and river training works within the Bhagirathi-Hooghly river system, with a view to optimising benefits from the Farakka Barrage. The main emphasis in the formulation of the Fifth Plan (1974-79) was again on completion of ongoing schemes. The few new schemes undertaken during this period, which included the replacement of oil pipelines at Bombay, an offshore terminal project at Salaya to meet the requirements of transporting crude from the Bombay High offshore oilfield to the Mathura and Koyali refineries, development of facilities at New Mangalore Port for the Kudremukh Iron Ore Project that had been established in a tie-up with Iran.

Two port projects reached completion over the Fifth Plan period[14]. The outer harbours at Madras and Visakhapatnam were commissioned, although the high-speed mechanical iron ore handling

plant had not yet become fully operational. Secondly, the Haldia Dock System was launched into operation in March 1977, for handling coal and iron ore traffic. Work was still in progress on installation of mechanical fertilizer-handling facilities at the fertilizer berth, development of a jetty for handling salt and sulphur, and of a berth for container traffic. At Cochin, the first phase of a programme for providing handling facilities for container traffic was completed and container ships started calling at the port.

In the Sixth Plan (1980-85), the main emphasis was to be on completion of facilities like warehouses and wharfages to allow for optimal capacity utilization[15]. Priority was given to development of container-handling facilities to meet the growing needs of container traffic. At Haldia, a full-fledged container berth was already in existence. Construction of a new container berth was proposed at Visakhapatnam Port. Provision was also made for acquisition of container-handling equipment for Bombay, Madras, Cochin, Visakhapatnam, Kandla, Paradip, Mangalore and Tuticorin ports. Ship-to-shore gantries were to be provided at Bombay and Cochin ports on the West Coast, and Haldia and Madras ports on the East Coast. At other ports, a limited number of containers would be handled by shore cranes/ forklifts and chassis.

Important schemes completed over the Seventh Plan (1985-90) included a general cargo berth at Kandla, augmentation of container-handling equipment at Cochin, multi-purpose berthing at Mormugao, construction of the outer arm and an oil jetty at Madras and provision of dredging equipment, and additional handling equipment at Bombay. A general cargo berth and a fertilizer berth was added at Paradip, and two general cargo berths were provided at New Mangalore. In Visakhapatnam, handling and dredging equipment was augmented, along with the construction of a general-cum-bulk cargo berth, an oil berth, and the crude oil discharge system at its outer harbour.[16] The current Eighth Plan (1992-97) expects to see completion of schemes sanctioned in the Seventh Plan, which including augmented container-handling facilities at Calcutta, Madras and Cochin, new cargo berthing at Kandla, jetties at Haldia and Mormugao and a warehouse at Haji Bunder in Bombay.[17]

In reviewing the planned development at major ports, evidence is found that government had realised the seriousness of their predicament. Government allocations to port development over the plan period have shown a rising trend, as is borne out uptil the Sixth Plan by the data below:

Period	*Plan Funding*
1st Plan (1950-55)	Rs.26.32 crores
2nd Plan (1956-61)	Rs.45.50 crores
3rd Plan (1961-66)	Rs.92.95 crores
Interregnum (1966-69) Annual Plans	
4th Plan (1969-74)	Rs.280.00 crores
5th Plan (1974-79)	Rs.308.00 crores
6th Plan (1980-85)	Rs.600.00 crores

(1 crore = 100,00,000)

1.6 Administration & Management in Port Undertakings

The administration of a port is responsible for efficient port operations, proper maintenance and upkeep of port property, optimum phasing of port improvement, and task allotments to port labour[18]. There is wide variation over the world in regard to the practice of ownership and management of ports in the world. Ports in West Asian countries like Syria, Kuwait and Iran are owned and operated

by their respective governments. Ports in the United States are owned and operated by category by the Federal and State Governments, and by local port authorities, municipalities, rail and road corporations and private corporations. In the United Kingdom, ports are owned by public authorities, municipalities or private companies. The mode of private corporate ownership does not exist in India, where major ports are administered under Acts of Parliament.

Under these, port administration in a major port is carried out by a Trust headed by a Chairman (and a Deputy Chairman, if necessary), consisting of trustees representing various interests appointed by Government, not more than 19 other trustees in case of Calcutta, Bombay and Madras Ports, and not more than 17 for the remainder.[9] The trustees are holders of either official or non-official positions. Official trustees represent departmental interests, for example, of the Customs and Railways. Non-official trustees generally represent trade, shipowners and labour. A representative of the Union Ministry of Shipping & Transport has also been appointed since 1980.

Almost all major interests are represented on the port trusts, in recognition that their coordinated effort is essential to fulfil national objectives. In accordance with the statutes governing major ports, all questions relating to the port trust are decided by majority vote of the trustees present. Financial matters under the Port Trust Acts require concurrent approval of the Union Government. Planning of operations and development in major ports is conducted by the Union Ministry of Shipping & Transport on the basis of plans drawn up by port trusts and in consultation with organisations like the Planning Commission, National Development Council, and the Union Ministries of Commerce and Finance, etc. Each Port Trust Board is required to be reconstituted every three years.

1.7 Administrative Frame

1.7.1 The Board of Trustees

Major ports in India are administered by port trusts which are autonomous bodies. While the Major Port Trust Act (1963) empowers the Union Government to constitute a Board of Trustees for each major port, intermediate and minor ports come under the administrative responsibility of the respective governments of the state or Union territory.

The Board of Trustees of Calcutta Port has 19 members. The Chairman who is executive-head of the Port is appointed by the Government of India. The Chairman heads the Board with two Deputy Chairmen, one of whom is posted at Calcutta and the other at Haldia. Besides the executive trustees, other *ex officio* members of the Board represent the Government of West Bengal (the Transport Secretary), the Union Ministry of Surface Transport (the Joint Secretary - Ports), the (Naval) Defence Services (the Naval Officer-in-charge at Calcutta), the Customs Department (the Collector of Customs), the South Eastern Railway (the Chief Operating Superintendent). Public corporations represented on the Board are the Indianoil Corporation (by the General Manager), Shipping Corporation of India (by the Regional General Manager), and the Central Inland Water Transport Corporation Indian Road Construction Corporation (by their Chairmen-cum-Managing Directors). These 12 members of the Board are called 'Official representatives'.

The other 7 members additional to these are 'non-Official representatives'. Three representatives are drawn from the three Chambers of Commerce, one representative each from the All India Shippers Council and the Association of Shipping Interests. Two remaining members represent the

labour unions - one from the National Union of Waterfront Workers of India (NUWWI), which is affiliated to the Indian National Trade Union Congress (INTUC), and the other from Calcutta Port Shore Mazdoor Union (CPSMU) affiliated to the Centre of Indian Trade Unions (CITU).

The tenure of the Board of Trustees is three years and vacancies occurring mid-term are filled only for the duration of the unexpired term of the Board. The Board is responsible for all work to be done for smooth running of the port. Its principal responsibilities are maintenance of the navigability of shipping channels, and conservancy and lighting of the harbour. The Board is also responsible for efficient functioning of the railway system owned and operated by Port authorities to provide rail facilities for cargo movements within the port area.

As a public body, the Port Trust generally follows the Government rules relevant to service conditions. Administrative matters are usually decided by majority vote of the Trustees present at the Board meeting convened for the purpose. In its financial aspect, the Board is empowered to receive grants from government, to raise loans in the open market and to fix charge rates and fees for various port services rendered by the Port. The Major Port Trusts Act does not provide any guidelines relating to the rates charged, costs incurred or returns on capital. The Port Trust is however statutorily required to receive prior Government approval for its annual budget and also to submit its annual report to Government. Annual accounts of the Port of Calcutta are subject to audit by the Comptroller and Auditor General of India (CAG).

1.7.2 **Organisation**

Day-to-day administration of the port is carried out through various departments, as shown in the administrative flowchart below. The Port of Calcutta has 14 departments. Fourteen Heads of Departments are in charge at corporate level at the Calcutta Port Trust headquarters, but are concerned primarily with the Calcutta Dock System. Below the resident Deputy Chairman at the Haldia Dock Complex, there are two General Managers - one for Operations and the other for Management & General Services. There are 8 divisions under them.

The Administration Department, headed by the Secretary, coordinates the work of all other departments, convenes meetings of the Board of Trustees, records proceedings of these meetings and conveys all Board decisions to the departments concerned. It also looks after policy matters, and personnel, security etc. The Finance Department which deals with financial planning, financial management, compilation and presentation of accounts, internal audit, costing and management accounting is under the Financial Adviser & Chief Accounts Officer (FACAO). The Marine Department, headed by the Director(DMD), is responsible for pilotage, dredging, port conservancy and fire services. The Traffic Department, under the Traffic Manager (TM), handles all matters relating to the receipt, storage, and loading and unloading of cargo, port railway operations, and also commercial matters. There are two engineering departments under civil and mechanical disciplines. The Civil Engineering Department headed by the Chief Engineer (CE) is responsible for all civil works at the port. The Mechanical Engineering Department under the Chief Mechanical Engineer (CME) is responsible for the upkeep of cargo-handling equipment, electrical lock-gates and railway locomotives, and for the maintenance of more than 100 port-vessels. .

Advice regarding the navigability of river channels, and on the need for dredging and river training emanates from the Hydraulic Engineering Department under the Chief Hydraulic Engineer (CHE). The Medical Department headed by the Chief Medical Officer (CMO) looks after health and

medical services. The Materials Management Department has the Chief Materials Manager (CMM) as its head and oversees stocks at the port. The functions of the Research and Planning Department headed by its Director are to provide management-related services comprising the management information system, port statistics, project formulation, evaluation monitoring, forecasting and traffic analyses, trade promotion activities and electronic data processing. Other port departments are headed by the Land Manager (LM), Legal Adviser (LA), Labour Adviser & Industrial Relations Officer (LAIRO) and Chief Vigilance Officer (CVO).

1.8 A Review of the Literature

This review of literature spans three broad areas relevant to the proposed study. The first is literature pertaining to financial management, particularly in the public sector, which is the broad area of focus for the present study. The second is literature specific to ports and harbours, where the principles of financial management are applied. The third is literature relating to the role of ports in the economic development of the country. These are dealt with below.

1.8.1 Literature on Financial Management

Financial management is an area of considerable research interest in India, because of the dominance of the public sector within large-scale enterprise in the Indian mixed economy. An indicative survey of the broad areas encompassed by this research reveals that it has focused on the aspects of corporate financial behaviour, capital structure planning, capital budgeting, management of working capital, financial management of public sector undertakings (PSUs) and financial management in general.

1.8.1(i) *Corporate Financial Behaviour:*

Annual surveys of finances within Indian joint-stock companies are regularly published by the Reserve Bank of India. The Department of Company Affairs of the Government of India publishes bi-monthly studies on financial performance of large public and private limited companies. Chaudhary(1962) is an analysis of such statements, undertaken as doctoral research, the analysis being directed to judge their performance. A number of studies, such as Jain(1969), Kaura & Subrahmanyam(1979), and Chakraborty & Reddy(1973), focus specifically on financial performance. Jain(1969) is an analytical study of financial performance of the cement companies in Indian environment, and was also undertaken as doctoral research. Financial performance of selected cement companies in India has also been analysed in the Kaura & Subrahmanyam study, which also encompasses a 'inter-firm comparison' based on the 'cause and effect' approach. Comparison at inter-firm level is also made in the study by Chakraborty & Reddy, using standard financial ratios as diagnostic tools. For the private sector, a financial study at corporate level is found in Saxena(1968), which is on the Delhi Cloth & General Mills Ltd. Studies on the appropriateness of methodologies for financial analysis constitute another sub-group; examples are Chakraborty(1966), and Rajagopalan(1968), which are evaluations of financial statements. Both analyse the limitations of financial statements through the use of financial ratios and other tools. Sharma & Rao(1976) is of the opinion that general assessment of financial soundness is inaccurate, if based on individual financial ratios in isolation; a multivariate approach is used instead to test corporate failure.

Although the studies reviewed above assess financial performance of different Indian companies with the help of financial ratios and other financial tools, none apply these ratios to the case of major ports in India. The present study thus involves the ratio analysis in judging financial performance and profitability of selected Indian major ports.

1.8.1(ii) *Capital Structure Planning:*

Capitalisation of enterprises is the next area of focus, in view of the bearing this has on scale of operations, as well as on performance and financial soundness. Capital structure planning includes valuation of shares on offer, as well as dividend policies governing distribution of profits. An example of studies on these aspects is Sharma & Hanumantharao(1969), where the applicability of the Modigliani & Miller Hypothesis has been tested over 30 engineering companies and an analysis also made of the influence of debt on the value of the firm. Another example is Singh(1981) where analysis is made of debt-equity ratios in the Indian corporate sector and the dependence of the Indian corporate sector on debt-capital is brought out. Venkataraman *et al*(1981) also deals with valuation in relation to debt-equity ratios in the Indian corporate sector. Finance of companies and company debt is studied in Garg(1981). Mishra(1969) is a study of the financing of new companies, undertaken as doctoral research. Agarwal(1969) discusses the requirements of finance for expansion of a company and the sources of such finance. Sharma & Murthy(1981) considers the role of specialised financial institutions as being pertinent. Kohli(1969) considers as a paradigm, the optimisation of capital structure within corporate enterprise. Batra(1980) is a study of the above financial features, contextual to the tyre-industry.

The above studies are found to have mainly discussed capital structure planning and the sources of finance, and especially the debt-equity ratios, which are deemed less important in the context of the present study. The present study thus mainly focuses on money management and is, in this respect, quite different to any of the above studies.

1.8.1(iii) *Capital Budgeting:*

Considering capital in term of its constituents, a number of research studies consider allocational aspects of the same, within the framework of capital budgeting and investment analysis. Kennedy(1965) lays down the broad parameters of project evaluation and an analytical description of the steps involved in the capital-budgeting process. Musa(1966) discusses techniques of ascertaining profitability of investment proposals which are in common use, and introduces the concept of net terminal value as an aid to optimum decision-making. Ananthan(1983) considers problems of investment appraisal when an inflationary situation is prevalent, postulating that some modification of ordinary capital budgeting procedures is necessary in such a case. Swami(1983) also explores aspects of capital budgeting techniques in the special context of inflation, where some modifications in standard appraisal of capital-budgeting proposals are suggested. Roy & Chaudhari(1982) is concerned with modelling the capital-budgeting procedure. The use of quantitative methods in decision making in capital budgeting and investment plans has been discussed in Barot(1966).

Capital budgeting processes and investment analysis are seen to have been the general focal area of the above studies This is accorded less importance by the present study, in which the areas of capital-budgeting and investment are discussed very pointedly.

1.8.1(iv) *Management of Working Capital:*

In addition to physical assets and capital resources, there are operational aspects of per-

formance within corporate enterprise which entail optimality in the management of working capital. Agarwal(1967) is a doctoral study of industrial finance in India over an extended time-frame, with particular emphasis on working capital needs. Working capital management is also the subject of Agarwal(1981) and Chari(1982). Chari considers ways of managing working capital more efficiently. Problems encountered in working-capital management in service units and loss-making units are the subject of Bhattacharyya(1982) and Bhattacharyya(1983), where integrated approaches to working-capital management are suggested. Chakraborty(1973) considers the concept of operating cycles as useful to improving the management of working capital. A case-study of the problem, in the context of the Rajasthan State Trading Corporation, is made in Mathur & Mishra(1979), using techniques of financial and statistical analysis to measure efficiency of working-capital management. Cash management in a developing economy has been discussed in the study of Singh & Kaupisch(1970).

Management of working capital is the only subject of discussion in the above studies. The present study excludes the context, since inefficient management of working capital is not the reason behind the poor performance of Calcutta-Haldia Port.

1.8.1(v) *Financial Management in Public Undertakings:*

Studies specific to public sector undertakings also exist. Ramanadhan(1963) studies financial problems within PSUs, relating their financial organisation to pricing and profit criteria, and to their profitability. Chattopadhyay(1982) studies these aspects *vis-a-vis* corporate capitalisation. Grewal(1972) analyses the relevance of financial management techniques to PSUs. Murty & Prasad(1981) reviews structural changes in sources and uses of funds in PSUs over an extended time-frame, suggesting ways of improving internal fund-generation and proper utilisation of external funds for the future. Bhattacharyya(1968) suggests guidelines for financial appraisal of PSUs, while Nigam(1967) applies appraisal-techniques to assess financial performance. Investment decisions within PSUs are the subject of Raj(1977), Rao & Sarma(1982), and Sanyal(1982), which lay down desiderata for investment planning and analyse PSU-investment in the light of these. Rao & Sarma further discusses special features of capital financing in public enterprises.

A number of case-studies, e.g. Rao(1979) and Naidu(1980) exist, which apply financial analysis to specific PSUs. Rao undertakes a sample-study of Tamilnadu State Enterprises with regard to their finances. Naidu analyses the social obligations and finances of the Andhra Pradesh State Electricity Board.

Emphases on financial management in the PSUs is contextually quite inappropriate for a study of Indian major ports. The motive of the PSU is to earn a profit, while the principal motive of a major port is to render services to port-users, for economic development of the hinterland as well as the country. The above studies have all stressed improvement of financial management of PSUs with the object of making them profit-oriented. The main object of the present study is, on the other hand, to analyse weaknesses in the financial management of Indian major ports and to suggest remedies which would ensure that these problems are overcome and these ports earn the minimum rate of return recommended by the Major Ports Commission (1970).

1.8.1(vi) *Financial Management in General*

As financial management remains the main area of focus for the present study, a number of studies on general procedures of financial management have been explored. Some of these are Kuchhal(1977), Raj(1978), Kulkarni(1981), and Khan & Jain(1981) which are source-works for the

entire spectrum of financial management procedures, particularly as applicable to PSUs in India, and cover the relevant financial tools and strategies for managerial decisions. The study by Kuchhal is aimed at evolving a coordinated approach to financial management. Raj makes a lucid presentation of the basic concepts and techniques of modern corporate financial management in an Indian context. Kulkarni formulates a conceptual approach to financial management. Khan & Jain covers the theme of financial management in the three interrelated financial areas of investment, financing and dividend policy, and also tools important to financial planning and management, such as funds-flow, cash-flow and ratio analysis. Contributions to the literature on financial management in general are also made by Ramachandran(1972), Murty(1978), Ramamurty(1978) and Pandey(1979). Ramachandran discusses the financial planning and control system. Murty mainly studies the management of finances. Working-capital management is the main focus of study in Ramamurty, while Pandey analyses financial problems and interprets the data that make for good financial decisions. The study last-named contains a comprehensive treatment of capital budgeting, capital structure and dividend decisions, along with working-capital management. Other studies such as Van Horne(1985), Gupta & Radhaswamy(1987), Chandra(1993), and Banerjee(1994) formulate general principles of financial management with the help of ratio-analysis and other numerical tools.

The present study also uses ratio-analyses in evaluating the financial management of selected major ports in India.

1.8.2 **Literature on Ports & Harbours**

It is surprising to observe, however, that there have not been any studies exclusively on the financial management of Calcutta Port, which is the research context for the present study. Studies on the Port and on other major ports have a prolonged history. Some of the committees appointed by Government to address wage-revision in ports, e.g. the Chowdhury Committee (1957), the Central Wage Board for Port & Dock Workers (1969), and the Lokur Committee (1977), did discuss port finances in their Reports, but were neither exhaustive nor purposeful in their comment. The Major Ports Commission (1970) made a comprehensive study for the first time in India, of all aspects of integrated working and development of major ports. But this study insofar as it pertains to financial management is only partial, with some of the important aspects which can influence the very quality of financial management being dealt with only in summary. The Reports thus do not reach useful conclusions.

The literature on ports and harbours reviewed as preliminary to the present study may be divided into two sub-parts: namely, literature on Calcutta-Haldia Port, and literature on ports other than Calcutta-Haldia Port.

1.8.2(i) *Literature on Calcutta-Haldia Port:*

It may be noted that the existing literature on this Port is not adequate to a study of the research problem. The first impression that one gets from a review of port literature is that port studies have been a relatively neglected branch in Indian economic literature. In fact, adequate material on Calcutta Port, particularly in book-form, was not available till the mid-60s. The first-known history of the Port in Mukherjee(1912) was followed by Mukherjee(1968) on the same lines, extending the review of historical growth of the Port. Banerjee(1975) presents an economic history of the Port over the period from 1833 to 1900. These books apart, there are important research reports presented by official committees, such as the Report of the Haldia Study Team (1965) and the Report of the Study Groups

on the Utilization of Port Facilities (1965), which had surveyed different aspects of traffic development and traffic-potential of major ports, including Calcutta-Haldia. Functional aspects of the optimum utilization of the Calcutta-Haldia port complex have been discussed in a study by the Calcutta Port Trust commissioned in 1976.

Dasgupta & Bierson(1987), and Ray(1993) are surveys of the maritime history of Indian ports, and consider within them, the historical aspects of the development of Calcutta Port. Haldia has been separately studied in Ghosal(1979). The historical account of the development of the bulk commodity-handling terminal at Haldia has also been studied in the paper. Although the institution of this port is relatively recent, the port overcomes drawbacks arising from the tortuous upriver passage to Calcutta Port, by offering bulk-handling facilities to the same hinterland.

A number of studies, both by expert bodies and individual scholars, have focused on operational features of the two ports. The Haldia Study Team Report (1965) and the Calcutta Port Trust report (1976) are among the former, which aim at a prescription of means to achieve optimum utilisation of port facilities. Proceedings of a seminar organised by the Indian Chamber of Commerce at Calcutta in 1980, address the same problem analytically. Background papers, namely ICC(1980) and Bose (1980) explore the technological, physical, institutional and managerial limitations that feature in the decline of port traffic. Demand factors - which include economic conditions of the hinterland of the Port and of the world - as well as policy-variables like the transport policy of the Government of India find main emphasis in the paper by Bose. However, Majumdar(1980) and Sau(1980) are of the view that the decline of the port is not explainable entirely by technological factors, and economic reasons predominate. This point of view is further echoed in Sau(1984) where analytical discussion is made about the problems confronting Calcutta Port. Sau(1989) addresses problems of dredging and maintaining the shipping channel down-river to Haldia. An analysis of economic factors limiting the volume of cargo handled by the Port has also been made in the study. Sau(1990) investigates factors leading to the decline in the importance of this Port relative to other major ports in India and to underutilisation of its capacity. Putatunda(1980) considers the need to improve managerial efficiency in ports. Ghosh(1992) is a simulation-study of port turn-around time as applied to Calcutta Port, relating improved profitability to the need for increasing efficiency of loading operations. Turn-around time of a ship, which is the duration of detention time from a ship's arrival at port to its sailing again, is discussed in further detail later in the present study.

Keeping in mind that the ports of Calcutta and Haldia are contiguous, offer mutually complementary services, and are components of a single port administration, the effort in the present study will be to study the two ports within a unified study-frame, rather than individually, as most previous studies have accomplished.

1.8.2(ii) *Literature on Ports other than Calcutta-Haldia Port:*

Besides the studies above which specifically address the context of Calcutta-Haldia Port, an extensive literature spans port planning and management, both in theoretical and empirical aspect, e.g. Bown(1967), Paston & Rees(1972), Nagorski(1972), Goss(1977), Nair(1977), Bennathan & Walters(1979), Atkins(1983) and Bandelaire(1986). The studies of Bown and Goss analyse the economics of port operations. Port expenditures are analysed and the demand for port facilities is discussed in Paston & Rees. The principles of port planning and organisation and also problems faced by ports in developing countries are the main area of focus in the study of Nagorski. Nair emphasises appropriate accounting and costing procedures for sea ports and suggested guidelines in his study. Procedures which

determine port prices in developed countries are explored by Bennathan & Walters. Matters relating to modern maritime terminal operations and their management are studied by Atkins in the case of the port of Oakland. Bandelaire covers port administration and management in Tokyo Port in his study. In the Indian context, Rao(1987) investigates the financial management factor in case of Visakhapatnam Port. Other ports in India are covered by descriptive studies such as Batra(1970) and Batra(1974), Kurani(1984a), Kurani(1984b), and Sahai(1986), which are reviewed below.

1.8.3 **Literature on the Economic Role of Ports**

Apart from studies on financial management and general discussion on ports and harbours, a specialised literature is also to be found some literatures which emphasises the role played by ports in the economic development of port-hinterlands and of the country. Some of the associated studies are reviewed below.

Sahai(1986) describes the historical background of the ports of India, examining their economic role. The contribution to economic development made by the port of Bombay, and by other major and other ports in India, is studied by Batra(1967), Batra(1970) and Batra(1974). Kurani(1984a) and Kurani(1984b) also examine services rendered by ports situated on the east coast and west coast of India, respectively, and analyse statistical data on their performance. Mukherjee(1968), earlier-mentioned, also explores the importance of Calcutta Port to the economic development of the Eastern India. Patra(1988) reflects on the bearing that ports situated in the State of Orissa have had on the economic development of that state. The history of Mormugao Port along with its functions and its contribution to economic development in Goa has been studied in Pereira(1978). The studies by Sau earlier-mentioned make the same reflections in context of Calcutta Port. Paston & Rees(1972), earlier-mentioned, states that a lowering of port costs accompanied by expansion of port facilities attracts port-users, and leads to the development of trade and commerce of the port-region. Oram & Baker(1971) shows that hinterland-development follows the development of the port provided the port can be efficiently operated. Condit(1981) provides an overview of the port of New York and indicates the part played by this port on the economic development of its service-region. Schwimmer & Amundsen(1973) relate development of a sea port and its hinterland to proper port-management.

Reviewing the above studies, it becomes apparent that while some studies hold physical, institutional, technological and managerial problems as mainly responsible for the poor port-performance at Calcutta, others assign this responsibility mainly to economic and policy considerations. No existing study explores financial management problems in Calcutta Port as a factor to poor performance. The study to be made here thus covers this unresearched problem, in an endeavour to show that sound financial management is more primary to any other factor that has found mention in the literature reviewed above, if the performance of Calcutta-Haldia Port is to be improved.

1.9 **The Present Study**

Effective financial management results in securing the greatest possible return from every unit of capital deployed within the firm. Financial Management deals with the planning and controlling of financial resources through resolution of three major decisions: namely the investment (or asset-mix) decision; the financing (or capital-mix) decision and the dividend (or profit-allocation) decision. Finan-

cial management is also directly concerned with production, marketing and other functions whenever decisions are made about the acquisition or distribution of assets. The traditional approach the scope of this to the raising of corporate funds. The modern approach takes a more broad-based view of financial management, thus covering both acquisition of funds and their allocation. Overall corporate results are adversely affected, without sound understanding of financial management principles.

Ports are in no way an exception, since they provide saleable services for which vast prior infrastructural investment has been necessary. Effective financial management thus becomes a must to ensuring that they can maintain all port facilities at high technical and operating levels at all times. India, as a maritime country, is a peninsula surrounded by a vast expanse of seas, and considers the sea as vital to its landmass. The location of India in this oceanic expanse favours international commerce as well as foreign relations. India thus has great potential to develop through maritime trade and transportation. The ports of India form a focus for the present study. Of these, 11 ports are presently classified as major ports in India, 23 as intermediate ports and 141 as minor ports.

Article 364(2)(a) of the Constitution of the Republic of India defines a major port as "a port declared to be a major port by or under any law made by Parliament or any existing law and includes all areas for the time being included within the limits of such port". The ports of Bombay, Calcutta and Madras which came into existence during the rule of the East India were declared Major Ports in 1921. Visakhapatnam and Cochin ports joined them as Major Ports in 1925 and 1936. At the commencement of the First Five-Year Plan in 1951, these were the only major ports in India. Over the planning period since, new major ports have been developed at Kandla, Mormugao, Paradip, Mangalore, Tuticorin and Nhava-Sheva. Nhava-Sheva Port is now known as Jawaharlal Nehru Port. The Haldia Dock Complex which was commissioned in 1977 is an integral part of Calcutta Port. Administration in a major port is carried out by a Port Trust composed of trustees appointed by the Government representing various interests. The Port of Calcutta has 14 departments, based primarily with CDS. The HDC has 8 divisions.

Initial emphasis in port development in India was on rehabilitation and modernisation of existing facilities at the major ports and augmentation of their berthing capacities. Thereafter, efforts were made to create new capacity and modernise existing facilities, followed by an emphasis on improvement in auxiliary facilities and technology to allow for optimal capacity utilization.

Financial management, particularly in the public sector, is the broad area of focus for the present study. Because of the dominance of the public sector within large-scale enterprise in the Indian mixed economy, the literature has focused on the aspects of corporate financial behaviour, capital structure planning, capital budgeting, management of working capital, financial management of public sector undertakings (PSUs) and financial management in general. There have not been any studies exclusive to financial management of Calcutta Port, which is the research context for the present study, and although some Committee Reports do discuss port finances, these are neither exhaustive nor purposeful in their comment.

The second area concerns the application of principles of financial management to the functioning of ports and harbours. Existing literature on CHP is not adequate to a study of the research problem, although a number of studies, both by expert bodies and individual scholars, have focused on operational features. Besides studies which specifically address the context of Calcutta-Haldia Port, a third area in the literature spans both theoretical and empirical aspects of port planning and management, and the role played by ports in the economic development of port-hinterlands and of the country.

Reviewing the above studies, it becomes apparent that while some cite physical, institutional, technological and managerial problems as being mainly responsible for poor port-performance at Calcutta, others assign this responsibility to economic and policy considerations. No study exists, which explores financial management problems as a factor to poor performance at CHP. The study made here covers this unresearched problem, and endeavours to show that sound financial management is more primary to any other factor finding mention in the literature, to improved performance of CHP.

The ports of Calcutta and Haldia are contiguous, offer mutually complementary services, and are components of a single port administration. Therefore the present study will consider the two ports within a unified study-frame, rather than individually, as was done in most previous studies. The study is executed over eight chapters, of which the first is introductory. Chapter 2 discusses definitions of the Finance Function and applications of this in the context of financial management at CHP. The third chapter considers historically, the development of CDS and HDC, which now together comprise the Calcutta-Haldia Port. Chapter 4 analyses information available from the Port and other secondary sources on acquisition and allocation of funds, on capital assets, investment, and capital-structure planning at CHP. Chapter 5 considers features relating to cost and revenue structures and categories at CHP, including the distinction between operating and non-operating costs and revenues. The analysis expands into the relationship between port costs and port revenues, which is the focus in Chapter 6. An informed assessment of the operational performance and profitability at CHP, including physical performance variables, can then be made in Chapter 7, basing itself on the preceding chapters. Chapter 8 integrates the summary and conclusions obtained by the present study.

With the understanding of the problem-context, namely the major ports of India of which the Calcutta-Haldia Port is a prime example, the study now passes on the problem itself by studying Financial Management, its methods and implications.

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CHAPTER - 2

THE FINANCE FUNCTION

2.1 Definition of the Finance Function

Analysis in the present chapter is sequenced over three parts, covering at first, the nature of the finance function , i.e. its definition, classifications and coverage, and a description of the objectives of financial enterprise. The analysis then considers the finance function for the Calcutta Port Trust as a unit and its breakup between the CDS and HDC sub-systems. Notice is then taken of accounting and budgeting procedures which may be applied at major ports, with the concepts of port budgets, budgetary control, revenue and capital budgets and the alternatives regarding management accounting procedures being described in some detail.

Before entering the details, we may first consider the definition of the finance function. The finance function may be approached from three alternative angles. In accordance with the dictionary- meaning of the word 'finance', a first approach concerns itself almost exclusively with the procurement of funds. The finance function is then defined as simply the task of providing funds needed by an enterprise on terms that are most favourable in the light of its objectives. So the finance function becomes a discussion on the instruments, institutions and practices through which funds are obtained. In such a definition it is assumed that expenditure decisions giving rise to the demand for capital, are made elsewhere within the enterprise and the main task of the financial authority is to determine how these funds can best be raised. The definition is too narrow to be of any use to this analysis.

The second alternative definition is based mainly on interpretation of the finance function as broaderthan just procurement of funds. Here finance is identified with cash, and since nearly every business transaction involves transfer of cash directly or indirectly, the term finance concerns everything in the conduct of enterprise.Obviously, such a definition is toobroad to be meaningful.

The third and last definition is most acceptable for this analysis. The definition entails a decision-making process, following comparative analysis of alternative uses and sources of funds, or in other words, envisages the finance function as the procurement of funds and their effective utilisation within the enterprise. The financial authority has a major role to play in planning an enterprise's need for funds i.e. in raising necessary funds and putting them to effective use. In terms of this definition, the finance function covers financial planning, forecasting of cash receipts and disbursements, realisation of funds, uses and allocations of funds, and financial control .

Effective financial management is imperative for any enterprise irrespective of size, nature of ownership and control, and of whether it is a manufacturing or service organisation. For successful operations in complex operating environments, knowledge of the principles of sound financial management is essential. If important areas relating to financial management are neglected, the overall results of enterprise will be adversely affected.

Port managements are not exempt from the principles of sound financial management. An efficient port must have dependable finances, which alone enable port administration to keep all port facilities at high technical and operating levels and to render efficient and economically viable services to users. The port has to maintain reserve funds for port development, replacement of outmoded port facilities and for unforeseen contingencies. The major objective of the port authority is to achieve a minimum return, adequate for payment of interest charges and for the replacement needs of the port. For such purposes, the exercise of rigorous control over expenditure becomes necessary, as in all other organisations, so that uneconomical areas and services can be identified and dealt with appropriately. Such analysis is attempted subsequently in chapters 5 and 6 of this study.

Although the basic functions of a port are to provide transhipment facilities for cargo and passengers from one mode of transport to another via sea, the manner and efficiency with which this is done and the magnitude of costs and charges involved which influence the economy of the entire region. For instance, an inefficient, high-cost port may render it impossible for the hinterland served to capture or maintain markets abroad for exportable items of cargo, and may also make the cargo imports required by the hinterland an extremely costly and uneconomic proposition. Both cases adversely affect the overall economy in the region of the port. Conversely, a financially-sound port, through its relatively cheaper service, could increase the flow of exports and open up new markets by making goods from outside markets more competitive and more attractive.

2.2 Classification of the Finance Function

The finance function is traditionally classified under two groups. These are, respectively, the executive finance function and the incidental finance function. As the names would indicate, the first requires administrative skills in planning and execution; the second is so-named because it covers, for the most part, routine work (chiefly clerical) necessary to bring financial decisions at the executive level into effect.[1].

2.2.1 Executive Finance Function

The basic executive finance functions are establishing asset-management policies, estimating and controlling cash flows and requirements, determining allocation of net profits, determining the needs and sources of new outside financing and conducting negotiations for the same, monitoring financial performance, and so on.

2.2.1(i) *Establishment of Asset-Management Policies*

All finance functions are concerned with the control of cash flows. In order to estimate and provide for the cash requirements of an enterprise, financial managers must know, among other things, how much cash will be 'tied-up' in various forms of non-cash assets. Determination of asset-management policies includes decisions regarding the nature and coverage of insurance that an enterprise will carry. The formation of sound and consistent asset-management policies is an indispensable prerequisite to successful financial management. However the role of financial managers in formulating asset-management policies is not exclusive in itself. Marketing executives participate in decisions involving carrying of inventories of finished goods, customer credit policy, etc. Production managers, likewise, participate in decisions concerned with carrying of inventories of raw materials and factory supplies, purchases or rentals of building, machinery and equipment, etc.

Determination of asset-management policies includes decisions regarding forms and coverage of insurance borne by an enterprise . In estimating and providing for cash requirements, the financial managers must asses the volume of cash that will be 'tied up' in the various non-cash assets. Consistent asset-management policies are prerequisite to successful financial management.

2.2.1.(ii) *Estimation and Control of Cash-flows and Requirements*

Another area of importance in the executive finance function is the ensurance of an adequate supply of cash for smooth flow of operations.Cash originates in sales, hence, cash requirements are closely related to the volume of sales. Provision of cash in proper amounts at proper times requires forecasting exercises. This financial exercise creates an expanding dilemma. The general principle of operation of enterprise is to match inflows of cash to outflows of cash so that, after providing for enough cash to current obligations, there would be no idle cash-balances earning nothing for the enterprise. But a practical problem is that cash inflows are not precisely predictable and seldom offset one another. So, to overcome this problem, the financial manager must retain a cash-balance on hand to pay bills on hand. At this point, the dilemma sets in. The more be protects his enterprise against risks associated with the inability to pay bills on time, the more the loss of returns that might have alternatively been gained from investment of idle cash. This is, in essence, the dilemma of liquidity versus profitability.

Another important executive finance function is the adequate supply of cash at all times for smooth operations of the enterprise. Since flows of cash originate in sales and cash requirements are closely related to the volume of sales, the fulfilment of the responsibility of providing cash in proper amounts at the proper time requires forecasting. The general principle of operation of the enterprise is to match inflow of cash to outflow of cash so that, after providing enough cash to meet current obligations, therewould be no idle cash balance earning nothing for the enterprise. But the practical problem is that cash inflows are not precisely predictable and seldom offset one another. So to overcome this problem the financial manager must keep a cash balance on hand to pay bills on hand.

2.2.1 (iii) *Determination of the Allocation of Net Profits*

There are generally three choices in respect of allocation of net profits after payment of taxes. These are, respectively, the payment of dividends to shareholders as return against their investments ; transfer of a portion of net profits to reserves for expansion of operations; and payments to employees in profit-sharing plans. As the last is made largely on contractual basis, the enterprise's continuing free choice in the matter of use of net profits effectively involves only the first two alternatives, i.e., payment of dividends and retention of earnings to acquire additional assets.

2.2.1(iv) *Determination of Needs and Sources of New Outside Financing*

On the basis of forecasts of inflows and outflows of cash in the ordinary course of operations, the financial authority should be able to ascertain rather closely the times when additional funds from outside sources would be needed, the length of the periods for which they will be needed, how best they can be raised, and from what sources they will be repaid. Outside financing refers to all kinds of borrowings, including borrowing from commercial banks and financial institutions, and the issue of debentures on the one hand, and the other principal method of outside financing i.e. through sale of additional equity shares.

2.2.1(v) *Negotiation of New Outside Financing*

Outside financing may be of both short-term and long-term nature. Whatever its nature,

continuing negotiations have to be conducted in order to obtain it, because of the time-lap before its sanction. So the finance function does not stop with the decision to undertake outside financing ; it extends onwards through the negotiations that arrange for this.

2.2.1(vi) *Monitoring Financial Performance*

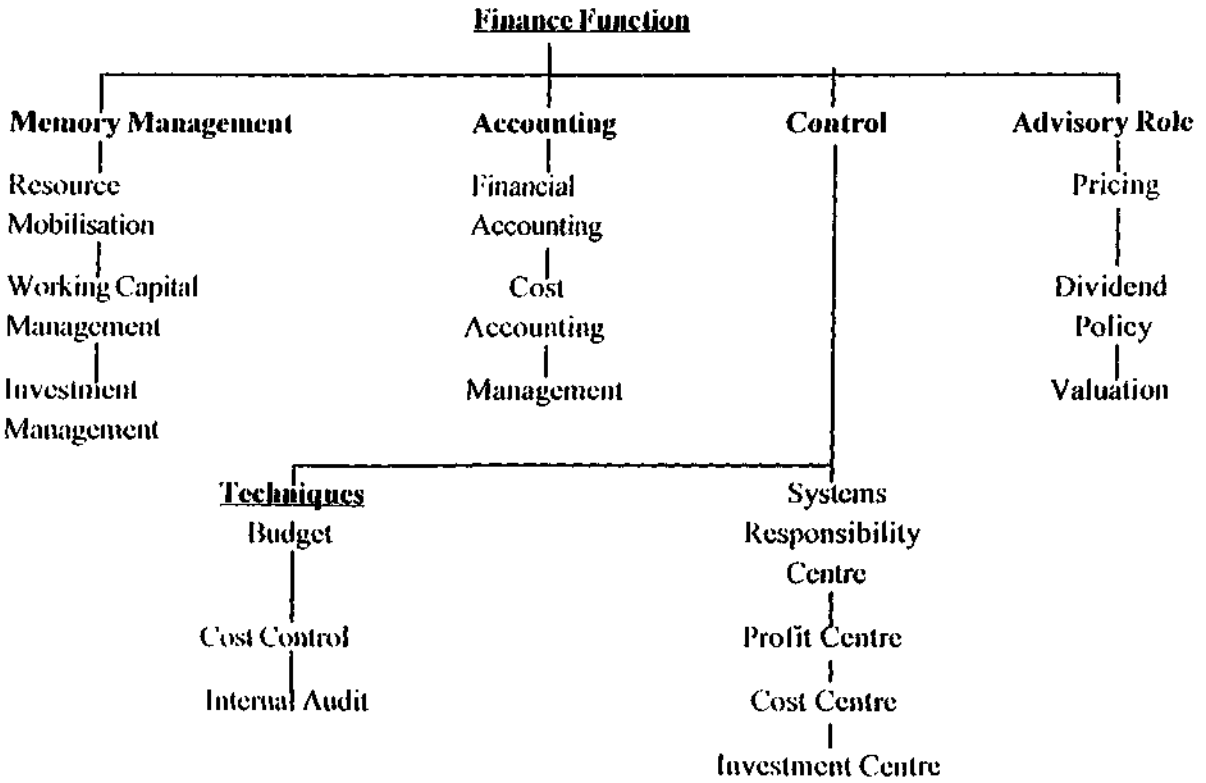
Monitoring financial performance requires retrospective analysis of the operating period for the purpose of evaluating the wisdom and efficiency of the financial planning exercise. Analysis of what has already occurred is of great value in improving the standards, techniques and procedures of financial control involved in carrying out the finance function. Thus this process of periodic review acquires importance within the finance function.

2.2.2 **Incidental Finance Function**

The basic incidental finance functions, on the other hand, are (i) supervision of cash in-flows and outflows (receipts & payments) and safeguarding of cash balances ; (ii) safe-custody of valuable papers such as securities, policies and so on; (iii) maintenance of records and periodic reporting ; and (iv) supervision of the mechanical details of financing. The nature of these incidental finance functions is self-explanatory.

2.2.3 **Area of the Finance Function**

The total area covered by the finance function may be presented by the following schematic chart



2.3 Financial Objectives

In the Indian major ports no clear enunciation existed for a long time of financial objectives, and as such they concerned themselves with the sole financial target of matching income to costs. In context, it would be of interest to note the observation made in 1970 by the Commission of Major Ports, that a port should so operate "as to meet all the financial obligations such as working expenses, depreciation, interest, etc." The earlier Port Trust Acts had not, however, spelt out this obligation clearly. The Bombay Port Trust Act [1879], for instance, cast an obligation on the Port to make ample annual provision for the due fulfilment of all liabilities either by readjustment of expenditure or by increase of rates. The Port was enjoined that in the event of any deficiency in port income, it should forthwith take such measures to prevent the recurrence of such deficiencies. However, no obligations to earn a standard rate of return on port investment have been prescribed in the various Port Acts. This is probably the reason why many of the ports have attempted only a sort of balancing of budgets, equating revenues with expenditure and taking an *ad hoc* view in respect of future liabilities[4].

The Viscount Rochdale Committee [1962] enquiring into the major ports of Great Britain had observed that "there had been a tendency, not only in this country, to treat various branches of transport as some form of public service to which, for one reason or another, sound financial principles need not be applied. The operation of transport services as state or municipal undertakings has accentuated this tendency"[5]. The Indian major ports were no exception to this and the same trend was observed in case of them for a long time. In conjunction to this, the functions which ports perform have a public utility aspect in the sense that they offer the community a certain basic economic floor upon which many other economic activities can be built. Similarly, most ports resemble public utilities in the sense that profits are extremely slim, if not marginal (in some cases, the ports incur cash deficits).[6]

But major ports cannot be efficiently run without creating surplus balances which are essential for unforeseen contingencies and for the development of the port and replacement of its assets. There is thus strong support in favour of the creation of surplus by major ports. A few elements of this argument are:

i) The view that ports should function as viable commercial organisations and should also generate surpluses that take care of at least a part of development needs found favour in Indian major ports.

ii) The recommendation of the Major Ports Reforms Committee Report [1986] also stressed in support of such a view, that "Ports must function on commercial lines, generate surpluses for their development and provide service at acceptable levels of efficiency and productivity. Depreciation should be provided for on replacement cost basis, instead of historical costs as at present"[8].

iii) An observation of United Nations Conference on Trade And Development relating to port management has mentioned "in 10% of the cases examined the financial objective was to cover current operating and maintenance expenses, depreciation and interest charges on loans. In the remainder, i.e.90% of the cases, there were additional objectives: either to make provisions for port improvement, or to earn a return on the capital employed, or both"[9].

iv) The Rochdale Commission recommended that ports should be regarded as commercial undertakings, and stated that ports should aim at providing, out of revenues, for (a) working expenses; (b) interest on loans; (c) depreciation of assets on replacement-cost basis; (d) taxation; and (e) some margin for reserves to meet unforeseen contingencies (i.e.premature obsolescence) and to help finance minor improvements.

In support of the above recommendations, the following reasons that argue for surplus creation at Indian major port may be pointed out.

Firstly, huge investments has been made from the public exchequer on the development of major ports, particularly since the commencement of planning. The ports are thus required to raise internal resources to meet their development and replacement needs.

Secondly, there has been rapid escalation in construction costs. In addition to this, non-availability or delays in supply of certain important inputs often lead to lengthening of construction periods, thus increasing the burden of capitalised interest.

Thirdly, massive outlays have to be made on dredging, breakwaters, etc., to adapt the ports to latest trends in shipping technology which demand for construction of deep-drafted harbours.

Fourthly, the replacement cost of port assets particularly in context of inflation is greatly in excess of their original costs and consequently the funds set apart for replacement needs are often not adequate to meet actual costs the time of replacement.

Fifthly, with the technological revolution, the risks associated with premature obsolescence and the resultant need to replace obsolete equipment early have assumed greater importance.

The Major Ports Commission [1970] recommended a rate of return of 12 percent on capital employed as a financial objective for major ports, with the following break-up: 6% towards interest charges; 3% towards replacement, rehabilitation and modernisation of capital assets; and 3% towards reserves for development, repayment of loans and contingencies.[10] The recommendation had been accepted by Government, and major ports had adopted the principle while fixing charges. Subsequently, interest rates on Government loans were revised from time to time, and in 1981-82, were 9%. Hence major ports were expected to earn 15% on capital employed by them. This return of 15% could be considered reasonable in view of the fact that Government also insisted upon a 12% post-tax return on net worth for the priority industries in public sector, and that ports do not have any obligation to pay taxes to the national exchequer. Although this objective of earning 15% return on capital employed on every port operation is desirable, achieving this rate of return on an overall basis may not seem to be practicable. The UNCTAD study stated, "port charges represent only a small percentage of the value of products carried, particularly of high-value goods"[11].

Pursuance of financial objectives as recommended by the Major Ports Commission [1970] would enable ports to maintain financial independence to a considerable extent. They would also be able to make investments in port assets which confer benefits to shipowners in the form of faster turn-round time of ships.

2.4.1 The Finance Function in Calcutta Port

The finance function has been shown to be one of the major functional areas of any enterprise, the others being production, personnel management and marketing. The head of the finance department of an enterprise is usually the Financial Officer, though this designation would differ from firm to firm. In some organisations he may be designated the Financial Adviser or Chief Accounts Officer, while in others he may be designated as the Vice-President (Finance). The importance attached to his function can be gauged from the fact that the financial officer is located on the same scalar level as the managers of production and distribution, and reports directly to the chief executive officer[12]. This importance is further emphasised by the fact that in most organisations the financial officer is a member of the Board of Directors. Furthermore, wherever he is not a member of the Board, he usually attends board meetings in order to be consulted and advise on the financial matters of the enterprise. Thus he serves as an important member of the 'top management team'[13].

Since financial decisions are of vital importance for the survival and growth of an enterprise it is essential to establish the finance function on sound and efficient lines. The exact nature of organisation for financial management will vary from firm to firm depending upon factors such as firm-size, nature of operations, nature of financial operations, capability of the firm's financial officers and, most importantly, on the financial philosophy of the enterprise [14]. In the light of this wide diversity of organisational practices, it is not surprising to find that in most organisations, the financial officer carries only routine responsibilities connected with the finance function e.g. receipt, disbursement and custody of funds and securities; supervision of debenture and share registrations and transfers; administration of all tax affairs; preparation of confidential payrolls; and so on.

At Calcutta Port, the finance function is given status equal with other departments like Traffic, Administration, Engineering, etc. The financial team is headed by the Financial Adviser & Chief Accounts Officer (FACAO). Financial management of Calcutta Port is under his immediate charge and he works under the immediate supervision of the Chairman, and under overall control of the Board of Trustees. All the powers of the port lie in the Board of Trustees and, subject to the provisions of the Major Port Trusts Act [1963] and directives issued by the Central Government, the Board enjoys autonomy. The Ministry of Shipping and Transport, through periodic directives, lays down the general pattern of financial control to be exercised by the Board of Trustees and the limits on their powers in certain matters like capital expenditure and appointments to top posts.

The delegation and exercise of financial and administrative powers of the Board of Management of major ports in areas and extent are indicated below :

Provision of the Act	Limits to Power of the Board of Management
i) Section 34(1) Power to enter into contracts	a) Rs.100 lakhs for Bombay & Calcutta, and Rs.75 lakhs for Madras, Cochin & Visakhapatnam. Rs.50 lakhs for other ports. b) Board of Management will exercise powers to the above extent in respect of projects/ schemes included therein sanctioned under Sec. 92 and 93 of the Major Port Trusts Act [1963], subject to evaluation/scrutiny of tenders by the tender committee.

ii) Section 36	
Power to execute deposit works	Full Powers
iii) Section 85	
Power to take overdrafts or temporary loans	Rs. 10 lakhs in all ports
iv) Section 92(1)	
Power to charge expenditures to capital	Rs.100 lakhs for Bombay & Calcutta. Rs.75 lakhs for Madras, Cochin & Visakhapatnam. Rs.50 lakhs for other ports
v) Section 93(1)	
Power to sanction new works of appliances	Rs.100 lakhs for Bombay & Calcutta. Rs.75 lakhs for Madras, Cochin & Visakhapatnam. Rs. 50 lakhs for other ports
vi) Section 94	
Power to order execution of works	Rs.50 lakhs for Bombay & Calcutta. Rs. 25 lakhs for other ports
vii) Section 95	
Power to compound or compromise claims	Rs.3 lakhs for all ports
viii) Section 96	
Power to write off losses	Rs.30 thousand in each case and Rs.10 lakhs in aggregate in one year.
ix) Section 101(1)	
Power to sanction expenditure without adherence to approved estimates except in emergencies.	Rs. 5 lakhs for Bombay & Calcutta. Rs.3 lakhs for other ports
x) Section 26	
Power to appoint consulting engineers	The Board of Management may appoint a person as consulting engineer subject to prior sanction of the Union Government

The FACAO is the principal staff officer with regard to financial matters at the Port. He is required to attend all meetings of the Port Trust, including meetings of the different subcommittees of trustees. His concurrence is necessary to any proposal having financial implications, before it can be put up to a board meeting. In case the FACAO has not concurred, a copy of his views are to be appended to the proposal. As the designation implies, his financial duties fall broadly under two categories: financial advice, and maintenance of accounts, including budgets. The FACAO is responsible for the following functions :

i) compilation of accounts, submission of periodical accounting reports and supply of other important financial statements to management ;

ii) preparation of budget estimates of income and expenditure;

iii) custodianship for the Port's cash balance and for maintenance of its bank accounts;

iv) assessment of port charges on equipment;

v) conduct of internal audit of various departments and verification of initial records maintained by the department;

vi) prechecks of bills and claims for all payments, before effecting the payments;

vii) scrutiny of proposals involving financial implications, in accordance with rules and regulations.

The organisational chain for the finance function at Calcutta Port is presented in the schedule below.

For the Calcutta Port Trust.

FACAO

Additional FACAO

Deputy FACAO

Senior Accounts Officer *(Sectional Heads)*

Accounts Officer

For the Haldia Dock Complex

Deputy Manager(Finance)

Assistant Manager *(one post)*

Junior Assistant Manager *(two posts)*

Accounts Officers *(four posts)*

Inspector of Accounts *(six posts)*

Treasurers

2.4.2 **The Finance Division of the Calcutta Port Trust**

All financial aspects of the Port's operations are covered by the FACAO's department. The department is further subdivided into different sections, each having specific functions, to ease the work load. The functions of the finance division concern booking , cash & pay, collection, post-operation & railway audit, engineering -accounts, outdoor audit, stores audit, provident fund, labour accounts, workshop accounts, and bills receivable, as briefly outlined below.

2.4.2(i) *Accounting Responsibilities & Realisation of Charges*

The Booking Section serves as the main component of the accounting system , although a system of central accounting as such does not exist under the Calcutta Port Trust. Every transaction made by the Calcutta Port Trust is recorded through the section . Functioning and accounting reports from all departments are procured and a balance sheet prepared, for audit by the Auditor-General

(A.G.), West Bengal. All purchase-proposals for departments other than Stores and Establishment are routed through the section. A 9-digit coding system is incorporated into the accounting system to keep account of various heads of expenditure. These nine digits identify the department concerned, the head of expenditure against which spending has been incurred and the designated officer responsible for disbursal and control of the expenditure. A cost-ledger is maintained, in which all relevant financial information is recorded. Every payment to port employees is made through the *Cash & pay Section*, although salary bills for the Port Trust are presently prepared by an outside computer-agency.

Bills payable by various parties using port facilities and services are realised through the *Bills Recoverable Section.*

The *Collection Section* is charged with the realisation of the revenue-dues of the Calcutta Port Trust, through its subsections which cover jetty collection, marine collections, coal & petroleum levies, and shed charges. Calcutta Port has five jetty collection centres located at Kidderpore, Netaji Subhas Dock, Katapukur, and at the Kidderpore and Netaji Subhas Dock Boat-toll collection centres. These collection offices levy jetty charges according to the 'scale of rates' or 'schedule of rates' prescribed. Pilotage charges, berth-hire charges, tug charges, etc. from steamer-agents are realised by the *Marine Collections* subsection, and charges for the import and export of coal by the*Coal and Petroleum Levies* subsection which also charges due for both oil jetties at Haldia and Budge-Budge. Storage charges due to the port are realised by the *Shed Charges* subsection. Sheds at the Port can be used free of cost by both importers and exporters for specified periods of time, which differ according to nature of cargo. The total volume of charges realised under this last-named head is appreciably more compared to the others.

2.4.2 (ii) *Mode of Collection of Port charges*

Modes of collection of charges are of two types, i.e. acceptance of cash payments, applicable mainly to occasional portusers, and acceptance of charges against deposit accounts of regular userss. In case of the latter, charges are collected and debited to the parties' accounts. However, the minimum deposit in such accounts must not be less than Rs. 10,000. Separate counters realise import and export charges, since these differ in nature. For fixing and realisation of charges leviable, the documents required include jetty *challans*, bills of lading, invoices, bills of entry and packing lists for import-cargo, and shipping bills, dock challans and invoices for export cargo.

2.4.2(iii) *Engineering Accounts*

Bills and proposals raised by theChief Engineer (CE) and Chief Mechanical Engineer (CME) are processed, checked and audited by the *Engineering Accounts Section* and then passed on to the appropriate authority. For work-projects that originating from the CE, administrative approval first has to be obtained and detailed estimates of the project are submitted, against which sanction is obtained. Tenders are then opened, the executing agency selected, and a work order issued. After the work has been executed, work bills are reimbursed. Every stage of the operation cycle must have a 'no-objection certificate' from the FACAO. Estimates contained in proposals received from theCME are vetted by the *Workshop Accounts Section*, which also scrutinises and arranges payment of bills drawn for non-budgeted staff of the CME's department . The section also prepares monthly statements of payments to non-gazetted staff for the purpose of recording accounts of these.

2.4.2(iv) *The Audit Sections*

Post-operation audit and refunds of charges in case of overcharge, or reclamation of charges in case of undercharge are made by the *Post-Operation & Railway Audit Section*, in accordance with documents sent by the Traffic department. The functions of the section are, thus, the collection of extra charges after audit (by the rules concerned, the CPT can claim such charges within a period of two years), the passing of weighment-charges bills after verification, and consideration of all claims for refund of overcharges. In case of overcharge, the party concerned has to claim the extra amount paid, with authenticated documents, within a period of six months.

The *Outdoor Audit Section* principally audits various documents of traffic, e.g. stock registers, etc. and preserves such documents. The section also audits the stock-register of stores; supervises encashment of leave by Class IV staff of the Port; and verifies provident fund accounts before settlement. Outdoor audit staff section are empowered to visit different sheds, docks, etc. for verification and audit of relevant documents. All proposals for purchases of stores are however processed and audited by a separate *Stores Audit Section*, which also approves all suppliers' bills. Proposals of purchase are checked for conformity against the financial powers of the Controller of Stores. Periodic reports are prepared by the section on the stores operation of the Port.

2.4.2(v) *Labour-Related Accounts*

The *Labour Account Section* prepares regular statements of pay bills and arranges for payment of the bills for 'A' category porters. It also prepares the retirement benefit bills of port labour. The *Provident Fund Section* maintains personal provident fund accounts for all personnel of the Port Trust, and prepares and processes final provident fund bills of all employees before their superannuation.

2.4.3 **The Finance Division of the Haldia Dock Complex**

The finance division of HDC keeps track of the financial position and movement of funds at the Haldia Dock Complex, and prepares and maintains records of all details of income and expenditure at the port, along with the usual 'budgetary functions'. The work of the division spreads over seven sections.

2.4.3 (i) *Charges Leviable*

Miscellaneous sources of revenues accruing to the HDC include marine & cargo dues, rental dues, railway and demurrage charges, and electricity charges. Marine dues are charges realised from steamer agents against the facilities provided to them by the port, include pilotage charges, ships-handling charges, tug-hire charges (for both tugs in-stream, and tugs in-docks), berth-hire charges, and port dues (to cover a part of dredging costs). Parties availing the HDC's services are required to advance an *ad hoc* deposit against cargo-handling charges. Charges levied depend on the mechanical facility provided, manpower recruited for handling the particular consignment, nature of the cargo, weight of the cargo, etc.

All land property in the dock and the Haldia township is owned by the HDC. This land has however been leased out to parties whose functions are port-oriented or port-boosting in nature, i.e. which help in nourishment of the port by providing it with more seaborne traffic. The HDC earns estate

rents from such tenants. The HDC collects haulage & demurrage charges on railway operations. The accounting part of this charge is the responsibility of the finance division but the billing part is done by the traffic department. The HDC acquires electricity from the West Bengal State Electricity Board and distributes it in the Haldia township through a captive substation. Against this, electricity charges are collected from users of this service.

2.4.3(ii) *Sectional Responsibilities*

All incomes of the HDC are dealt with by the *Revenue Section*, which keeps records of these and prepares financial/ revenue statements for the complex. The *Engineering Accounts Section* keeps record of all expenditures relating to engineering equipment. The section is further subdivided into two wings, one of which looks after engineering bills, while the other is in charge of engineering booking, or the general account. Accounts and bills of suppliers of various materials to port stores are dealt with mainly by the *Stores Accounts Section*. A 10-digit coding system is followed, in which the first three-digits identify the cost-centre, the next three define the type of expenditure, and the subsequent three digits indicate cost units. The last digit is a 'dummy' meant for accommodating future eventualities.

The *Cash Section* (or *Pay Bill Section*) deals with salaries and wages of HDC employees and the other fringe benefits and retirement benefits due to them, with the exception of provident funds accounts which are handled at Calcutta. All bills for the HDC, excluding the salary bill, are prepared by the *Electronic Data Processing Section*. The *Pre-Audit Secion* handles the pre-audit of accounts before any payment is made against them. Accounting for the HDC as a whole is finalised through the *General Account Section*. Ledgers are maintained, and the preparation of the port's budget is done in accordance with these.

2.5 Accounting and Budgeting Procedures

In accordance with the provisions of the Major Port Trusts Act [1963], all major ports maintain accounts on systematic and scientific basis. Within the system of accounting followed, port income and expenditure are accounted for on a functional basis, i.e. income and expenditure against any a particular activity are shown as such in the accounts. There are four principal activities which are common to both income and expenditure, namely, cargo handling and storage, port and dock facilities for shipping, including pilotage, working of port railways and rental of port lands and buildings. There is also a fifth activity i.e. management and general administration found on the expenditure side alone, and expenditure on it has to be apportioned amongst the preceding four activities by source of expenditure. Besides these, there are separate accounting heads that show finance, and miscellaneous incomes and expenditures. Income accounts appear only in the general ledger where all transactions are recorded against each main activity, while expenditure accounts appear not only in the general ledger but also in the cost ledger, where costs are recorded under each main activity.

Port accounts are classified into *income accounts* and *expenditure accounts*. Expenditure accounts are further presented departmentally, by budget-centre and are then broken down by cost centres (areas of responsibilities). These cost centres comprise an expenditure breakup over various categories. A budget-centre, on the other hand, is a section of the organisation of an undertaking defined for the purpose of budgetary control.

2.5.1 The Budgetary Function

Financial control is possible only after preparation of budgets. As preliminary to analyses of budgeting procedures, general concepts about budgets and budgetary control are first considered.

Control can be of two types, i.e. physical and financial. Physical control is in term of units of output or any other such physical measure, while financial control is generally expressed in monetary terms, in relation to time or quantity. Both forms are essential to financial management. Financial control plays an even more important role compared to physical control, if we consider the overall importance of finance to the enterprise.

2.5.1.(i) *The Budget*

A budget may be defined as the quantitative expression of a business plan for a specified future period, usually the financial year, and thus is simply a financial forecast for a future period. According to the definition provided by the Institute of Cost and Management Accountants of the U.K., a budget is "a financial and/or quantitative statement, prepared and approved prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. It may include income, expenditure and the employment of capital". In short, it may be considered as a guide to enterprise.

2.5.1.(ii) *Budgetary Control*

Every plan must be followed up by action or operation. Management has to control operations continuously in line with the plans, so that planned results may be achieved. This 'plan-action-control' may therefore be considered to be a triangle and without any only one aspect the triangle remains incomplete. Budgetary control can then be defined as the control exercised by management in comparing performance with plans, and in initiating corrective action to secure planned results.

Budgeting has therefore assumed a great deal of importance in both public and private enterprises. Budgets are one of the recognised tools of management, both while formulating policies, and while keeping check on their execution. It is thus very desirable that major ports should develop a proper system of budgetary control. "A properly designed and organised budgetary control system, when understood and supported by the staff, should contribute positively and constructively to the efficient working of the port"[16].

2.5.2 Classification of the Budget

Budgets may comprise two types viz.the revenue budget and capital budget.

2.5.2(i) *Revenue Budget*

The revenue budget pertains to operating and other expenditure chargeable to the period of account viz. one year.. The revenue budget is prepared on the basis of traffic forecasts made on realistic projections by the Research and Planning Department. The expenditure budget, on the other hand. is prepared on the basis of past actuals of expenditures and probable changes that may take place in the ensuing year.

The process of preparation of a revenue budget is as follows. First, the finance department

sends a general letter addressed to all the heads of the departments requesting them to furnish information relating to the budget estimates for the ensuing year. After compilation and consolidation of the information provided, the finance department sends the budget estimates to the Port Secretary's department. This enables the Secretary's department to make the budget estimates available to the Trustees, in advance of the special Board meeting. As per section 98 of the Major Port Trusts Act [1963], the Board has to meet on or before 31st January in each year to consider budget estimates, and may provisionally approve them with or without modification. The provisionally-approved estimates have to be sent to the Union Government of India or before 10th February each year.

2.5.2(ii) *Capital Budget*

The capital budgeting process involves planning the availability, and controlling allocation and expenditure of long-term investment funds. Three essential questions that have to be answered in the capital budgeting process, relate to how much money would be needed for forseeable capital expenditure in the coming planning period, how much money is likely to be available for such proposed investments, and how the funds available would be assigned to projects under construction.

Control over capital expenditure would be difficult without capital budgeting. Capital budgeting helps management in forecasting future requirements for funds and thereby enables advance planning to secure additional funds when these are needed. Keller & Ferrara define capital expenditure decisions "as those which involve expenditures made in anticipation of maintaining current revenues and increasing future revenue prospects".[17]

In capital expenditure decisions, management has several alternatives and the question it confronts relates to which alternative should be chosen to invest its limited resources . Naturally, management would like to choose the investment alternative which yields the greatest net benefit. The benefit or return obtained from investment of such funds must at least be equal to the cost of capital procured for investment.

In case of major ports, the capital budget covers both development works of the port as well as works connected with renewals and replacements. The budget is prepared on the same lines as the Revenue Budget, within the framework of the port's programmes under the Five-Year Plan, which had in turn been framed following the necessary cost-benefit analysis. The capital budget for a port may be broken down over several groups of items, such as

i)capital expenditures on *port-properties*, including land; buildings, sheds and other structures; capital costs of dredging; and capital expenses on construction of wharves, roads and *bunders*;

ii) capital expenditures on *port-equipment*, including floating craft; railway and rolling stock; navigational aids; and cranes and vehicles;

iii) capital expenditures on *port-plant & installations*, including plant and machinery; and installations for water, electricity, telecommunications and fire-fighting.

The individual items above are again divided into sub-items and there is a separate and detailed accounts classification in the general ledger to collect and compare actual capital expenditure under each item or sub-item, as also for each individual work.

According to section 98 of the Major Port Trusts Act [1963], major ports have to submit

budget estimates to the Union Government every year for its sanction. It may be mentioned here that PSUs are not required to submit their revenue budgets to Government, but that the policy of submitting capital budgets to Government for approval is natural and cannot be found fault with, since for both initial capital outlay and major capital expansion, the sums have largely to be drawn from the central exchequer.

2.5.3 **Management Accounting**

One of the most widely acceptable definitions of management accounting defines this as the presentation of accounting information in such a way as to assist management in the creation of policy and in the day-to-day operations of an undertaking[18]. Management accounting thus refers to presentation of accounting information to management in order to assist the managerial functions of decision making, planning and control. Management accounting can be said to include all accounting techniques including financial and cost accounting, and also the use, in appropriate situations, of mathematical and statistical techniques. From this standpoint, the following methods and techniques are usually applied:

i) Analysis of Cash & Fund Flows
ii) Analysis & Interpretation of Financial Statements, using Accounting Ratios & Statistical Measures
iii) Financial Planning
iv) Trend Analysis & Business Forecasting
v) Capital Budgeting
vi) Marginal Costing
vii) Budgetary Control & Standard Costing
viii) Operations Research
ix) Performance & Efficiency Audit
x) Reporting

These methods and techniques are now explored in further detail.

2.5.3(i) *Analysis of Cash & Fund Flows*

Cash-flow statements are statements of changes in the financial positions prepared on the basis of funds defined as cash or cash-equivalent. In simple words, a cash-flow statement shows the sources of cash receipts and the purposes for which payments are made, thus explaining the changes in the cash balances of the enterprise. Funds-flow statements will be widely defined in chapter 4. In summary, it may be said the funds-flow statement is a useful tool in the financial manager's analytical kit. The basic purpose of the funds-flow statement is to indicate on a historical basis where cash came from and where it was used. It is often regarded as a counterpart to the cash budget. The cash budget is a projection into the future whereas the funds-flow statement is historical. The funds-flow statement is a report on the financial operations of an enterprise.

A cash-flow statement is not very different from a funds-flow statement. While in the preparation of funds-flow statements, the sources and uses of all funds are taken into account, only the sources and uses of cash alone are taken into consideration in the preparation of cash-flow statement.

2.5.3(ii) *Analysis & Interpretation of Financial Statements*

The purposes of the conventional revenue statement and balance sheet are to show, firstly, the results of operations for the period under review, and secondly, the assets and liabilities of the firm at the end of the reference period. It is however difficult to make inferences from the mass of figures included in the usual annual financial statements. So in order to gauge the financial health of the firm accurately it generally becomes necessary to regroup and analyse the figures disclosed by the conventional statements. The use of accounting ratios enables conclusions to be drawn from the redrafted figures as to the earning capacity and financial condition of an enterprise.

Analysis of financial statements comprises the breaking- down of a complex set of factors of figures into simple elements. Analyses are generally of two types, viz. (a) analysis of financial statements over a number of years, in which case the 'trend' is important; and (b) analysis of the financial position of the enterprise at a particular date, as disclosed in a set of financial statements. To evaluate the financial conditions and performance of a firm, the financial analyst needs certain yardsticks. Accounting ratios and statistical measures are frequently used for the purpose.

2.5.3(iii) *Financial Planning*

Financial planning is defined in the guidelines to be followed in important decisions relating to financial matters, such as

(a) the determination of capital structure requirements and their finance;
(b) the determination of working capital requirements and their finance.
(c) the scheduling of long-term investments e.g. capital expenditure planning.
(d) determination of credit policies, profit-retention policies, and dividend policies, etc.

These are some of the essentials of the financial spectrum usually included under financial management. Some require management accounting in a restrictive view which includes various accounting methods, systems and techniques, e.g. Financial Accounting, Cost Accounting, Budgetary Control and Standard Costing, Marginal Costing, etc. It is imperative for any management accounting system to consider the full implications of all aspects that relate to finance i.e. the raising of the financial resources, their effective deployment by the enterprise, generation of internal financial resources and their allocation.

2.5.3(iv) *Trend Analysis & Business Forecasting*

For analysis of the trends of data shown in financial statements, it is necessary to obtain statements for a number of years. The method involves calculation of percentage relationship that each statement-item bears to the value of the same item in the 'base year'. Trend percentages disclose changes in financial and operating data over specific periods and make it possible for the analyst to form an opinion as to whether the tendencies reflected by the data are favourable or unfavourable.

Trend ratios are calculated only for some important items which can be logically connected with each other. Unless the connection exists, the ratios are not meaningful. For example, trend ratios for sales, although showing a clear increasing tendency, are meaningful in the real sense when compared to (a) operating assets which might have increased at a higher rate; (b) the cost of goods sold which might have increased at a lower rate; or (c) with operating expenses.

While auditing trend percentages, the following weak linkages need to be kept in mind:

a) Trend percentages or ratios become uncomparable if the accounting practices reflected in accounts have not been consistently followed every year.
b) A change in price level would make comparisons out of tune. Financial figures for every year need to be adjusted in the light of charge the prices before trend percentages are calculated.
c) Trend percentages must not be read without referencing also considering the absolute data on which they are based. In the absence of absolute data, conclusions could be misleading.

2.5.3(v) *Capital Budgeting*

The concept of capital budgeting has been discussed earlier. In summary, it may be said that the capital budgeting bears reference to decisions to invest current funds most efficiently in long-term activities in anticipation of an expected flow of future benefits over a series of years. These long-term activities are those which affect operations beyond the period of one year. Generally, capital budgeting decisions will include addition, disposal, modification and replacement of long-term or fixed assets.

2.5.3(vi) *Marginal Costing*

To understand marginal costing, the meaning of Marginal Cost first needs to be defined. Marginal Cost is the amount, at any given volume of output, by which aggregate costs are changed if the volume of output is increased or decreased by one unit. This is subject to the condition that fixed costs do not change with the increase in volume. Marginal Costing comprise ascertainment of these costs and of the effect on profits of changes in volume or type of output, by differentiating between fixed costs and variable costs. Although not a distinct method of cost-ascertainment such as job or process costing, it applies existing methods in a manner that brings out the relationship between profit and volume of output. Marginal costing may be so designed as to apply to all types of costing: i.e. job and process, as well as historical and standard.

2.5.3(vii) *Budgetary Control & Standard Costing*

Standard cost has been defined as a predetermined cost which is computed in advance of production on the basis of specifications of all the factors affecting costs and used in standard costing. When standard costs are used, the technique is known as Standard Costing. Standard Costing is thus defined as the ascertainment and use of standard costs and the measurement and analysis of variances, and thus, sequentially involves the ascertainment and use of standard costs; the measurement of actual costs; comparison of standard costs to actual costs to obtain variances, and the analysis of variances leading to appropriate corrective action, where necessary.

Budgetary Control had been discussed earlier in this chapter. While Budgetary Control and Standard Costing are interrelated, they are not absolutely interdependent[19]. Budgetary controls can operate in industries where it would be difficult, or at least not desirable, to apply standard costing. Generally, however, it is found that the value of budgetary control is enhanced if used in conjunction with standard costing. Similarly, standard costing becomes more effective and fruitful if supported by a system of budgetary control. If no formal system of budgetary control is in operation, standard costing can be carried out only by defining these conditions as part of the standard costing procedure. This is

tantamount to the establishment of budgets even in the absence of formal budgetary control. Standard Costing and Budgetary Control are therefore complementary to each other and, for optimum benefits both should be in operation simultaneously.

2.5.3(viii) *Operations Research*

A simple definition of Operations Research describes it as " a scientific methodology which is applied to the study of the operations of large complex organisations or activities with a view to assessing the overall implications of various alternative courses of action, thus providing an improved basis for management decisions". The science is of recent origin. It was first applied in the last World War, when scientists where asked to work in close calibration with senior officers of the Royal Air Force in Britain, to find out the reasons for the ineffectiveness of certain radars supplied to the RAF.

Operations researchers have now turned their attention to the complex problems of industry and business and apply scientific methods of observation and analysis to resolve these. However there still appears to be some air of mystery about these because like any other applied science, it is difficult to define operations research so as to fully cover all aspects of its use. In a nutshell , operations research may be said to be the application of modern science to complex managerial problems so as to help management in scientific determination of policies and actions. Thus operations research is primarily a tool for planning rather than for control. Engineers, technicians, mathematicians, statisticians and, to some extent, accountants combine to form an operations research team which makes an overall scientific analysis of problems through mathematical or statistical models. These models, which incorporate measurement of factors of chance and risk, constitute the framework of analysis. They assist in predicting and comparing the results of feasible actions in order to assist the choice of the best alternative.

2.5.3(ix) *Performance & Efficiency Audit*

Efficiency or performance audit comprises the appraisal of operational performance to determine whether business plans have been executed efficiently. It is not enough merely to see that expenditure incurred has been according to plan, but the results obtained should also be as they where planned. Broadly speaking, efficiency audit starts with the examination of the plan (which may, for instance, be in the form of financial or other functional budgets), and extends to the comparison of the actual performance against the plan and the investigation into the reasons for variances. Such comparisons may also be made with reference to performances during other periods or may be extended to inter-firm comparison between units of the same or of different industries.

Efficiency audit is of particular significance in industrial concerns and ensures that real economy has, in general, been effected in all spheres of business i.e. that every rupee invested in capital or other fields yields optimum returns and investment in different spheres of business is adequate, balanced, and optimum. Efficiency audit also checks whether job evaluation and merit rating have been introduced on correct lines and are being rigorously adhered to.

2.5.3(x) *Reporting*

Management can exercise control only when information is made available to it. Such information may relate to physical or financial performance, or to variations of actual costs from standards, where standard costing is in force. Information is usually conveyed to appropriate management levels in the form of written reports enabling them to take appropriate action. Reports for internal use

are called internal reports. Management is also obliged to supply financial and other information to shareholders, tax authorities, stock exchanges and Government agencies like the Company Law Administration, Controller of Capital Issues, etc. Reports to external groups are called external reports. Most reports are periodic in nature and are made at regular intervals, as per the requirements.

Periodic reports are also referred to as General Purpose Reports. As against general reports, there are also special reports intended for special purposes. While special reports are submitted usually to the Board of Directors or top management, general purpose reports are submitted to various levels of management from foreman to managing director. These various levels according to keller and Ferrara are a line of defence against waste .....some levels could actually be more important in cost control than other levels"[20].

A primary function of accounting reports is to communicate information pertaining to the area of responsibility of any specific individual. The report highlights unfavourable trends, if any, so as to enable the individual to institute corrective action before the situation goes out of control. In large enterprises, it is not possible for middle and top management to personally observe and organize all operations covering production, finance, marketing costs and other operational activity. To enable the management to exercise effective control the accounting department has to compute, summarize and interpret the information. Reports prepared by the accounting department are of great help in reducing costs and increasing the effectiveness of different operations.

2.6 Financial Management for Major Ports

The finance function may be defined from three alternative dimensions i.e. as being almost exclusively concerned with the procurement of funds; as being identified with cash; or as a decision-making process, following from analytical comparison of alternative uses and sources of funds - the third definition is most suitable to the present analysis. Effective financial management is imperative for any enterprise irrespective of size, nature of ownership and control, whether it belongs to the manufacturing or service sector. Thus a financially-sound port, through relatively cheaper services, can increase both export and import flows by making trade with outside markets more competitive and attractive.

The two groups under which the finance function is traditionally classified are, respectively, executive and incidental finance functions. Of these, the first applies administrative skills in planning and execution, while the second covers the work of bringing financial decisions at the executive level into effect. The executive finance functions concern formulation of asset-management policies, estimation and control of cash requirements and flows, allocation of net profits, assessment of the need and sources for external finance, and, importantly, the monitoring of financial performance. Incidental finance functions concern, on the other hand, supervision over of cash receipts and payments, custody and security over cash balances, securities, etc. and the maintenance of records and periodic reporting.

Port commissions had previously recommended that ports should operate in a manner that meets all financial obligations such as working expenses, depreciation, interest, etc. But a strong argument in favour of the creation of surplus at ports bases itself on the fact that major ports cannot be efficiently run without creating surplus balances which are essential both in unforeseen contingencies, and for meeting the costs of port development and asset-replacement. The Major Ports Commission

[1970] thus recommended a 12 percent return on capital employed for all major ports. The principle is now followed while fixing port-charges, while with escalation in interest charges, the recommended rate of return has been scaled up to 15 percent. Pursuance of such recommended financial objectives would enable ports to exercise considerable financial independence, and also to invest in incremental port assets which benefit portusers.

Executive management can exercise financial control only when information is made available to it relating to physical or financial performance, or to variations of actual costs from standard costs. Such information is usually forthcoming in the form of written reports from the financial management conveyed to appropriate executive levels. Such reports can be internal or external, depending on whom they are circulated among. Most accounting and audit reports are periodic in nature and are made at regular intervals.

Financial management at Calcutta-Haldia Port is under immediate charge of the Financial Adviser & Chief Accounts Officer (FACAO), under overall control of the Port Trust. Financial aspects of operations at CDS and HDCare subdivided under different sections. A comprehensive picture of the financial health of a port is available from various financial documents prepared under its finance function. All major ports maintain systematic accounts. Port incomes and expenditure are accounted for on a functional basis, with four principal port activities being common to both income and expenditure, namely, cargo handling and storage, port and dock facilities for shipping, including pilotage, working of port railways and rental of port lands and buildings. A fifth activity i.e. management and general administration is found on the expenditure side alone. Besides these, separate accounting heads show finance and miscellaneous incomes and expenditures for a port.

The budget is a financial device which pre-states business plans for the forthcoming financial year. Budgetary control is then applied by comparing performance with plans, and initiating corrective action wherever necessary. A properly-designed budgetary control system thus contributes positively to the efficient working of a major port. Port budgets comprise many interrelated components. The revenue budget pertains to operating and other expenditure chargeable to the accounting year, and is prepared on the basis of traffic forecasts made on realistic basis by the Research and Planning Department. The expenditure budget on the other hand is prepared on the basis of past actuals of expenditures and probable changes that may take place in the ensuing year. Capital-budgeting involves planning the availability and allocation of long-term investment funds. The capital budget at major ports covers both development works and maintenance works, and is prepared on the same lines as the revenue budget, within the framework of port programmes under the Five-Year Plan. Major ports annually submit their budget estimates to the Union Government for sanction.

Cash-flow statements are statements of changes in the financial positions prepared on the basis of funds defined as cash or cash-equivalent. Of these, the funds-flow statement which indicates fund sources and commitments on a historical basis is most useful in financial analysis. However, in order to ascertain the financial position of any organisation accurately it generally becomes necessary to regroup and analyse the figures in these conventional statements. Such computed accounting ratios enable sharper conclusions to be drawn as to the financial health and profitability of the enterprise, thus serving as financial yardsticks. Efficient exercise of financial planning oversees the mobilisation of all financial resources and their effective deployment, as also the generation of internal financial resources and their allocation. Trend percentages which disclose changes in financial and operating data over specific periods make it possible for the financial analyst to form opinions as to whether the tendencies

reflected are favourable or unfavourable.

Of the other methods of financial assessment, cost-accounting is also often applied as a supplement. This method is based on evaluation of marginal costs and/or standard cost. The technique, when the latter concept is applied, is known as Standard Costing, which is interrelated with budgetary control. Operations Research can also be applied in studying large complex organisations to assess the implications of alternative courses of action. Efficiency or performance audits appraise operational performance in terms of efficiency of operation.

After discussing definitions of the finance function and applications of this in the context of financial management at CHP, the third chapter will consider historically, the development of CDS and HDC.

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CHAPTER - 3

THE MAJOR PORT SYSTEM OF CALCUTTA & HALDIA

The present chapter considers the locational, technical and special characteristics of the two systems that together constitute the Calcutta Port Trust. These are namely, the Calcutta Dock System upriver on the Hooghly and the newer complex at Haldia located further downstream. The two systems are interlinked, making it sensible to speak of the Calcutta-Haldia Port as constituting a single *major* port. However, the chapter approaches the two port-systems chronologically.

3.1 The Calcutta Dock System

3.1.1 Location

Out of the eleven major ports in India, five are located along the east coast and the six remaining are on the west coast. Calcutta Port, on the east coast in the state of West Bengal lies to the north of the Bay of Bengal, and is one of the four largest operational major ports in India.[1] The uniqueness of Calcutta Port arises from the fact that it is the only riverine major port in India.[2] Calcutta is situated on the left bank of the river Hooghly at latitude 22°33'N and longitude 88°19'E *(refer map)*.[3] Ships bound for this port have to travel 203 kms. upriver, negotiating several difficult bars and bends, to reach Calcutta Dock System (CDS) from the Sandheads. The ships also have to wait for a rise in tide to commence the onward journey to the port, and it thus takes about 30 hours for a ship to reach the CDS, including waiting time for the tide. The outward journey after loading/unloading takes about 40 hours. Minimum draft at the entrance channel of Calcutta Port is 6.7m. and the minimum width is 467m.[4]. The Port itself extends from its mouth near Budge Budge to Serampore, with jetties and warehouses to both sides of the river. Because of the riverine character, Calcutta is an expensive port. Its mouth is frequently silted-up, necessitating large dredging operations. The maximum size of vessels able to enter the river Hooghly is restricted by the existence of several bars and bends and by the available depth, which fluctuates daily. Only ships that are under 152.4m. in length and less than 21.3m. in beam are allowed under lock-entrance restrictions of CDS, and should be loading to a maximum draft about 7.9m. The CDS has two turning circles, with diameters of 549 m.[5]

Calcutta Port commands a vast hinterland of about 80,000 sq.km. comprising the states of West Bengal, Sikkim, Assam, Bihar, Orissa and parts of Uttar Pradesh and Madhya Pradesh in India, as also the neighbouring countries of Nepal and Bhutan. The region is inhabited by about 200 million people (1981 Census) and is rich in agricultural, mineral and industrial resources. It is also extensively served by a network of transport and communication.

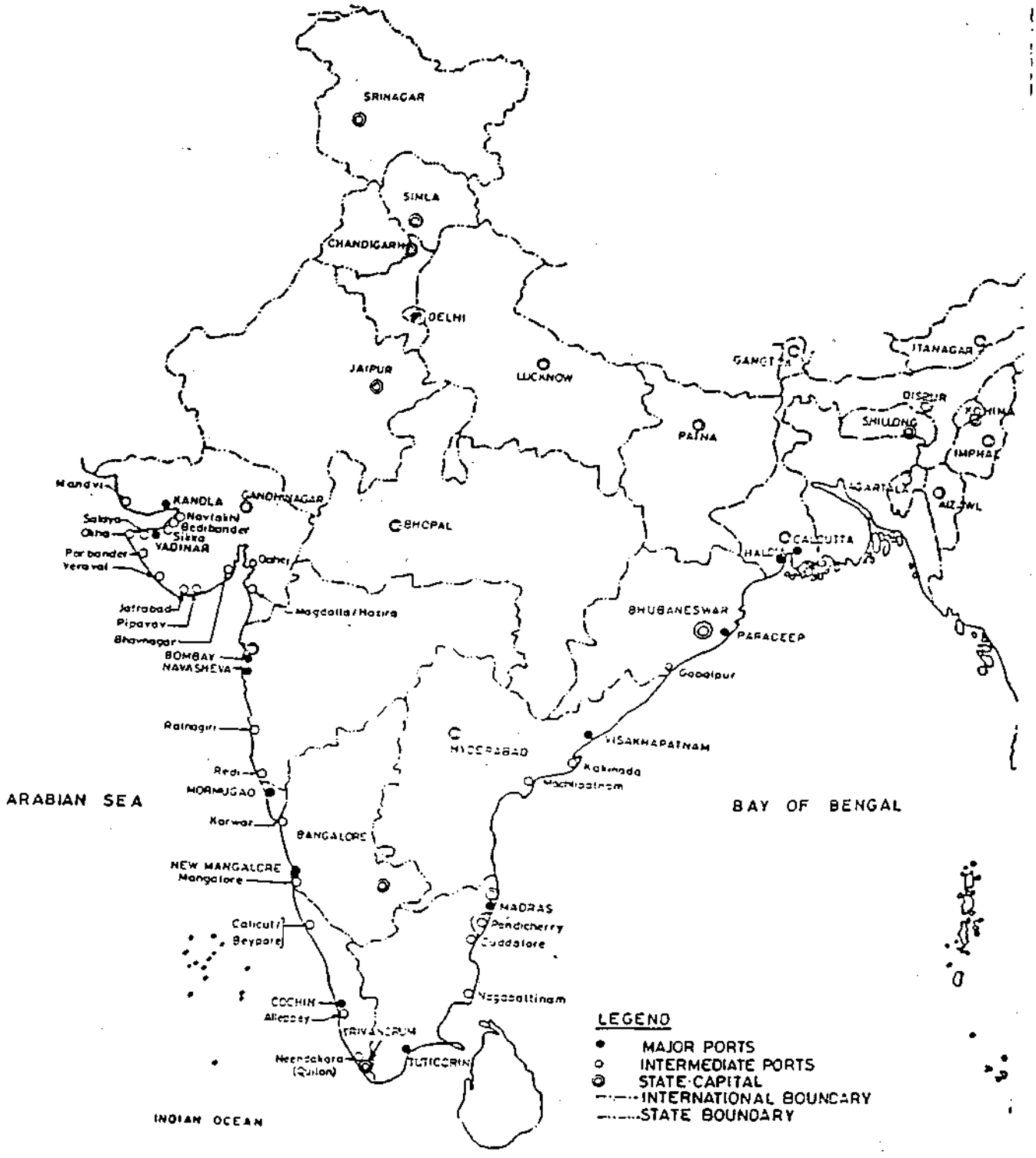
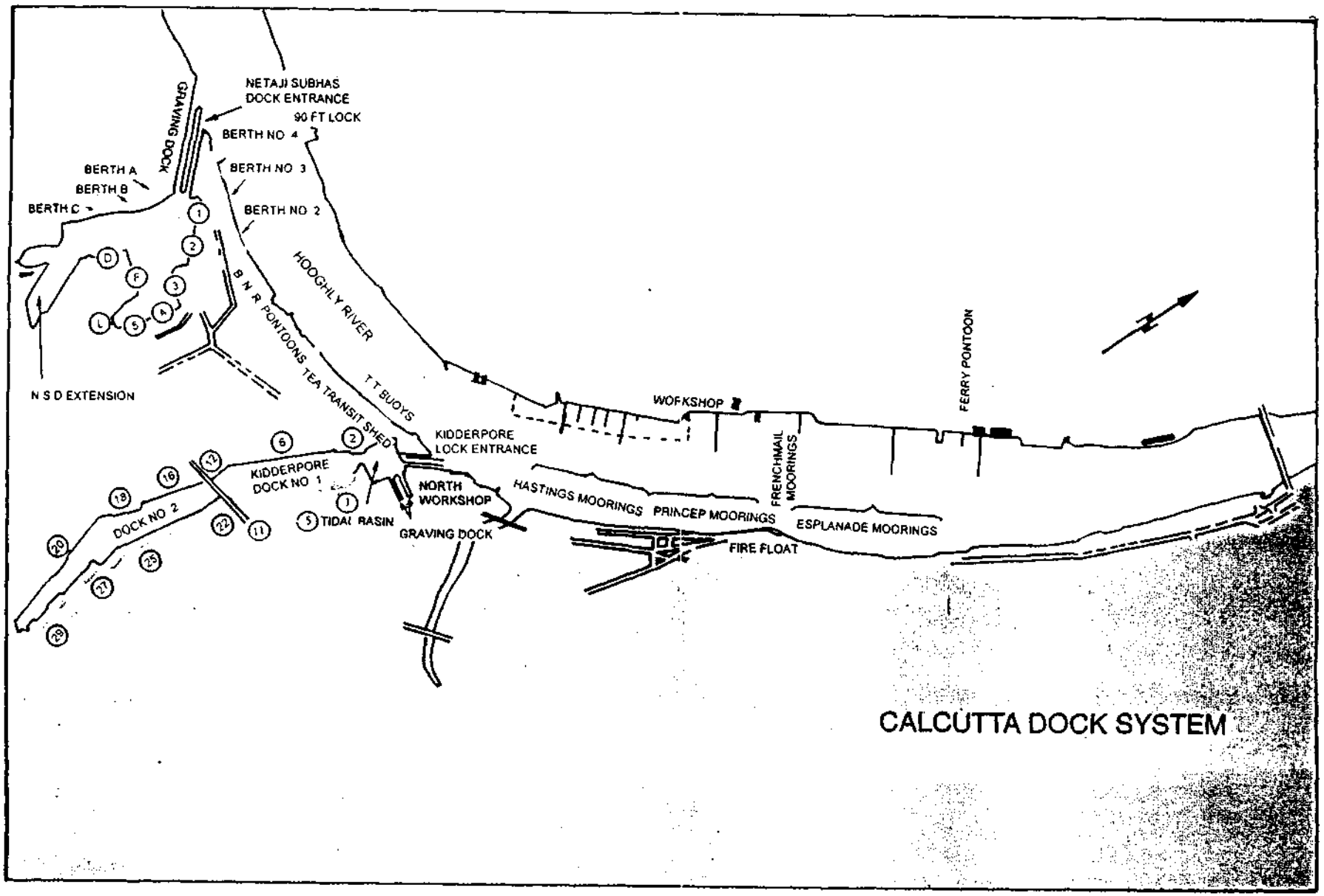
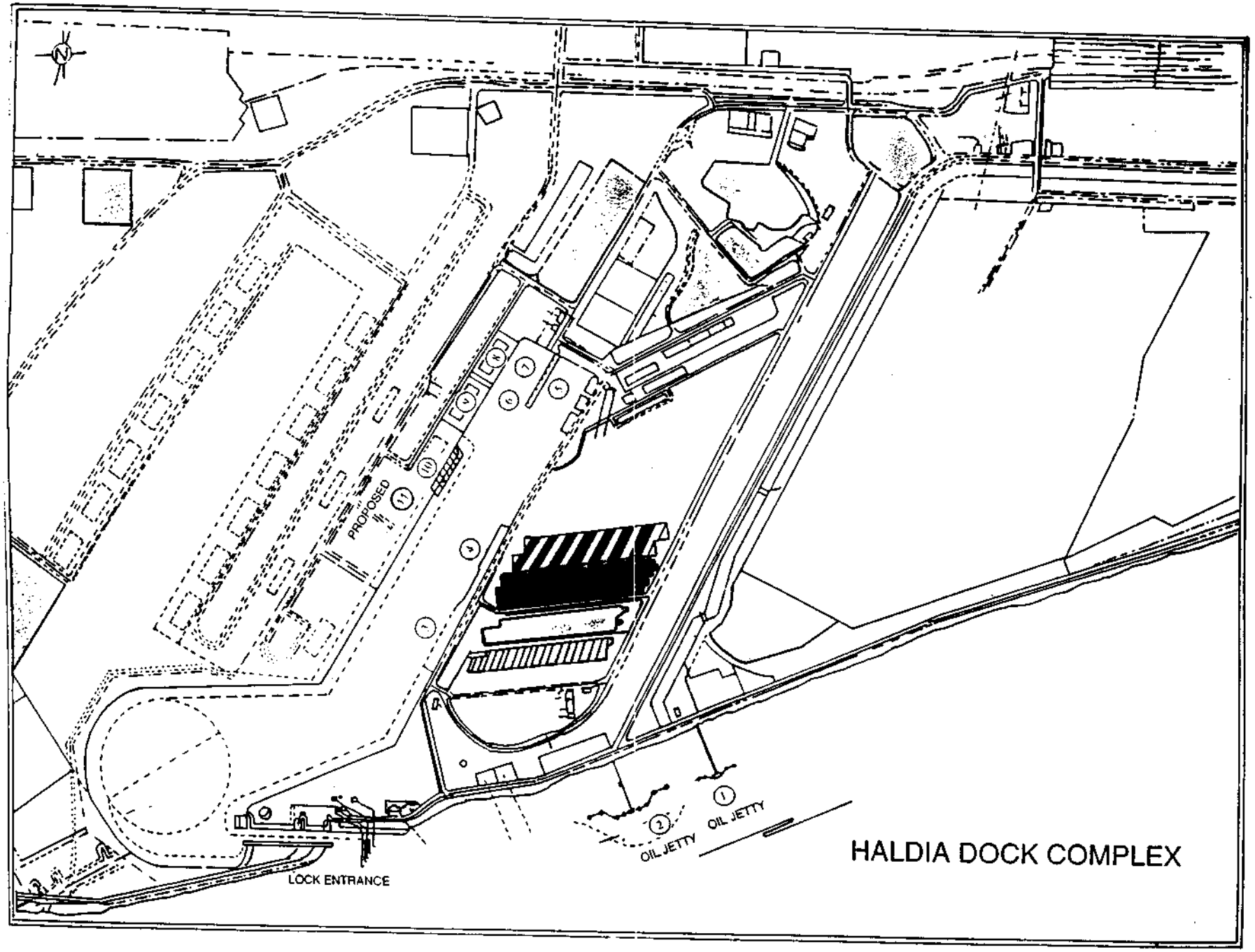
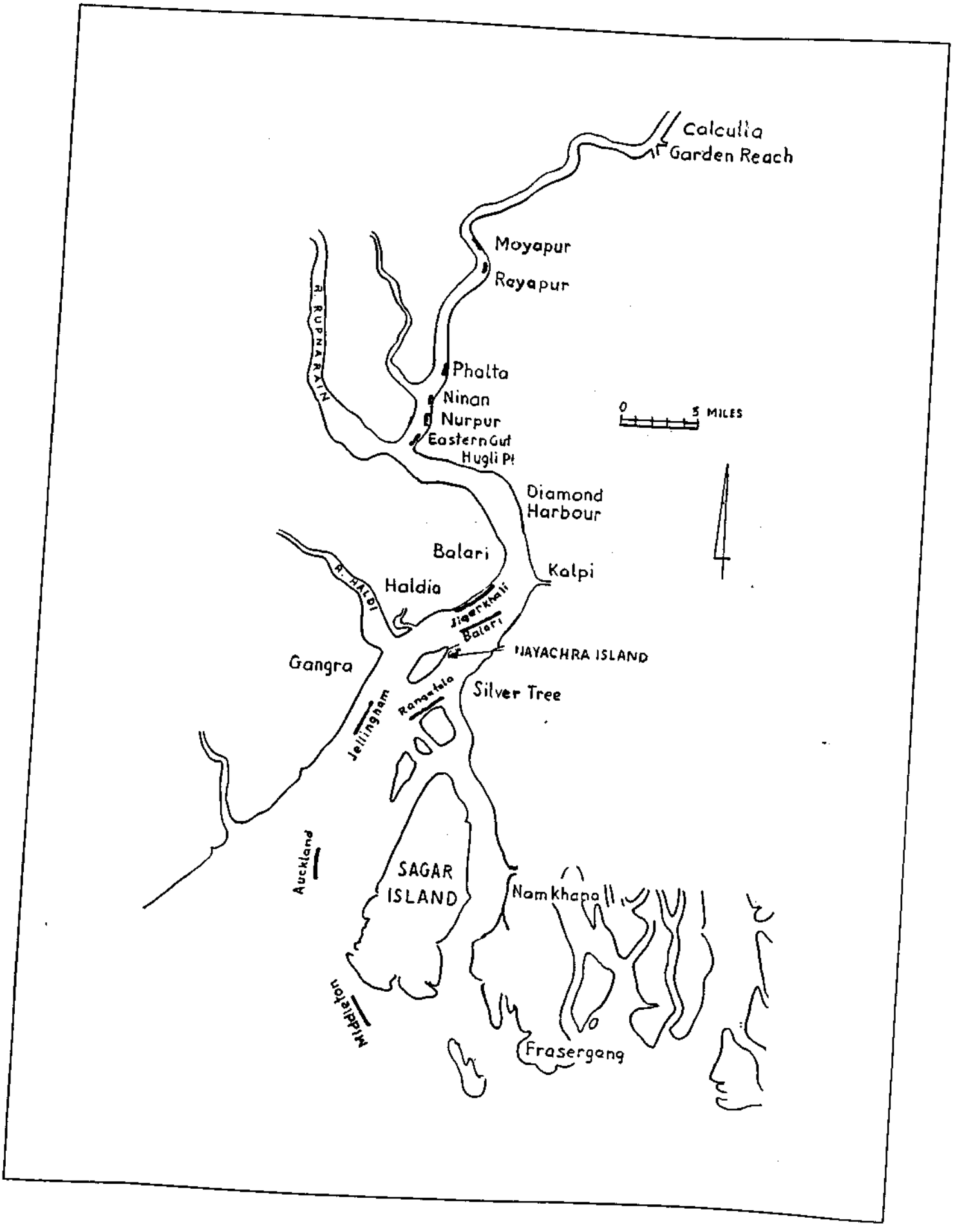

SRINAGAR
SIMLA
CHANDIGARH
DELHI
JAIPUR
LUCKNOW
PATNA
GANGTOK
ITANAGAR
DISPUR
SHILLONG
IMPHAL
AIZAWL
BHOPAL
CALCUTTA
HALDIA
BHUBANESWAR
PARADEEP
Gopalpur
VISAKHAPATNAM
Kakinada
Machilipatnam
HYDERABAD
BANGALORE
MADRAS
Pondicherry
Cuddalore
Nagapattinam
TUTICORIN
TRIVANDRUM
COCHIN
Alleppey
Neendakara (Quilon)
NEW MANGALORE
Mangalore
Calicut
Beypore
KARWAR
MORMUGAO
Reis
Ratnagiri
BOMBAY
NAVASHEVA
Bhavnagar
Piparav
Jafrabad
Magdalla/Hazira
Okha
Porbander
Veraval
Salaya
Navlakhi
Sikka
KANDLA
Mandvi
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
LEGEND
MAJOR PORTS
INTERMEDIATE PORTS
STATE CAPITAL
INTERNATIONAL BOUNDARY
STATE BOUNDARY

FIG. NO. 1


NETAJI SUBHAS
DOCK ENTRANCE
90 FT LOCK
BERTH NO 4
BERTH NO 3
BERTH NO 2
BERTH A
BERTH B
BERTH C
GRAVING DOCK
HOOGHLY RIVER
B N R PONTOONS
TEA TRANSIT SHED
T T BUOYS
N S D EXTENSION
KIDDERPORE
LOCK ENTRANCE
KIDDERPORE
DOCK NO 1
DOCK NO 2
NORTH
WORKSHOP
TIDAL BASIN
GRAVING DOCK
WORKSHOP
FERRY PONTOON
FRENCHMAIL
MOORINGS
HASTINGS MOORINGS
PRINCEP MOORINGS
ESPLANADE MOORINGS
FIRE FLOAT
CALCUTTA DOCK SYSTEM


PROPOSED
LOCK ENTRANCE
OIL JETTY
OIL JETTY
HALDIA DOCK COMPLEX


Calcutta
Garden Reach
Moyapur
Raya pur
R. RUPNARAIN
Phalta
Ninan
Nurpur
Eastern Gut
Hugli Pt
0 5 MILES
Diamond Harbour
Balari
Kalpi
R. HALDI
Haldia
Jiggerkhali
Balari
NAYACHRA ISLAND
Gangra
Silver Tree
Ramaekala
Jellingham
Auckland
SAGAR ISLAND
Namkhana
Middleton
Frasergang

In 1992-93, about 8 percent of total value of Indian exports and 14 percent of total value of imports pass through this port. The main items of export at the Port are tea, jute & gunnies, shellac, linseed, ores, hides, mica, sugar, iron scrap, finished steel, engineering goods and structurals. Principal items of import are salt, fertilisers, machinery, hardware, petroleum, cement, phosphates, edible oil and sundry other commodities. In 1992-93, the volume of imports stood at 3.68MT, against an export volume of 1.48MT. Of the import commodities, the principal item was petroleum oil & lubricants (POL), constituting about 46 percent of total imports. The nearest seaport to the port of Calcutta is Paradip, situated at a distance of 380kms. from Calcutta city along the east coast .

3.1.2 **A Brief History of Calcutta Port**

The history of the port dates back to the 14th century when the province of Bengal had many flourishing ports, most notable of which was Tamralipta, or modern-day Tamluk. The port of Saptagram or Satgaon (literally seven villages) began to flourish in this century. Much before the arrival of the British, Calcutta was a favourite anchorage for European traders. In the 16th century, the Portuguese felt the upriver journey to Satgaon to be unsafe for their ships and anchored them near the site of Calcutta, from where the cargoes were taken up the Hooghly by country-boat. Satgaon thus came to be superseded by the port of Hooghly and when the Nawab of Bengal captured the Portuguese fortress there in 1632, it became the Mughal headquarters.

Merchants had founded the village of Gobindapur and established a market at Sutanuti because silting of the Hooghly had made it difficult for larger vessels to sail upriver. On 24 August 1690, the English under Job Charnock anchored at this new site, but the decision to locate British trading headquarters there was not sudden. Charnock had lived at Cossimbazar, Hooghly, Patna, Balasore, Uluberia and Hijli too, but finally settled on the site that was later to become Calcutta for establishment of trading headquarters in 1690. Calcutta was preferred for various reasons. The river at the point where the Howrah Bridge (Rabindra Setu) now stands is at its narrowest, and was therefore most easily crossed. Of all upriver locations to which oceangoing vessels could proceed, Calcutta offered by far the best anchorage.

The first dry-dock was constructed at Bankshall Ghat in 1790. The Calcutta Port Commissioners came into existence on 12 August 1870, and the Calcutta Port Trust constituted in 1975.

3.1.3 **Berthing Facilities at Calcutta Port**

The CDS is constituted by two dock-systems and an oil-jetty. Kidderpore Dock has 19 cargo berths, including one berth with mechanical foodgrain-handling facilities that is linked to the grain silo of the Food Corporation of India (FCI). Of 9 other berths at Netaji Subhas Dock, two are exclusive to containers, one for liquid cargo, one with a 200T capacity crane for heavy-lift cargo and five others for general cargo. The Budge Budge petroleum wharves have five jetties, all for liquid cargo, with extensive tankage facilities.

Lowest berth occupancy over the composite Calcutta-Haldia Port was at the Budge Budge petroleum wharf (35 percent) and the highest (92 percent) at Berth 8 under HDC, which

handles coking coal and general cargo shipments at Haldia. Average berth occupancy at Kidderpore Dock was 59 percent, 69 percent at Netaji Subhas Dock, and 70 percent at HDC in 1990-91.[6]

3.1.4 **Port Estates at Calcutta Port**

The port at Calcutta has one of the largest estates among major ports in India. Land estates of CDS in Calcutta, Howrah and Budge Budge comprise 1347.03 hectares, out of which 1071.91 hectares lie in Kidderpore/Garden Reach area, 51.31 hectares alongside the Calcutta riverfront (including the Cossipore area), 83.71 hectares at Budge Budge and 140.09 hectares at Howrah. 97.56 hectares of the port estates are occupied by structures, including offices, staff-quarters, etc.(30.33 hectares), and sheds, godowns, warehouses, etc. (67,23 hectares). Approximately 626.28 hectares of port estates have been leased out for various industrial and commercial purposes, and 720.75 hectares are in the Port's direct use. Thus 46.9 percent of the CPT's metropolitan estates are under outside lease.[7]

The breakdown of the area under direct use of CDS is:

Docks, Canals & Submerged lands	242.32 ha. (33.6%)
Roads	80.02 ha. (11.1%)
Railways & Marshalling Yard	162.00 ha. (22.5%)
Open Land (Docks & Storeyards)	177.16 ha. (24.6%)
Total	661.50 hectares
Structures	59.25 ha. (8.2%)
Total	720.75 hectares (100%)

The breakdown of area leased out by CDS is :

	Land Area	Structures
i) Dock Area	466.26 ha.	31.19 ha.
ii) Howrah Area	61.16 ha.	5.18 ha.
iii) Calcutta Area	8.23 ha.	-
iv) Budge Budge Area	52.32 ha.	1.94 ha.
Total	587.97 ha.	38.31 ha.

Total Lands Leased-out 626.28 hectares

Out of 626.28 hectares of estates leased-out, 250.58 hectares are covered by short-term lease and 279.88 hectares by long-term lease.

Considering the extent of its landholdings in metropolitan Calcutta, the Calcutta Port Trust is the single largest landowner in the city. In 1990 there were nearly a thousand

litigations relating to the Port's estates in the courts from lowest to highest level, that .[8]. Protection of land estates against encroachment and increase of rental incomes in a city where land-prices soar everyday requires constant vigilance and supervision. In consideration of this, the Calcutta Port Trust appointed two consultants in 1983, whose reports were submitted the same year. The consultancy report of H.K.Sen & Associates observes "permissible floor area ratio in Calcutta Port Trust properties is generally much higher than the present use. There is uneconomic utilisation of the valuable land. It is imperative, therefore, that the land owned by Calcutta Port Trust be put in phases to proper economic and social use over the next fifteen to twenty years".[9] The second report of A.K.De & Associates observes " Port Trust lands have a bi-modal and tri-modal market. For example, Hide Road lands can be used for residential as well as office purposes. Thus there will always remain the obvious difficulty of defining and measuring what is the most valuable use of the Port Trust land".[10]

Financial particulars relating to CDS income from and expenditure on estates are summed up in the table below.

Table 3.1

Financial ParticularsonCDS Landed Estates

Items	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Income from operations	92.30	91.07	115.64	125.52	133.24	125.85
Expenditure on operns.	88.93	91.50	101.14	106.76	113.88	114.15
Surplus on operations	3.37	-0.43	14.50	18.76	19.36	11.70
Net Surplus	-3.42	-22.51	1.27	2.56	2.19	1.85
Income from Estates	7.12	7.42	8.61	10.88	12.46	15.07
Expn. on Estates	1.53	1.61	1.65	1.83	2.24	2.61
Surplus from Estates	5.59	5.81	6.96	9.05	10.22	12.46
Income from Demurrage	NA	NA	32.61	36.12	42.83	34.17

Source : *Calcutta Port Trust Administrative Reports and Annual Accounts for the above years*

The credit for net surpluses since 1988-89 at CDS, which was in deficit before that year, has been the rising surplus from port operations and particularly from estates, as shown in the above table. Net surpluses at CDS in the table would have vanished in deficits, had it not been for continuously rising estate incomes and surpluses, which have helped CDS to maintain its net surplus position. Furthermore, the progressively improving financial performance of the port over the period indicated in the table is founded on the continuously rising trend of estate incomes and surpluses.

3.1.5 **Dock Facilities under CDS**

The port of Calcutta extends a comprehensive range of facilities such as modern computerised container terminals, mechanised dry, liquid and grain bulk-handling, and heavy-lift and break-bulk general cargo handling facilities with large storage infrastructure in its two dock systems at Calcutta and Haldia. The port of Calcutta handled 16MT of cargo in the year 1991-92, in which the contribution of CDS was 4.16MT and that of HDC was 11.84MT.[11]

CDS comprises the two impounded dock systems of Kidderpore Dock and Netaji Subhas Dock, and a separate oil wharf at Budge Budge, 20 kms. downstream of Calcutta, and possesses usual equipment like shore cranes, mobile cranes, fork-lift trucks, tractor-trailer combinations and extensive warehousing facilities.

3.1.5(i) *Kidderpore Dock (KPD)*

Kidderpore Dock is divided into two sections: KPD-I and KPD-II, mainly due for operational and administrative reasons. KPD-I has 10 operational berths with single-storeyed transit sheds, and 38 shore cranes with capacities of 3T/5T for handling general cargo. There are 36790 sq.m. of covered storage area and 12310 sq.m. of open area for short-period as well as long-period storage. Of the 10 berths, one berth handles passenger ships to and from the Andaman Islands. KPD-I also has buoys to facilitate overside landing and shipment.

KPD-II consists of 8 berths for handling general import/export cargo. Of the 8 berths, one is a multipurpose berth equipped with bulk foodgrain handling directly into a grain silo which has storage capacity of 29000T. KPD-II also provides 4 buoys for overside handling, with another 4 lay-up berths for ship repairs, etc. Out of 8 berths, 5 berths have double-storeyed sheds without shore-crane facilities. The 3 other berths have 6 shore cranes of 2T capacity and 7 yard cranes with various capacities ranging from 5T to 30T for handling heavy lifts. There is total covered storage area of 51478 sq.m. and open area of 20549 sq.m. at KPD-II. This dock section also has a railway service facility for goods loading to and from the docks.

3.1.5(ii) *Netaji Subhas Dock (NSD)*

Netaji Subhas Dock comprises 9 operational berths, of which 6 berths are presently earmarked for handling general cargo, 2 berths for container shipments and 1 berth for POL products. Out of 6 general cargo berths, one is a specialised heavy lift berth served by a 200T cantilever crane which is the highest capacity shore-based crane installed in India. This is supported by 3 self-propelled floating cranes of various capacities ranging from 30T to 60T. Only one of the berths has lower-rated facilities of 5 shore cranes of 3T capacity, supported by 3 yard cranes of 3T capacity. 3 berths at NSD are three-storeyed and two are double-storeyed with total covered area of 60599 sq.m. and open area of 14838 sq.m. available for general cargo storage.[12]

3.1.6 **Dry-docking Facilities at Calcutta Port**

The Port provides adequate facilities for repairs of merchant vessels. At present, there are 5 dry-docks (2 at NSD and 3 at KPD), and 3 lay-up berths (2 at KPD and 1 at NSD). These dry-docks are capable of executing all major surveys and under-repairs. At the NSD dry-docks, a 25T travelling electric crane is available to the south side. The dry-docks are also

served to north and south by one 3T and 6T diesel electric crane apiece, and to the north by one 3T electric crane. A 5T Wieman Electric crane is also available at the KPD dry-docks. For propeller or other heavy-lift work, various floating cranes can be provided by the Port Trust on demand.[13]

3.1.7 **Other Port Facilities**

During the fair season (October to March) deep drafted vessels, primarily with bulk cargo, are handled at the Sagar anchorage in the estuary, around 145 kms. downstream of Calcutta. Cargoes, after discharge, are then brought to Calcutta by barge.

For maintenance of the long navigational channel in a river as capricious as the Hooghly, Calcutta Port owns a varied fleet of 72 vessels and river-craft, in addition to the normal craft requirements of a port. The average age of this vessel fleet is 22 years, and over the next fifteen years at least 37 vessels and craft would have to be replaced.[14]

The Calcutta Port Trust provides terminal railway facilities at Calcutta and Haldia to cater to the needs of both import and export cargo. Facilities include railway track, locomotives, staff and so on. In addition to carriage of seaborne cargo, the CPT Railway also serves a number of industrial and commercial sidings including the oil refinery and fertiliser plant at Haldia, and the FCI godowns and stock-yards of the Steel Authority of India (SAIL) at Calcutta.

3.1.8 **Transportation Linkages**

Calcutta is linked to the network of National Highways running through its vast hinterlands and connecting the states of West Bengal, Bihar, Orissa, Assam, Uttar Pradesh, Madhya Pradesh and the neighbouring countries of Nepal and Bhutan. The city of Calcutta directly connects to NH 2, 6, 34, 35 and 41.

The port has its own railway system with track-length of 350 kms. and route length of 36 kms.[15] Rolling-stock at the CPT railway comprises 49 locomotives with varying haulage capacities ranging from 750T to 1800T, and over 400 open, covered and tank wagons. A loco crane of 60T capacity and a fully- equipped tool van keep the railway in good trim. The port railway functions as terminal agent to Eastern Railways (ER) and South-Eastern Railways (SER), under Indian Railways, affording direct receipt and despatch facilities to cargoes originating or bound for any part of the country. Calcutta Port is also accessible from insular points in the hinterland through inland water transport.

Calcutta is the largest terminal port in South Asia, and thus commands a large and resource-rich hinterland, well-connected to the Port by railways, roads, waterways and airways. ER and SER connect to the North-Eastern Railways section, and the city is also connected to the Grand Trunk Road and the old Jessore Road. Major inland waterways along the Ganga and the Hooghly, and the Damodar Canal system also link the hinterland with the Port.

3.2 The Haldia Dock Complex

3.2.1 Location

The Haldia Dock Complex occupies the right bank of the river Haldi, half-way between Calcutta and the Sandheads i.e. 104 km. downriver from Calcutta, and is located at latitude 22°12"N and longitude 80°6"E. Ships journeying to the port have to wait for a rise in tide and take about 11 hours to reach HDC from open sea. The outward journey takes about 19 hours. HDC can accept vessels upto a length of 201.2m. compared to 152.4m. at CDS. The maximum loaded draft for HDC is limited to 13.7m. against 7.9m. for CDS. Maximum depth of the entrance channel of HDC is 6.7m. and the minimum width is 467m.

Ore-loading capacity at HDC can go up to 6000T per hour, and 40 thousand tonnes of loading take just 8 hours to complete, compared to the earlier 4-6 days at Calcutta Port. Roughly, the loading time for 3 thousand tonnes is one hour at Haldia, against one day at CDS. HDC has one of the largest lock entrances in the world with an overall length of about 325 m. and width of 42m. The initial draft of nearly 10m. has now been improved to 13m. and the port can safely accommodate ships of 80000DWT and more.

The 5 bars between Haldia and the sea are Jellingham, Rangafala, Auckland, Middleton and Gasper. Auckland bar is the governing bar for HDC most of the time, and is kept under maximum dredging around the year.

Calcutta-Haldia Port is an import-based port. In 1992-93 the volume of imports was 9.24MT against export volume of 3.94MT. The principal imports from the port are POL which comprise about 68 percent of all imports from this port, Coking coal (23 percent) is another principal import. Principal items of exports are thermal coal (75 percent), and various quantities of iron and steel, tea, jute products, etc.

3.2.2 History of HDC

The question of setting up another port subsidiary to Calcutta Port had arisen from time to time over the past century, because the port at Calcutta had been constantly plagued with the problem of bars, bends and bores. Five possible sites were considered, namely Geonkhali, Haldia, Kankhali, Dariapur and Jenson Road. Of them, Geonkhali, 60km. south from Calcutta, was a serious contender. It had year-round draft 7.9m. and could allow entrance to large-sized vessels, longer than the maximum of 161.54m. allowed at CDS. It however suffered the serious constraint of being situated north of Balari, which would prove a serious handicap for the passage of large ships. Finally Haldia, 104km. from Calcutta and nearer the sea, which did not suffer from these constraints was selected. It lay on the western bank of the river, and thus would provide easy railway and road connections without intervention of the river. Besides, major portions of the port hinterland were major mining centres for coal and ore, including iron and manganese, for which there were lucrative export markets. A modern port was thus justified, as an outlet providing facilities to large ore carriers.

The Haldia Project Report was prepared by the Port consultant, Rendell Palmer Tritton (RPT) of the U.K. in 1959.[16] Haldia offered a minimum draft of 9.14m. on all days, 9.75m. over 238 days and 10.67m. for 39 days in a year. The navigational channel from the

Sandheads to Haldia was straight and hence, unlike Calcutta, Haldia could take vessels of any length and beam. The outline for the Haldia project was cleared by international experts; these included Posthuma DG of Rotterdam Port; the Dutch hydraulic expert Jansen, and experts from the London Port. The project team felt that "new port facilities at Haldia should be considered as an integral part of the Calcutta Port along with its older facilities, such as the Calcutta Jetties, Kidderpore Docks, King George's Docks (later renamed Netaji Subhas Dock), and the Budge Budge oil jetties for the purpose of financial assessment of the port as a whole". It was anticipated that industries, a fishing harbour, a free trade zone, etc. would develop at Haldia making it an urban centre strong enough to act as a countermagnet to Calcutta, which would attract the migrant rural population in eastern India coming in search of employment.[17]

Work on the Haldia project started during the 3rd Five-Year Plan. Construction of the main dock commenced in 1968. In the meantime, the oil jetty had already been constructed and was commissioned in August 1968. By 1976, civil works on the berths were complete and the dock was commissioned in February 1977, utilising mostly indigenous knowhow with very little foreign assistance. This was, as such, a pioneering effort as most of the equipment had been manufactured for the first time in the country. Haldia might therefore be considered a landmark in the history of port development in India.

On account of perennial navigational problems faced by Calcutta Port, the HDC has steadily grown in importance. Over the past few years traffic at CDS has been sluggish while that at Haldia has been picking up. In 1980-81, Calcutta Port handled a shipment-volume of 4.06MT while Haldia handled 5.45MT. In 1990-91 i.e. after one decade, Calcutta Port handled 4.13MT traffic, barely higher than traffic handled in 1980-81. Haldia in the same year handled traffic of 5.66MT more than in 1980-81, with total handling in 1990-91 being 11.11MT. Considering these trends, it would appear that over time to come Haldia would supplant Calcutta as a port, and there is therefore greater emphasis on the provision of infrastructure and other facilities at Haldia.

3.2.3 **Berthing Facilities at HDC**

There are two oil jetties on the river at HDC, the second of which was commissioned as late as July, 1991. Two mechanised berths handle coal meant for exports, and one of these also handles POL products to the account of Indianoil Corporation. Another mechanised berth built to handle fertiliser imports and its raw materials now also handles coking coal. General cargo is catered to by a finger-jetty with two berthing faces and two general cargo berths. While one general cargo berth mostly handles coking coal, the other has modern container-handling facilities. An additional general cargo berth has been sanctioned on which construction is nearly complete, and it will be ready for operations shortly. The HDC as such handles very little general cargo. Out of 11.84MT handled in 1991-92, general cargo constituted only 27000T or 0.23 percent. Highest berth occupancy at HDC was at one of the berths handling coking coal and general cargo (92 percent), and average berth occupancy was 70 percent in 1990-91.

3.2.4 Port Estates of HDC

Like the CDS in Calcutta, the Haldia Dock Complex is the single-largest landowning authority at Haldia. In 1960 the Calcutta Port Trust had acquired 3049.25 hectares of land spread over 37.5 sq.kms. at Haldia in order to set up the HDC. In order to facilitate techno-economic growth of the port-city of Haldia and overall infrastructural development of the area, and in order to attract port-based industries and business enterprise, the CPT transferred 359.64 hectares of land to the State Government and to government agencies. 2689.2 hectares of land are therefore at present with the HDC, the breakdown of which is given below:

Area retained for HDC use	887.36 ha.	(33.00%)
Leased land area	804.29 ha.	(29.91%)
Area Licenced 24.70 ha.	(0.92%)	
Vacant area reserved for future use of CPT	600.21ha.	(22.32%)
Allotable land presently vacant	372.64ha.	(13.85%)
Total	2689.20	hectares (100.0%)

The percentage analysis indicates that a large part of HDC's land estates (over 22%) are reserved for the future use of the Calcutta Port Trust, and that in addition, over 13 percent of allotable land is presently vacant.[18]

The CPT has been constrained to move bulk cargo handling activities downstream to the Haldia Dock Complex because of restrictions imposed on ship size by limited draft, and bends and bars on the river Hooghly. As these bulk cargoes are basically industrial raw materials, land in the vicinity of the HDC has been used for promoting port-based industries. Overwhelming pressure of the kind that a metropolitan city like Calcutta places on port land also does not exist at Haldia. As a result, demand for HDC land is not very great. Such factors have led the CPT to adopt a different approach towards commercial exploitation of its landed estates at Haldia. Unlike in Calcutta, instead of encouraging various non-port users also to lease port land, the HDC has been allotting land on liberal terms to port-based industries to generate traffic for the dock complex and to boost operational revenues for the Calcutta-Haldia Port as a whole. Therefore, while the bulk of CDS leased-lands are on short-term leases of CDS lands, a major part of HDC land has been allotted on long-term leases to port-based industries. The major lessees at Haldia include Indianoil Corporation, Hindustan Fertiliser Corporation, Shaw Wallace, Hindustan Lever, etc. representing both public and private sectors. Certain State Government agencies, in addition, namely West Bengal Industrial Development Corporation and WBIIDC have also taken up land at Haldia for establishing industries.

Of the total income of HDC, the share of income from estates is modest, unlike at CDS. This is understandable in view of the need for HDC to charge lower lease-rentals as a means of attracting port-based users to Haldia, which is situated in a relatively obscure area. Hence the estates of HDC can in no way be looked upon as a primary source of revenue generation as has been the case for CDS.

The financial position of HDC during recent years is given below.

Table 3.9

Financial Results of the Haldia Dock Complex

(Rs.crores)

	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Income	65.17	69.34	99.92	110.64	123.70	148.42
Expenditure	50.35	59.88	51.51	64.74	76.38	105.49
Net Surplus	14.82	9.46	38.41	45.90	47.32	42.93
Income on Estates	1.56	1.59	2.32	2.62	3.47	4.40
Expenditure on Estates	2.75	2.82	2.92	3.57	3.98	5.18
Surplus/Deficit from Estates	-1.19	-1.23	-0.60	-0.95	-0.51	-0.78

Source:- *Calcutta Port Trust Administrative Reports and Annual Accounts for the above years.*

Table 3.9 shows a different picture from Table 3.1 for CDS. Of the total income of HDC, the contribution from estate rentals is modest, unlike CDS. The analysis for CDS indicated the high contributions of CDS estate-rentals towards its surplus balance. In case of HDC, estate rental incomes consistently fall behind expenditures on port estates, resulting invariably in a deficit on estates. It is to be remembered that HDC has to charge lower rentals as a means of attracting port-based users to HDC, which is situated in a non-metropolitan and relatively obscure area. Hence, estates at HDC cannot be looked upon as a primary source for generating revenues, unlike in the CDS.

3.2.5 **Port Facilities at HDC**

The Haldia Dock Complex comprises 9 berths, of which 2 are riverine oil jetties/ berths and 7 are located in the impounded dock. The two riverine berths handle petroleum crude and POL products. Three others, presently, are coal handling berths with fully mechanised handling facilities for loading thermal coal and unloading coking coal. Another two are in fact finger jetties with no shore-based equipment and handle both dry and liquid bulk cargo. One more berth handles coal by semi-mechanised means, and the last is a multipurpose berth with a container crane to handle containers and has no other shore crane. However it also handles break bulk cargo, using ship gear. Construction of Berth 10 is nearly complete and the berth will be ready for operation shortly. HDC handles a very small quantity of general cargo. Out of 11.84MT handled in 1991-92, general cargo constituted only 27000T. The main general cargoes in break bulk form are scrap, bag-fertiliser, cases/pallets, tea, bag-mica, cases of machinery etc. The general cargo berth has total covered storage capacity of 9300 sq.m. and an open area of 13000 sq.m.[19]

3.3 CDS & HDC: Common Features

Viewing CDS and HDC in a unified perspective, now, an examination is made of how they constitute part of that same riverine port system, governed by the common administration of the Calcutta Port Trust. The reason for this is, of course, that the Port of Haldia has come into being to supplement the operations of the CDS which are limited by its upriver character. HDC is thus not a competitor to CDS, but is more of an adjunct.

3.3.1 Port Hinterland

The 80000 sq.km. hinterland of the Port has vast agricultural, mineral and industrial resources.[20] The region served by the port has the richest coal, ore and mineral deposits in India and a dominant part of India's tea and jute industry. Four steel plants belonging to both private and public sectors and various other large industrial units are also situated there.[21]

This hinterland has undergone vast transformation since Calcutta Port was founded. The hinterland of the pre-industrial port supplied commodities like saltpetre and handicrafts like cotton piecegoods and silk manufactures, which saw large-scale shipment from Calcutta. After the coming of the mechanical age in Europe, manufactured goods from Europe were commercially distributed over North India from Calcutta. Calcutta's hinterland during this phase was reduced to a raw-material hinterland, supplying the industrial countries of the world with commodities like indigo. In course of time the growing cultivation of cash crops like opium, jute - well-known as the 'golden fibre', and tea added new importance to Calcutta's hinterland. Gradual industrialisation of the region and the introduction of steam navigation and railways in the 19th century changed the face of the hinterland region. The jute textile industry - India's second most important industry, coming next only to cotton - was located in this area. Discovery of coal in Bengal and subsequent development of the coal industry added another new dimension to Calcutta and its hinterland. Other minerals like manganese and iron ore were also exported through this port. The establishment of the Tata Steel Plant in 1909 at Sakchi, Jamshedpur, 243kms. west of Calcutta, added a new chapter to India's industrialisation. Jamshedpur has been described as the hub of a great wheel, with one of its spokes pointing to the great port and market of Calcutta.[22] Establishment of the Indian Iron and Steel Company near Barakar in Bengal in 1918 was another landmark in the history of the iron and steel industry in India.

Partition of India in 1947 resulted in the loss of a significant part of Calcutta's hinterland, comprising mostly the jute-growing districts of East Bengal that now form Bangladesh. Even so, Calcutta was still left the vast hinterland which covers the Indian states of West Bengal, Assam, Bihar, Orissa, Uttar Pradesh, Madhya Pradesh, Sikkim and the independent countries of Nepal and Bhutan.[23]

3.3.2 Navigational Problems at Calcutta-Haldia Port

The port of Calcutta has been perennially plagued with problems of navigation. Bars and bends in the Hooghly river, subject to sudden fluctuations in depth and alignment of channels, call for constant dredging. Although the channel is well demarcated with various navigational aids, oceangoing ships encounter difficulty in negotiating these. The CPT surveys

and charts the river continuously, and broadcasts depths over the bars to shipping companies. Pilotage of ships on the river is compulsory. Drafts are allotted to shipping on the basis of depths available over different bars and the tidal rise, which varies from season to season and between days over the same season. Anchorages available on the Hooghly are used by ships in passage to and from the port.

Bars occur because of silt deposits in certain sections of the river. The curves of the river, bathymetric conditions and attendant factors decide the location, nature and extent of the bars. There are 17 bars in the Hooghly between Calcutta and the Sandheads. The upper reach of the river from Calcutta to Diamond Harbour has 12 of these, while there are 5 others between Haldia and the sea. These are listed below, along with distances from the Calcutta Docks.[24]

Bars on the Hooghly between Calcutta and Haldia

Outram Esplanade and Hastings (0.5)
Panchpara (8)
Sankrail (10.5)
Munikhali (14.5)
Pirserang (17)
Poojali (27)
Mayapur (35)
Rayapur (41)
Ninan Nurpur (58)
Eastern Ghat (63)
Kukrahati (72)
Balari (88)

Bars on the Hooghly between Haldia and the Sandheads

Jellingham (108)
Rangafala (115)
Auckland (130)
Middleton (158)
Gasper (172)
(*kms. ex-Calcutta)

For any river-port, the bar with shallowest depth of water which poses the greatest constraint to port-access is called the governing bar. For the port of Haldia, the Auckland bar is the governing bar most of the time, and has therefore to be kept under maximum dredging around the year. The governing bar for Calcutta, between Haldia and Calcutta Port, was for the Balari bar. This has now totally silted up, and shipping thus passes through the alternate Rangafala channel. The governing bar for Calcutta has thus shifted and now alternates with high frequency between the three bars of Mayapur, Rayapur and Ninan Nurpur, for which reason these three bars too are now kept under intensive dredging.

3.3.3 Dredging Requirements

Annual dredging requirements for the port have been assessed at 22 mcm. with the following bar-wise requirement:[25]

Upper Reach (1)
Rangafala or Balari (4)
Jellingham (7)
Auckland (7)
Middleton (2)
Gasper (1)
(*in MCM.)

The CPT possesses 3 suction dredgers, called the Mahaganga (hopper capacity 2860cum.), Churni (1700cum.) and Subarnarekha (1274 cum.), and in addition has one bucket dredger, and two grab dredgers (850 cum. each). The dredging capacity of the Port's fleet of dredgers adds up to 3.35mcm. (estuarine) and 1.31mcm. (riverine and dock), or to a total of 4.66mcm.[26]

Emergency dredging is arranged through the Dredging Corporation of India (DCI) when its very large cutter suction dredger has been available. Dredging in the upper riverine reaches and to some extent in the estuary is executed by Port dredgers, although the bulk of estuarine dredging is done by DCI dredgers engaged by the Port on annual contract. These DCI dredgers are deployed round the year in the estuary. Of these, two are new and sophisticated dredgers which have been procured by DCI from Netherlands. The annual dredging capacity of the 3 DCI dredgers on the basis of 220 days annual working, is 15 mcm.

Dredging work executed by CPT and DCI dredgers over recent years is indicated in the table below.

Table 3.3

Dredging Work at Calcutta Port

Year	(in million cum.)		
	CPT	DCI	Total
1984-85	10.87	3.64	14.51
1985-86	6.67	5.87	12.54
1986-87	5.70	6.28	11.98
1987-88	1.80	7.48	9.22
1988-89	3.80	6.68	10.48
1989-90	2.23	7.83	10.06
1990-91	2.01	10.21	12.22
1991-92	2.49	15.80	18.29

Source: *Administration Reports and Annual Accounts of Calcutta Port Trust.*

It can be seen from the table that dredging volume hovers around the 11 cum. mark in most years, and is exceeded in flood-years. The low figure for 1987-88 originates from the widespread drought conditions that afflicted most of India that year. Another point indicated by the table is that dependence on the DCI for dredging work has gradually increased, and the CPT's own dredging capacity and dredging fleet has remained static. Total cost of dredging at Calcutta Port in 1984-85 was Rs.10 crores which had increased to Rs.43 crores by 1991-92. With the same reference period, unit cost per cum. of dredging was initially Rs.6 for CPT and Rs.9 for DCI, but by 1991-92 this had increased to a uniform Rs.25 for both CPT and DCI.[27]

The Union Government subsidises 90 percent of dredging costs incurred by the Port.[28] The contention exists that the Union Government should bear the entire dredging cost on a national waterway which is used not only by the Port but by others as well. It may not seem entirely fair to ask Calcutta Port to bear the cost of regular dredging over a 200 km. stretch of the river. The Port's present financial situation also does not really warrant that such expenditure be met from internal funds.

3.3.4 **Upriver Pilotage Requirements**

In pilotage terms, Calcutta Port presents unique features, since it has the longest pilotage distance for any major port.[29] All vessels bound for the port report at the Sandheads in Bay of Bengal where the navigation channel to the port commences. These vessels have to negotiate the bars on the Hooghly and move zigzag to the anchorages, river jetties and docks of the port located at different points along the river. Sagar anchorage, the first of these, is 87km. north of the Sandheads. Ships here can be worked simultaneously, but each one has to have a pilot on board at all times for safety and emergency navigation of the ship. It takes 4 hours for a ship to reach Sagar from the Sandheads. From Sagar, the Haldia facilities are 45km. upriver. This distance is traversed in 6 hours from the Sandheads. If Balari bar is not closed to operations, ships move alongside of Haldia and proceed to Budge Budge or Garden Reach (Calcutta). The distance from Haldia to Budge Budge is 80 km. and to Calcutta (Garden Reach) 104km. If Balari is closed, as has been the case over the last five years, a ship to Calcutta from Sagar travels via the Rangafala channel, bypassing Haldia and Balari. The distance to be covered from the Sandheads to Calcutta is therefore 221km., and 236km. if the traverse is via Balari. Ships can cross the bars only when river level rises with the rise of tide. The governing bar can only be crossed at high-water time.

For a journey from the Sandheads to Haldia a ship has to negotiate three bars, namely Jellingham, Auckland and Middleton. Generally, Auckland is the governing bar for Haldia. The ships cross this bar on high water and timings are adjusted accordingly so that, over every 24 hours, ships can reach or leave Haldia on the two high tide periods.

The governing bar for Calcutta or Budge Budge is usually Balari which has to be crossed with rise of tide. When Balari is closed, Rangafala becomes the governing bar. A ship takes 10 to 12 hours to reach Garden Reach from the Sandheads. At Garden Reach, just near the Netaji Subhas Dock, the river pilot hands the ship over to the harbour pilot who brings her to the lock from where the berthing master takes over. For journeys upriver from the Sandheads to Calcutta, a ship can take advantage of one high tide and thus does not have to halt anywhere in the river for lack of draft.

But the downriver journey is a different story. Depending on draft, speed, etc., ships going from Calcutta to the Sandheads are placed in the two categories of tide-time ships and 'Uluberia' ships. Tide-time ships cross the upper reaches of the Hooghly from Garden Reach to Poojali/Mayapur on the ebb tide and then meet the rise of tide on flood to cross the bars at the Hooghly point area. If drafts permit, they cross Balari/Rangafala on the same high tide and proceed straight to the Sandheads. Ships of deeper draft wait at the anchorages at Diamond Harbour/Kulpi/Mud Point and then cross Balari/Rangafala on the next high tide at night. A deep-drafted ship has therefore to halt a number of times between Calcutta and the Sandheads. Such vessels take between 40 to 50 hours to reach the Sandheads from the berths at CDS. Thus pilotage up and down the river becomes a difficult and time-consuming process. Tides play the most crucial role in pilotage to the port, the rise of tide in the Hooghly river varying from 4.2m. at neap tide to 6.5m. during spring tide.

Calcutta Port has two large oceangoing pilot vessels, one of which by turn cruises in the area of the Sandheads. Pilots disembarking from outgoing vessels make overnight halts on the pilot vessels if necessary, till they can embark on incoming ships and provide pilotage to the port.

Several lighthouses, light vessels, lighted and unlighted buoys, track marks and onshore towers guide the pilots. 64 lighted buoys mark navigational tracks between the Sandheads and Diamond Harbour, and 18 others between Uluberia and Calcutta. In between, there are 60 unlighted buoys.

Drafts at Calcutta and Haldia Ports have improved,as would be evident from the figures in the table below.

Table 3.4

Drafts at Calcutta-Haldia Port

(days per year)

Year	*Port*	*7m.+*	*8m.+*	*8.5m.+*	*9m.+*
1986-87	CDS	50	NIL	NIL	NIL
	HDC	366	100	3	NIL
1988-89	CDS	193	51	NIL	NIL
	HDC	365	242	136	36
1989-90	CDS	235	41	NIL	NIL
	HDC	365	320	178	37
1990-91	CDS	195	38	NIL	NIL
	HDC	365	350	236	112
1991-92	CDS	262	48	NIL	NIL
	HDC	365	353	271	120

Source:

1. *Ray, Animesh; Maritime India: Ports and Shipping; Pearl Publishers, Calcutta; 1993; p.186*

2. *Hooghly River Tide Tables; Survey of India and Marine Deptt. CPT, for different years upto 1992*

Thus CDS can berth vessels with draft of 7m. through 70 percent of the year. The same position applies to vessels of upto with 8.5m. draft at Haldia. Shipping companies are however yet to take full advantage of these increasing drafts, particularly at CDS, although with intensive dredging and comprehensive river training works, the draft is likely to improve further within the next few years.

3.4 **Traffic Trends at Calcutta-Haldia Port**

In 1870-71, which was the first operational year after Calcutta Port came into existence, port traffic was 3.27MT comprising imports of 1.47MT and exports of 1.80MT. Calcutta was and continued to be the biggest port of the country for decades after. The 10 million tonne mark was crossed in 1912-13 with cargo volume of 10.10MT, and the 11 million tonne mark in 1928-29 with 11.01MT of cargo. Lowest traffic was during the Second World War, when in 1942-43, cargo traffic came down to 3.68MT.

In 1947-48, the year India achieved Independence, Calcutta handled a cargo volume of 7.06MT (38 percent) as against 18.35MT for the country as a whole. Bombay Port was next with cargo volume of 5.35MT (29 percent). This premier position was retained by Calcutta Port till 1954-55, when out of total 21.78MT, for the country, Calcutta handled 7.94MT (36 percent) and Bombay 7.71 MT (35 percent) of total cargo traffic. In the very next year however i.e. 1955-56, Calcutta's traffic was 8.16 MT against Bombay's 10.45 MT.

The volume of total traffic handled at the port since 1951-52 is given in Table 3.5. The table also shows percentage changes in the total tonnage handled, over the previous year. It is seen that traffic volumes have fluctuated, with alternate increases and decreases. Over the First Five-Year Plan period, commencing from the second year of the Plan, total volume of traffic decreased from 9.44 MT in 1951-52 to to 8.01 MT in 1955-56 thus registering a fall of 15.15 percent. Over the Second Plan Period (1956-61) there was an increase of 7.56 percent in total volume of traffic from 8.73 MT in 1956-57 to 9.39 MT in 1960-61, but traffic was still down 0.53 percent over the high figure of 1951-52. Comparing the total volume of traffic over three decades, i.e. between 1951-52 and 1980-81, it is seen that there was almost no improvement in total cargo volume handled over this period. Traffic was 9.44 MT and 9.51 MT in 1951-52 and 1980-81, respectively. After this however, total volume of cargo handled began to increase, and over the twelve years from 1980-81 to 1992-93, Calcutta Post achieved a doubling in traffic. Total volume of traffic in 1980-81 was 9.51 MT but shot up to 18.34 MT by 1992-93. This was primarily because of the development of Haldia Port activities, and because of increase in imports of POL and coking coal and in exports of thermal coal to the state of Tamilnadu through Haldia Port.

Table 3.6 gives a breakup between CDS and HDC of total cargo handled since the commissioning of HDC. This reveals that out of total cargo volume handled, the major share derives from HDC. Out of total traffic of 9.51 MT in 1980-81, the share of HDC was 5.45 MT, or 34 percent higher than the traffic of 4.06MT at CDS. This percentage figure rose to 155 percent in 1992-93 when total traffic at CDS was 5.16 MT and was 13.18 MT at HDC. It is also seen that after the commissioning of HDC, the volume of traffic at CDS has in general either declined, or improved only marginally in subsequent years. In 1979-80, CDS traffic stood at 3.84 MT and was 5.16 MT in 1992-93. The major share of traffic was being handled at HDC.

Table 3.5

Traffic Handled at 'Calcutta-Haldia Port' during 1951-52 to 1992-93.

(million tonnes).

Year	Imports	Exports transhipment	Total(inc.	% change in total
Cargo)	year		over the previous	
1951-52	4.15	5.29	9.44	00.00
1952-53	3.37	6.19	9.56	1.27
1953-54	2.77	5.23	8.00	-16.32
1954-55	3.29	4.48	7.77	- 2.87
1955-56	3.46	4.55	8.01	3.09
1956-57	4.42	4.31	8.73	8.99
1957-58	5.60	4.53	10.13	16.04
1958-59	5.15	4.07	9.22	-8.99
1959-60	5.03	4.64	9.67	4.88
1960-61	5.49	3.90	9.39	-2.90
1961-62	4.88	4.31	9.19	-2.13
1962-63	5.48	4.61	10.09	9.79
1963-64	6.03	4.77	10.80	7.04
1964-65	6.08	4.85	10.93	1.20
1965-66	5.28	4.44	9.72	-11.07
1966-67	5.79	4.18	9.97	2.57
1967-68	4.88	4.00	8.88	-10.93
1968-69	4.00	3.86	7.86	-11.23
1969-70	3.40	3.42	6.82	-13.23
1970-71	3.25	2.72	5.97	-12.46
1971-72	4.75	2.54	7.29	22.11
1972-73	4.15	2.47	6.62	-9.19
1973-74	3.89	2.40	6.29	-4.98
1974-75	5.08	2.42	7.50	19.24
1975-76	4.48	3.18	7.66	2.13
1976-77	4.86	3.14	8.00	4.44
1977-78	3.97	3.58	7.55	-5.62
1978-79	5.27	2.71	7.98	5.70
1979-80	6.12	2.67	8.79	10.15
1980-81	7.10	2.41	9.51	8.19
1981-82	6.82	3.11	9.93	4.42
1982-83	7.08	3.61	10.69	7.65
1983-84	6.94	3.53	10.47	-2.06
1984-85	7.07	3.45	10.52	0.48
1985-86	8.52	3.61	12.13	15.30
1986-87	8.19	3.88	12.07	-0.49
1987-88	8.84	4.23	13.07	8.28
1988-89	9.70	4.53	14.23	8.87
1989-90	9.76	4.93	14.69	3.23
1990-91	10.61	4.63	15.24	3.74
1991-92	11.25	4.75	16.00	4.99
1992-93	12.92	5.42	18.34	14.62

Sources: *1. Administration Reports and Annual Accounts of Calcutta-Haldia Port of various years*

2. Basic Port Statistics of India of various years

Table 3.6

Traffic Handled by Calcutta and Haldia Ports during 1979-80 to 1992-93

(million tonnes).

Year	Calcutta Port				Haldia Port			
	Imports	*Exports*	*Total*	*%change over prev. Yr.*	*Imports*	*Exports*	*Total*	*%change over prev. yr.*
1979-80	2.23	1.61	3.84		3.89	1.06	4.95	
1980-81	2.65	1.41	4.06	5.73	4.45	1.00	5.45	10.10
1981-82	2.88	1.57	4.45	9.61	3.94	1.54	5.48	0.55
1982-83	3.14	1.43	4.57	2.70	3.94	2.18	6.12	11.68
1983-84	2.95	1.14	4.09	-10.50	3.99	2.39	6.38	4.25
1984-85	2.82	1.17	3.99	-2.44	4.25	2.29	6.54	2.51
1985-86	3.16	1.00	4.16	4.26	5.36	2.60	7.96	21.71
1986-87	2.98	1.07	4.05	-2.64	5.21	2.81	8.02	0.75
1987-88	3.51	0.88	4.39	8.39	5.32	3.36	8.68	8.23
1988-89	3.40	0.94	4.34	-1.14	6.29	3.59	9.88	13.82
1989-90	3.39	0.95	4.34	0.00	6.37	3.98	10.35	4.76
1990-91	3.16	0.96	4.12	-5.07	7.44	3.67	11.11	7.34
1991-92	2.93	1.22	4.15	0.73	8.32	3.52	11.84	6.57
1992-93	3.68	1.48	5.16	24.34	9.24	3.94	13.18	11.32

Sources :

1. *Administration Report and Annual Accounts of Calcutta-Haldia Port of various years.*
2. *Basic Port Statistics, 1992-93*
3. *Major Ports of India and Statistical Profile.*

While the share of imports in total cargo handled was considerably low upto 1955-56, it started assuming greater proportion from 1956-57 onwards and imports exceeded exports from that year. This rather large increase in share of imports was mainly due to rising imports of POL, foodgrains, etc. The domination of imports over exports has since continued and has risen in relative importance to total traffic. Imports in 1956-57 were 4.42 MT against exports of 4.31 MT, i.e. almost equivalent, but by 1992-93 imports at 12.92 MT registered a percentage-ratio of 139 percent over exports of 5.42 MT. For CDS, the breakup figure similarly shows that in 1980-81 the volumes of imports and exports were 2.65 MT against 1.41 MT respectively. In 1992-93 imports had risen by 39 percent to 3.68 MT while the volume of exports rose by only 5 percent to 1.48 MT. For HDC on the other hand, while imports increased by 108 percent in 1992-93 over 1980-81, exports increased by 294 percent from 1 MT in 1980-81 to 3.94 MT in 1992-93. While the increase in imports though HDC is attributable to increase in POL and coking coal imports, the increase in exports is mainly on account of exports of thermal coal to the Tamilnadu State Electricity Board (TNEB). These exports, which passed previously through Paradip Port are now routed through Haldia Port.

Table 3.7

Trends of Traffic at Calcutta-Haldia Port and its % share among Major Ports of India, 1928-29 to 1988-89.

Volume of Cargo (*Million tonnes*)

Year	*Cal. Port*	*All Major Ports*	*% share of traffic of Cal. Port.*
1928-29	10.9	22.0	49.5
1947-48	7.1	16.4	43.2
1951-52	9.7	23.1	42.1
1960-61	9.0	39.5	22.7
1964-65	11.0	45.0	24.4
1970-71	6.0	55.6	10.7
1977-78	7.6	66.2	11.5
1983-84	10.5	100.6	10.4
1986-87	12.1	142.4	8.5
1988-89	14.2	146.4	9.7
1989-90	14.7	147.6	10.0
1990-91	15.2	151.7	10.0
1991-92	16.0	156.6	10.2
1992-93	18.3	163.2	11.2

Notes : *a) Figures refer to traffic of all ports of India.*
b) The HDC was commissioned in 1977.

Source : *The Commissioners for the Port of Calcutta, CPT.*

Trends in traffic at Calcutta-Haldia Port and the percentage share of these relative to other major ports of India over the period 1928-29 to 1992-93 are presented in Table 3.7.

The table shows that in 1928-29 the volume of cargo of 10.9 MT at Calcutta Port constituted nearly 50 percent of the total cargo volume of 22 MT of all major ports. After this the cargo share of CPT declined until 1989-90 but has shown slight improvement after that year. The share was 10 percent in 1989-90, 10.02 percent in 1990-91, 10.2 percent in 1991-92 and 11.2 percent in 1992-93. The volume of cargo at Calcutta Port increased from 10.9 MT in 1928-29 to 18.3 MT in 1992-93, thus rising by only 7.4 MT (68%) over the long period of 64 years. As against this, cargo volumes handled by major ports other than Calcutta rose by 141.2 MT (641.8%) over the same period, indicating their burgeoning operations and importance.

Trends in cargo traffic handled by Indian ports and share in these of minor/ intermediate ports over the period from 1960-61 to 1991-92 are shown in Table 3.8. The table also indicates the total cargo handled by Indian ports and the share of minor ports in these. It is clear from the table that the share of minor ports in total cargo handled has been declining, falling from 10.04 percent in 1960-61 to 6.56 percent in 1991-92, with the exception of a few intermediate years when it rose slightly. Thus the major part of cargoes handled has been through major ports, which increased their cargo volume from 39.52 MT in 1960-61 to 156.64 MT in 1991-92. The share for major ports in this last year was 93.44 percent. Cargo volumes handled at minor ports over the three decades increased by 149.43 percent against an increase of 296.36 percent in cargo volumes handled at major ports, also indicating the tendency of traffic to congregate at major ports.

Table - 3.8

Trends in Cargo Handled by Indian Ports and Share of Minor/Intermediate Ports

Year	*Cargo Handled by Minor Ports*	*Cargo Handled by Major Ports*	*Total Cargo Handled by Indian Ports*	*Share of Minor Ports (%)*
1960-61	4.41	39.50	43.93	10.04
1965-66	7.71	50.22	57.93	13.31
1970-71	6.69	55.58	62.27	10.74
1975-76	6.50	64.92	71.42	9.10
1980-81	6.73	80.27	87.00	7.74
1981-82	7.01	87.92	94.99	7.38
1982-83	6.63	93.70	100.33	6.61
1983-84	8.45	96.38	104.83	8.06
1984-85	9.62	106.76	116.38	8.27
1985-86	9.06	119.62	128.68	7.04
1986-87	8.37	124.37	132.74	6.31
1987-88	5.89	134.60	140.49	4.19
1988-89	9.07	146.71	155.78	5.82
1989-90	10.06	145.93	156.70	6.93
1990-91	11.00	150.02	161.02	6.83
1991-92	11.00	154.14	165.14	6.56

Source : *1. Basic Port Statistics of India*
2. Minor/Intermediate Ports of India : A Stitistical Profile, (1960-61 to 1990-91)

Table - 3.9

Trends in Corgo Trafic Handled at Various Major Ports during 1951-52 to 1991-92

(million tonnes)

Year	*Kandla*	*Bombay*	*J.L. Nehru*	*Mormugao*	*N. Bangalore*	*Cochin*	*Tuticorin*	*Madras*	*Vizag.*	*Paradip*	*CHP*	*Total*
1951-52	-	7.50	-	-	-	1.61	-	2.05	1.14	-	9.45	21.75
1955-56	0.15	9.68	-	-	-	1.64	-	2.34	1.29	-	8.01	23.11
1960-61	1.57	14.35	-	-	-	2.01	-	3.04	2.76	-	9.39	33.12
1965-66	2.51	17.91	-	7.87	-	2.87	-	4.87	4.46	-	9.73	50.22
1970-71	1.61	14.87	-	11.01	-	4.81	-	6.92	8.73	2.16	5.97	55.58
1975-76	3.20	16.65	-	12.77	0.34	4.26	1.36	7.88	8.55	3.33	7.66	66.00
1980-81	8.76	16.98	-	13.77	0.96	5.23	2.56	10.38	10.12	2.24	9.27	80.27
1981-82	9.69	19.40	-	14.98	1.64	5.50	2.67	11.41	10.98	2.23	9.47	87.98
1982-83	12.36	23.21	-	12.81	2.27	5.71	3.23	12.07	10.22	1.57	10.25	93.70
1983-84	14.16	23.89	-	12.84	2.84	5.00	3.55	12.84	9.88	1.37	10.01	96.38
1984-85	15.74	26.94	-	14.30	3.38	4.07	3.77	14.13	11.08	2.14	10.27	105.82
1985-86	16.49	24.31	-	16.12	3.69	5.28	4.22	18.15	15.91	3.33	12.13	119.63
1986-87	16.19	25.08	-	14.92	5.43	6.88	4.13	19.78	15.04	4.85	12.07	124.37
1987-88	18.06	29.57	-	13.33	6.11	6.80	4.26	22.82	15.37	5.19	13.07	134.60
1988-89	17.83	29.34	-	15.39	7.09	7.82	5.13	23.86	20.37	6.03	14.22	147.06
1989-90	18.92	27.75	0.70	14.17	7.66	7.12	5.32	23.94	21.12	6.18	14.69	147.57
1990-91	19.69	28.90	2.02	14.91	8.02	7.28	5.08	24.52	19.42	6.88	14.95	151.67
1991-92	21.00	26.26	2.79	16.10	8.27	7.48	5.87	25.05	21.52	7.30	16.00	156.64

Source : *Basic Ports Statistics of India, 1992-93, IIPM*

Table - 3.10
Traffic Handled at Major Ports for Selected Commodities
(1992-93)

('000 tonnes)

Port	*POL*	*Iron Ore*	*Fertiliser*	*FRM*	*Food Grains*	*Coal*	*Containerised Cargo*		*Others*	*Total*
							'000 tonnes	*'000 TEUs*		
Kandla	17951	2	448	334	600	35	358	28	3181	22909
Bombay	20108	-	24	943	262	-	3869	314	3875	29081
J.L. Nehru	-	-	588	106	577		1712	145	24	3007
Mormugao	1798	13602	244	-	4	108	5	1	567	16328
New Mangalore	630	5082	241	-	-	-	13	2	1122	7088
Cochin	6180	-	134	415	66	55	309	56	804	7963
Tuticorin	510	-	378	283	189	3161	277	35	1417	6215
Madras	9813	4797	586	276	236	5593	1252	127	2777	25330
Visakhapatnam	7593	4960	484	946	186	5947	85	9	2565	22766
Paradip	195	1346	142	152	3	4414	-	-	1355	7607
Calcutta/Haldia	8920	-	313	346	117	5059	1104	81	2458	18317
All Ports	73698	29789	3582	3801	2240	24372	8984	798	20145	166611

Source : *Basic Ports Statistics of India, 1992-93, IIPM*

Table - 3.11
Trends in Cargo Traffic Handled (Commodity-wise)
at Calcutta-Haldia Ports (1950-51 to 1991-92)

('000 tonnes)

Year	POL	Fertiliser	FRM	Food Grains	Iron Ore	Coal	Others	Total
1950-51	781	-	119	630	277	2137	3588	7532
1951-52	926	19	48	1688	440	3167	3160	9448
1952-53	985	30	11	1084	960	3434	3056	9560
1953-54	893	18	14	562	1083	2436	2997	8003
1954-55	987	31	24	442	565	2302	3420	7771
1955-56	1154	34	30	209	882	1867	3835	8011
1956-57	1249	36	10	733	786	2024	3897	8735
1957-58	1296	29	60	1129	1003	2076	4539	10132
1958-59	1215	39	51	1313	786	1820	3994	9218
1959-60	1464	54	64	1329	1116	1705	3943	9675
1960-61	1409	51	74	1800	731	1385	3941	9391
1961-62	1687	42	82	993	632	1704	4059	9199
1962-63	1921	72	111	1083	550	2118	4236	10091
1963-64	1898	54	190	1553	790	1932	4383	10800
1964-65	1836	77	118	1696	911	1761	4529	10928
1965-66	1431	62	232	1523	1024	1370	4087	9729
1966-67	1326	50	387	2422	911	1121	3757	9974
1967-68	1207	92	480	1814	683	904	3671	8878
1968-69	1231	58	465	1085	457	909	3658	7863
1969-70	1492	27	209	788	380	970	2953	6819
1970-71	1405	3	111	852	430	660	2504	5965
1971-72	1862	31	155	1084	236	786	3140	7294
1972-73	2039	76	302	157	242	795	3006	6617
1973-74	1971	43	348	520	182	725	3496	7285
1974-75	2277	78	412	1120	107	897	2611	7202
1975-56	2888	49	351	1094	118	918	2245	7663
1976-77	3066	80	353	1026	-	808	2662	7995
1977-78	3410	109	289	109	133	1036	2460	7546
1978-79	3917	122	564	51	96	336	2385	7979
1979-80	4582	116	324	-	88	733	2678	8521
1980-81	5154	559	116	68	13	885	2477	9272
1981-82	4505	349	191	172	13	1421	2823	9474
1982-83	4595	346	-	423	10	2129	2741	10244
1983-84	4754	207	194	938	20	1947	1954	10014
1984-85	5092	560	238	204	6	1708	2460	10268
1985-86	6059	471	300	-	-	2319	2979	12128
1986-87	5722	371	232	75	-	2481	3191	12072
1987-88	5912	209	298	104	-	3124	3424	13071
1988-89	6469	166	291	447	-	3605	2892	13870
1989-90	6436	384	388	193	-	4178	3110	14689
1990-91	7257	231	457	92	-	4134	2782	14953
1991-92	7690	275	479	60	-	4603	2893	16000

Table 3.9 shows trends in cargo traffic handled at various major ports over the period from 1951-52 to 1991-92. The table indicates that where cargo volume grew by 350 percent from 7.50 MT in 1951-52 to 26.26 MT in 1991-92 at Bombay Port, it shot up by 1122 percent from 2.05 MT to 25.05 MT over the same period at Madras Port and 1788 percent from 1.14 MT to 21.52 MT at Visakhapatnam Port. Cargo volumes at Calcutta Port increased extremely sluggishly on the other hand, by only 69 percent from 9.45 MT to 16.00 MT over the period of study. It is therefore observed that while traffic development at other major ports has been rapid, Calcutta Port has displayed only sporadically increasing trends. As earlier stated, the volume of cargo at Calcutta Port was 9.47 MT in 1981-82, almost equal to cargo in 1951-52. Cargo volume then started to rise at a faster pace and reached 16 MT in 1991-92. In 1951-52 Calcutta Port handled about 43 percent of total cargo handled at major ports, but only 10 percent of this in 1991-92. Thus in 1991-92 Calcutta Port handled only 16 MT out of total volume 156.64MT of cargo handled by all major ports.

Traffic in selected commodities handled by major ports in the year 1992-93 is presented in Table 3.10. The table indicates traffic in main commodities like POL, iron ore, fertilisers, fertiliser raw materials, foodgrains, coal, containerised cargo and so on. It becomes clear that POL and coal are the main cargoes of the 11 major ports, comprising 44.07 percent and 14.58 percent, respectively, of total cargo traffic handled by all major ports. The major share of POL handling is at Bombay Port (20 MT or 27.28%), followed by Kandla Port (17.9 MT or 24.36%), Madras Port (9.8 MT or 13.32%), and Calcutta Port (8.9 MT or 12.10%). In case of coal handling, Visakhapatnam Port (5.9 MT or 24.40%) occupies first position, followed by Madras Port (5.6 MT or 22.95%) and Calcutta Port (5.1 MT or 20.76%) respectively.

The principal items of commodities that pass through Calcutta-Haldia Port are POL, coking coal, fertiliser, fertiliser raw materials, and foodgrains. Commodity-wise trends in cargo traffic handled at Calcutta Port during the period from 1950-51 to 1991-92 are indicated in Table 3.11. POL has constituted a significant proportion of cargo handled from the outset. In 1950-51 POL traffic was 0.78 MT, but rose to 7.69 MT in 1991-92, thus registering a ten-fold increase over this period. By 1992-93 it had risen further to 8.92 MT . Coal (of both coking and thermal qualities) occupied the second position, its traffic volume doubling from 2.14 MT in 1950-51 to 4.60 MT in 1991-92. Handling of fertilisers and fertiliser raw materials also increased continuously but cargo traffic in iron ore became nil from 1985-86 on, till the conclusion of the study, although rising in a few years prior to that, such as 1953-54, 1959-60 and 1965-66.

At present, principal imports through Calcutta-Haldia Port are of POL, coking coal, fertiliser, fertiliser raw materials, etc., while principal exports from this port are coking coal, POL, gunnies and jute products, tea, iron & steel etc. Coal is exported through Haldia Port to Tamilnadu for thermal power generation. Table 3.12 shows that POL registered 62 percent of total imports and 16 percent of total exports at CHP in 1992-93. The share of POL handling at Calcutta Port covers 49 percent of total traffic. By way of comparison, POL imports and exports at Bombay Port comprised 60 percent and 80 percent respectively, of its total imports and exports, while POL accounted for 69 percent of the total traffic handled by the Port. Madras and Visakhapatnam Ports registered respective shares of 39 percent and 33 percent for POL in total traffic handled by them.

Table 3.12

Import and Export of POL by the Major Ports of India in 1992-93

Ports	% share of Import on total import	% share of Export on total export	% share on total traffic
Calcutta Port	62	16	49
Madras	44	20	39
Cochin	81	60	78
Bombay	60	80	69
Kandla	83	39	78
Visakhapatnam	45	12	33
Mormugao	63	NIL	11

Source : *Compiled and calculated from Administration Reports and Annual Accounts of Major Ports of India for the year 1992-93*

3.5 The Financial Position of Calcutta-Haldia Port

Calcutta Port has displayed a mixture of good, bad and indifferent financial results over the century. Huge establishment costs, large recurring expenditures on dredging and maintenance of the navigational channel of 235 km., replacement and maintenance expenses on the large fleet of CPT vessels, costs of modernisation of facilities, and debt charges have always been serious handicaps in balancing the port budget. To relieve the consequent financial burden, the Port has been levying stiff tariffs for its services. Calcutta has thus been a high-cost port from the very beginning.

Revenue results have in financial terms not shown any consistency. In 1899-1900 Calcutta Port earned an income of Rs.66.51 lakhs against incurred expenditure of Rs.66.53 lakhs, and thus suffered a small loss of Rs.2000. This was followed by profits or losses of a few lakhs of rupees annually, for a number of years.[30] From 1929-30 to 1936-37, during the Depression and post-Depression period, the Port incurred losses every year. Over the next twelve years i.e. until 1949-50, the Port earned profits every year.[31] Following a few subsequent years of indifferent performance, the port of Calcutta showed a favourable financial position again for a decade from 1955. This was followed however by years of alternating profits and losses. Till 1988, the largest financial deficit was Rs.12 crores in 1973-74 and the highest profit was Rs.17 crores in 1984-85. The financial position is stabilising now, with increasing quantum of profit during the last five years from 1988-89, the average profit being Rs.44.42 crores a year. It is expected that with reductions in manpower and increasing income from traffic and estates, the financial position of the Port in the years to come will be increasingly satisfactory. Financial figures on the revenue account for Calcutta-Haldia Port for the forty-two years from 1951-52 uptil 1992-93 are presented in Table 3.13.

The table also presents a growth analysis for revenues and expenditure for Calcutta Port. Over the period of the table, growth rates for revenue and expenditure have averaged 10.29 percent and 9.40 percent, respectively. Average decadal annualised growth rates for the port's revenues show acceleration over the time-frame, starting at an average 6.90 percent over

Table 3.13

Revenue Account of Calcutta-Haldia Port

during 1951-52 to 1992-93.

(Rs. crores)

Year	Revenue	Growth	Expenditure	Growth	Surplu/Deficit	Growth
1951-52	7.87	-	8.14	-	-0.27	-
1952-53	8.68	10.29	8.31	2.09	0.37	237.04
1953-54	8.18	-5.76	9.00	8.30	-0.82	-321.62
1954-55	8.83	7.95	9.21	2.33	-0.38	53.66
1955-56	9.97	12.91	9.34	1.41	0.63	265.79
1956-57	10.87	9.03	9.60	2.78	1.27	101.59
1957-58	12.76	17.39	11.20	16.67	1.56	22.83
1958-59	12.96	1.57	12.48	11.43	0.48	-69.23
1959-60	12.98	0.15	12.71	1.84	0.27	-43.75
1960-61	14.12	8.78	13.62	7.16	0.50	85.19
1961-62	15.06	6.66	14.23	4.48	0.83	66.00
1962-63	16.97	12.68	16.45	16.23	0.52	-37.35
1963-64	17.72	4.42	17.19	3.93	0.53	1.92
1964-65	18.39	3.78	18.34	6.69	0.05	-90.57
1965-66	18.56	0.92	20.30	10.69	- 1.74	-3580
1966-67	20.45	10.18	23.57	16.11	- 3.12	-79.31
1967-68	NA	-	NA	-	NA	-
1968-69	24.20	-	27.97	-	-3.77	-
1969-70	28.24	16.69	32.83	17.38	-4.59	-21.75
1970-71	23.66	-16.22	32.64	-0.55	-8.98	-95.64
1971-72	30.42	28.57	45.44	39.17	-15.02	-67.26
1972-73	32.17	5.75	39.62	-12.81	-7.45	50.40
1973-74	30.95	-3.79	42.98	8.48	-12.03	-61.47
1974-75	42.14	36.16	48.26	12.28	-6.12	49.13
1975-76	55.68	32.13	54.02	11.94	1.66	2812.42
1976-77	59.15	6.23	55.64	3.00	3.51	111.45
1977-78	59.33	0.30	65.06	16.93	-5.73	-263.25
1978-79	71.46	20.44	74.66	14.76	-3.20	44.15
1979-80	96.20	34.62	86.39	15.71	9.81	406.56
1980-81	101.65	5.67	98.38	13.88	3.27	-66.67
1981-82	114.48	12.62	108.31	10.09	6.17	88.69
1982-83	131.74	15.08	119.85	10.65	11.89	92.71
1983-84	118.41	-10.12	121.58	1.44	-3.17	-126.66
1984-85	154.61	30.57	137.71	13.27	16.90	633.12
1985-86	146.53	-5.23	148.44	7.79	-1.91	-111.30
1986-87	167.96	14.62	156.58	5.48	11.38	695.81
1987-88	167.59	-0.22	180.64	15.37	-13.05	-214.67
1988-89	227.99	36.04	188.29	4.23	37.70	388.89
1989-90	247.37	8.50	198.92	5.65	48.45	28.51
1990-91	270.92	9.52	221.42	11.31	49.50	2.17
1991-92	302.14	11.52	257.36	16.23	44.78	-9.54
1992-93	335.46	11.03	290.78	12.99	44.68	-0.22

Sources: *1. Administration Report and Annual Accounts of various years.*

2. Basic Port Statistics, 1992-93

3. Major Ports of India and Statistical Profile.

the 50s, through 7.63 percent for the 60s, a sharp 15.01 percent over the 70s, and decelerating slightly to 11.03 percent thereafter. The comparable averaged growth rates for expenditure on the other hand were 5.85 percent in the 50s, sharply rising to 13.71 percent over the 60s, and then decelerating to a more stable 9.43 percent, and 9.49 percent for the two decades thereafter. From the position reflected in the table, it might be stated that the port experienced sharply increasing costs in the 60s and early 70s during which significant deficits emerged, to which the port management reacted by concentrating on revenue maximisation over the subsequent decades. As earlier stated, this expansion in revenues indicates sharply increasing tariffs at the port, as well as being reflective of the better operational performance of recent years, bearing out the status of CHP as a high-cost port.

The breakup of the financial position of CHP reflected in the previous table between CDS and HDC in Table 3.14 shows that Calcutta Port, particularly, had faced deficits in most years till 1987-88, with the highest deficit of Rs.22.5 crores occurring in that year. Although from 1988-89 onwards, the CHP started to show a profit-turnaround, the surpluses have generally been marginal, constituting a relatively small part of the total surplus of the CPT. In 1992-93, for instance, the quantum of surplus at CDS was only Rs.5.44 crores (12.17%) out of the total surplus of Rs.44.68 crores accruing to the Calcutta Port Trust. On the other hand, there has been remarkable improvement in the quantum of surpluses earned by HDC, which increased five-fold from Rs.7.93 crores in 1980-81 to Rs.39.24 crores in 1992-93. Thus out of the total surplus of CPT, the share of HDC has consistently been maximal. In 1991-92, for example, HDC contributed as much as 96 percent of the CPT's surplus of Rs.44.78 crores shown by CPT, and in the next year, despite improved performance of CDS, the HDC contribution remained as high as 88 percent. Such consistent financial features of the CPT also lead to a belief that over time to come Haldia will gradually supplant Calcutta as a port.

Table 3.14
Financial Position of Calcutta-Haldia Port during 1980-81 to 1992-93

(Rs. crores)

Year	*Surplus/Deficit CDS*	*Surplus/Deficit HDC*	*Surplus/Deficit Net*
1980-81	-4.66	7.93	3.27
1981-82	1.82	4.35	6.17
1982-83	8.53	3.36	11.89
1983-84	-5.18	2.01	-3.17
1984-85	10.24	6.66	16.90
1985-86	-12.88	10.96	-1.92
1986-87	-3.44	14.82	11.38
1987-88	-22.50	9.46	-13.04
1988-89	1.28	38.41	39.69
1989-90	2.55	45.90	48.45
1990-91	2.19	47.31	49.50
1991-92	1.85	42.93	44.78
1992-93	5.44	39.24	44.68

Sources : 1. Administration Report and Annual Accounts of 'Calcutta-Haldia Port' for the above years

2. Statistical Hand Book; 1989; 'Calcutta-Haldia Port'

The financial position of the Calcutta Port Trust can be appreciated more fully from the overall accounting position found in the Annual Accounts for a particular year. Operating incomes and expenditure for 1990-91, headwise for the Calcutta Port Trust (i.e. inclusive of CDS and HDC together), are shown in Table 3.15 below.

Table 3.15

Income and Expenditure Break-up of the Calcutta Port Trust, 1990-91.

(Rs.crores)

Head	*Income*	*Expenditure*	*Results*
Cargo and Storage	146	42	+104
Finance and Miscellaneous	26	41	-15
Port and Docks	70	66	+4
Port Railways	12	15	-3
Estates	16	6	+10
General Administration	—	50	-50
Total	270	220	+50

Source : *Administrative Reports and Annual Accounts of Calcutta Port Trust,1990-91*

From the table it is evident that the bulk of the surplus derived from cargo handling and storage, which contribute 54.07 percent to the port's income. Under this head, demurrage or storage alone generated a surplus of Rs.45 crores, or nearly 50 percent; this income mostly accrued from operations at CDS. The 'finance and miscellaneous' head showed an adverse position mostly because of heavy burden of interest on borrowed funding for capital works and also on account of pension payments to retired employees, which is reflected in the deficit position under this head. Port estates are seen to have been a good source of revenue for CHP.

Of total CHP expenditure of Rs.220 crores in 1990-91, Rs.93 crores were spent on wages and salaries and Rs.15 crores on fringe benefits like medical facilities, leave encashment and leave travel concession. Thus half of total expenditure was on establishment purposes.

The table also yields the observation that the financial position of the CPT can be improved by increasing incomes from storage charges and estates, and by economy measures in establishment, reduction of the interest burden and better management of port railways.

Comparative features of financial results at major ports in India from 1950-51 to 1989-90 are shown in Table 3.16. The table reveals that where Bombay, Madras, Visakhapatnam and Kandla Ports have shown continuous surpluses in most years, Calcutta Port has not shown any consistent performance, with surplus results in some years and deficit results in others. Although the Port once held premier position, its relative position after 1950-51 has been behind Bombay, Madras, Visakhapatnam, and in some years even behind Kandla. Among major ports in India, it is Bombay and Madras Ports which show consistently good financial results.

Table 3.16

Financial Results of the working of Major Ports in India

(Rs. Lakhs)

Name of the Port.	*1950-51*			*1960-61*			*1970-71*			*1975-76*			*1980-81*		
	Rev.	*Exp.*	*Sur/ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*
Calcutta	70.9	77.1	-6.2	145.2	139.9	5.3	265.6	326.5	-60.9	556.8	540.2	16.6	1016.4	983.7	32.7
Bombay	55.9	46.4	9.5	127.4	86.7	40.7	251.4	220.4	31.0	505.1	398.6	106.5	1073.3	724.6	348.7
Madras	13.0	9.1	3.9	30.9	21.8	9.1	117.0	85.2	31.8	230.5	188.5	42.0	440.2	389.4	50.8
Cochin	6.2	4.5	1.7	12.8	9.3	3.5	42.2	36.3	5.9	105.1	82.8	22.3	194.3	201.5	- 7.2
Visakhapatnam	5.3	5.5	-0.2	19.5	13.8	5.7	94.5	66.1	28.4	177.7	169.8	7.9	396.1	425.8	-29.7
Kandla				8.7	7.8	0.9	24.2	25.9	-1.7	79.3	62.1	17.2	267.1	157.6	109.5
Mormugao							28.9	20.2	8.7	55.9	35.6	20.3	236.5	234.0	2.5
Paradip							17.8	18.1	-0.3	77.2	74.6	2.6	100.7	162.5	-61.8
New Mangalore										5.0	8.9	-3.9	35.2	34.2	1.0
Tuticorin										4.7	2.5	2.2	55.7	57.0	-1.3

Name of the Port.	*1985-86*			*1986-87*			*1987-88*			*1988-89*			*1989-90*		
	Rev.	*Exp.*	*Sur/ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*	*Rev.*	*Exp.*	*Sur./ Def.*
Calcutta	14653	14844	-191	16796	15658	1138	16759	18064	-1305	22799	18829	3970	24737	19892	4845
Bombay	20695	13436	7259	22147	14118	8029	23723	16761	6962	29228	18909	10319	28580	21150	7430
Madras	9869	6195	3674	10433	6896	3537	11256	7622	3634	13525	8269	5256	14832	8882	5950
Cochin	3265	3930	-665	3718	4068	-350	3626	3908	-282	4654	4721	- 67	5722	5225	497
Visakhapatnam	7173	6309	864	8272	7449	823	9280	8494	786	13546	9757	3789	13021	9054	3967
Kandla	4525	2248	2277	4480	2361	2119	5072	2879	2193	6245	3252	2993	7431	3924	3507
Mormugao	4168	3282	886	4257	3672	585	4058	3421	637	5160	3836	1324	5339	3889	1450
Paradip	3004	3416	-412	4309	4568	-259	4847	5015	-168	5322	4992	330	6709	5906	803
New Mangalore	1411	1316	95	1915	1590	325	2083	1795	288	2604	1653	951	2603	2217	386
Tuticorin	1511	1189	322	1440	1284	156	1435	1444	-09	1941	1511	430	2274	2073	201

Sources: *1. Administration Reports and Annual Accounts of Major Ports of India for the respective years*

2. Major Ports of India and Statistical Profile

3. Basic Port Statistics

3.6 Manpower at Calcutta-Haldia Port

Manpower at Calcutta Port has traditionally been high, although at the highly-mechanised Haldia Docks, it was ensured that manpower needs were kept to the minimum. In 1960, the CPT had 40084 employees comprising 295 of Class I rank (0.73%), 374 of Class II rank (0.93%), 11185 of Class III rank (27.90%), and 25186 under Class IV (62.83%). There were also 3044 casual employees. Overall manpower remained above 40000 till 1973.[32] Manpower strength from 1980 to 1992 at CHP, with the breakup for CDS and HDC and growth rates thereof, are given in Table 3.17 below. Declining growth rates reflect the overall decrease in manpower.

Table 3.17

Manpower at Calcutta-Haldia Port between 1980 & 1992

Year as on	Manpower at CDS	Manpower at HDC	Total Manpower
1-1-1980	31931	2397	34328
1-1-1981	31907	2571	34478
1-1-1982	30849	2785	33634
1-1-1983	29825	3150	32975
1-1-1984	29251	3294	32545
1-1-1985	27879	3352	31231
1-1-1986	26105	3442	29547
1-1-1987	24837	3432	28269
1-1-1988	23258	3427	26685
1-1-1989	22271	3490	25761
1-1-1990	21789	3711	25500
1-1-1991	20595	4020	24615
1-1-1992	20175	4260	24435

Source : *Administration Reports and Annual Accounts of Calcutta Port Trust for the above years*

The table shows that total manpower has been declining over more recent years. In the 12 years from 1980 to 1992 employment was reduced by around 10000. The table also indicates that manpower reductions have taken place in CDS only, while manpower has actually increased at HDC. The decrease in number of employees at CDS consistently by about 1000 a year is the result of natural attrition caused by superannuation. In 1992, successful implementation of the Voluntary Retirement Scheme (VRS) also led to retirement of 1200 employees. About Rs.30 crores were disbursed as one-time payments to retiring employees. On the other hand, there is also a long list of 1800 candidates which has accumulated over the past 30 years, comprising 'death-in-harness' cases i.e. dependents of CPT employees who died while in service, who have been agitating for employment under the Port. Growth analysis in the table shows the opposition in trends regarding manpower between CDS and HDC. Sharpest reductions in

manpower at CDS took place during the mid-years of the study, with the annualised rate of decline being as high as 6.36 percent in 1986 and 1988. At HDC, growth rates in manpower were lowest during the mid-years of the study, declining from the high value of 13.11 percent in 1983 to negative rates over 1987 and 1988, and then picking up again towards the end of the study.

The category-wise manpower position at Calcutta and Haldia as in 1992 is shown in Table 3.18 below.

Table 3.18

Manpower by Class-Category under the Calcutta Port Trust (1992)

	Calcutta	Haldia	Total
Class I	771	184	955
Class II	164	132	296
Class III	9130	1761	10891
Class IV	8732	2183	10915
ShoreLabour	1378	0*	1378
Total	20175	4260	24435

** At Haldia Cargo work on shore is done by about 600 casual workers who have been pooled together in a cooperative.*

Source : *Administration Reports and Annual Accounts of Calcutta Port Trust, 1992*

The table also presents a percentage analysis of the distribution by workforce category between CDS and HDC. Percentage distribution of the total CPT workforce in 1992 was 3.91 percent Class I, 1.21 percent Class II, 44.57 percent Class III, and 44.67 percent Class IV. However, as much as 82.57 percent of the CPT workforce was attached to CDS. Also to be noted in the table is the relatively high clustering of Class I-category employees at CDS, which in percentage-terms, bears a ratio of 3.16% : 0.75% in the table. Payrolled shore-labour is of course entirely absent at HDC, for the reason footnoted under the table.

Apart from the disproportionately huge expenditure on wages and salaries of Rs.100 crores a year and on fringe benefits of Rs.25 crores a year, the Port's liability for payment of pension to retired employees has been increasing steadily. The present annual payment of Rs.15 crores will increase to Rs.30 crores within the next five years.

At Haldia, manpower has been kept within the reasonable limit of 5,000. But with new berths and increasing traffic, work in three shifts with full manpower strength would become necessary and will require induction of 1000 more workers. The table shows that manpower at HDC has been increasing every year because of expansion of the port. Haldia is the only dock system in India where the entire stevedoring work in cargo hatches is done by port labour.

3.7 Problems & Prospects for the Port at Calcutta

Calcutta Port is one of the four largest operational major ports in India. Its uniqueness arises from its being the only riverine major port in India, located 203 kms. upriver, necessitating a difficult journey past several bars and bends. The Port however commands a vast hinterland, serving Eastern India, as also neighbouring countries. The region is highly populated, is rich in resources, and is well served by communications.

Its beginnings as a port commence with Charnock's upriver voyage in 1690. The Calcutta Port Commissioners came into existence on 1870, and the CPT was constituted in 1975. CPT comprises the twin dock-systems of CDS and HDC. Under CDS, there are two docks (Kidderpore & NSD, of which NSD is larger) and an oil-jetty. The port also has extensive land estates. In Calcutta, the CPT is in fact the single largest landowner in the city. Thus rising net surpluses at CDS originate in port operations and estate rentals.

The port of Calcutta extends a comprehensive range of facilities including container-handling, mechanised dry, liquid and grain bulk-handling, and heavy-lift and break-bulk general cargo handling facilities with a large storage infrastructure. It also provides adequate dry-docking facilities for repairs of merchant vessels. Maintenance of the long navigational channel upriver is carried out by the Port's maintenance fleet of 72 vessels and river-craft. Terminal railway facilities are provided at both Calcutta and Haldia to cater to imports and exports,and the port-railway also provides links to industrial and commercial sidings including the Haldia oil refinery and fertiliser plant, the FCI godowns, and the SAIL stock-yards of the Steel Authority of India.

Calcutta Port is linked to its hinterland via the National Highway network. It is the largest terminal port in South Asia and is well-connected by railways, roads, waterways and airways. Major inland waterways also link the hinterland to the Port.

Because of navigational problems, the channel to the Port calls for constant dredging, and for constant surveys and charting of the river-course. Pilotage is necessary for ships journeying along the river. The Port possesses 3 suction dredgers, and one bucket dredger, and arranges emergency dredging through the DCI, at 90 percent subsidy to dredging costs. However, it is contended that the Union Government should bear the entire dredging cost as the waterway is used by others as well.

The Haldia Dock Complex, which occupies the right bank of the river Haldi, 104 km. downriver from Calcutta, can accept ships of larger size and deeper draft. HDC handles more of the traffic in coking coal. The HDC, too, is the single-largest landowning authority at Haldia, but its share in rental income is more modest, since lower lease-rentals are charged inorder to attract port-based users.

CHP is an import-based port. Following the development of the HDC, Calcutta Port has seen a doubling in traffic. Out of total cargo handled at CHP, the major share is from HDC. After the HDC's commissioning, traffic-volume at CDS has generally either declined, or stagnated.

Principal commodities passing through CHP are POL, coking coal, fertiliser, fertiliser raw materials, and foodgrains. At present, principal imports through CHP comprise POL, coking coal, fertiliser, fertiliser raw materials, etc., while principal exports are coking coal,

POL, gunnies and jute products, tea, iron & steel etc. The share of POL handling at Calcutta Port covers 49 percent of total traffic.

CHP displays mixed financial results, because of its huge establishment costs, large recurring expenditure on dredging and maintenance, and on the port-owned fleet of CPT vessels, costs of modernisation of facilities, and debt charges. To relieve this financial pressure, the Port has levied stiff tariffs for its services, and has thus traditionally been a high-cost port. The port experienced sharply increasing costs in the 60s and early 70s during which significant deficits emerged, to which the port management reacted by concentrating on revenue maximisation over the subsequent decades.

The share of HDC in total surplus of CPT has consistently been maximal, leading to a belief that Haldia will gradually supplant Calcutta as a port. The financial position of the CPT can be improved by increasing incomes from storage charges and estates, and by economy measures in establishment, reduction of the interest burden and better management of port railways.

While manpower at CDS has traditionally been high, the highly-mechanised HDC ensures that manpower needs are kept to the minimum. Total manpower has in fact declined over more recent years. However, manpower reductions have taken place in CDS only, while manpower has actually increased at HDC, because of expansion of the port.

In view of the importance that expansion in facilities and operations have to the health of a port, the next chapter will explore the growth of both CDS and HDC more rigorously, going into the acquisition and allocation of funds on capital assets, investments and capital-structure planning at CHP.

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CHAPTER - 4

ANALYSIS OF SOURCES & APPLICATIONS OF PORT FUNDS

4.1 The Meaning of 'Funds'

In analysing the sources and application of funds at Calcutta-Haldia Port, the first necessity would be to comprehend the technical nature of the word *funds*. Accountants have varied in their opinions with regard to the meaning, and various interpretations are given to the financial term . Thus, *funds* are, alternatively:

i) *literal cash*, including both undeposited cash and demand deposits in the banking system[1]
ii) *cash and marketable securities*[2]
iii) *working capital*, defined in turn as the excess of current assets over current liabilities[3]
iv) *net monetary assets*[4]
v) all *cumulated financial resources* arising from items of working capital, and also from financial and investment activities of an enterprise involving non-current items.

The foregoing establishes that the definition of funds most common is that of *working capital* or *net current assets*. In the words of Foulke[5], funds in this particular sense are what might be termed working-capital funds, as distinct from actual cash funds.

4.2 The Funds Flow Statement

Traditionally, the basic financial statements of business enterprise are the balance sheet and the income statement (or profit & loss account). While these furnish useful financial data regarding the operations of an enterprise, a serious limitation is that they do not provide information on changes in the enterprise's financial position over any particular duration of time. Thus their utility for analytical and planning purposes is limited, since, in the operational sense, they fail to answer important questions, e.g.

i) What are the factors responsible for differences in owner's equity, and in assets and liabilities of the enterprise between consecutive balance sheets?
ii) What are the premier financing and investment activities of the firm over the said period?
iii) Have long-term sources of investible funds proved adequate to finance purchase of fixed assets?
iv) Does the enterprise possess adequate working capital?
v) What funds have been generated from the enterprise's operations?
vi) Has the enterprise's liquidity position improved?

The funds flow statement overcomes these limitations of the basic balance sheet and income statement. The funds flow statement is a report on the financial operations of the enterprise. Although it cannot replace the profit & loss account, it provides an equally significant analysis of financial transactions.

A funds flow statement is also known variously as the *Funds Statement*, the *Where Got-Where Gone Statement*, or the *Statement of Sources & Applications of Funds*. The statement is not a supporting schedule for the conventional financial statements, although it is technically based upon the same accounting data. It is needs no reiteration that the statement is a technical device designed to highlight changes in financial conditions within an enterprise between two consecutive balance sheets. It thus acts as a complementary statement which presents information not easily obtainable, or not obtainable at all, from the other financial statements. It reveals changes that have taken place in asset, liability and shareholder equity levels over the period selected. These changes are of two types, namely in *sources of funds* and in *applications of funds*. Sources of funds are generally those that derive from sales of assets and are indicated by decreases in assets and increases in liabilities or shareholder equity. Applications or uses of funds are associated on the other hand with increases in assets and decreases in liabilities or in shareholder equity. In the specific context of ports, these definitions come to be somewhat qualified, as will be shown.

4.3 **The Funds Flow Statement for Calcutta Port**

The funds flow statement of Calcutta Port over the period 1981-82 to 1992-93 is presented in Table 4.1(A & B). It is apparent that in the case of the Port, and Indian ports in general, one of the most important fund-sources is port borrowings. These loans are of three types, i.e. loans from Government (both State and Union governments), intercorporate loans, and commercial borrowings. For Calcutta Port, intercorporate loans and commercial borrowings are found to have been present only in 1992-93, where they amount to Rs.5 crores and Rs.14.24 crores, respectively, and in 1990-91 when Rs.18.33 crores had been accepted as intercorporate loan.

Loans from Government were a major source share at the beginning of the study. In 1981-82, they were of the order of Rs.13.15 crores, registering as 22.38 percent of total fund-sources. In 1982-83, they constituted the maximum proportion of total sources at Rs.18.99 crores, or 32.45 percent. Thereafter, the loan amounts started to decline, and in the last year of study i.e. 1992-93, loans from Government had fallen to Rs.12.82 crores, registering as only 7.69 percent of total sources.

Government grants were made to port schemes such as comprehensive corrective works, bridge replacements, and the fish-harbour project. Of the above works or projects, the grant of Rs.0.10 crores from the Government of West Bengal towards replacement of a viaduct bridge was made only in 1992-93. Government contributions amounting to Rs.0.21 crores, Rs.0.40 crores and Rs.0.05 crores, towards the fishing harbour at Roychowk were made for three years between 1982-83 and 1987-88, respectively. The major grants sanctioned by Government were towards corrective works, and ranged from a minimum Rs.1.30 crores (1.33 percent) in 1986-87 to a maximum Rs.5.45 crores (3.04 percent) in 1990-91.

Other capital receipts show a mixed picture over the period of study, with sometimes increasing and sometimes decreasing trends. Commencing at Rs.7.06 crores in 1981-82, these reached a maximum of Rs.52.94 crores in 1989-90. However, the maximum proportion of total sources recorded by these receipts was in 1988-89, when they contributed 42.10 percent. Thereafter these receipts have been falling and were only of the order of Rs.32.99 crores (19.79%) in 1992-93.

A surplus position in net revenues has been shown in all years except 1983-84, 1985-86 and 1987-88. The maximum and minimum net balances have been in 1986-87, at Rs.12.01 crores

Table - 4.1(a)

Funds Flow Statement of Calcutta -Haldia Port during 1981-82 to 1992-93.

(*Rs. Crores*)

A. Source.	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
1. (a) Loan from Government	13.15	18.99	19.80	23.02	17.94	21.44	13.78	15.45	28.78	23.77	26.68	12.82
	22.38	*32.26*	*30.45*	*27.34*	*17.44*	*21.86*	*14.61*	*14.44*	*17.56*	*13.24*	*15.31*	*7.69*
(b) Inter Corporate Loan										18.33		5.00
										10.21		*3.00*
(c) Commercial Borrowings(NIB)											14.24	
											8.55	
2. Contribution from Govt.	3.04	2.11	3.25	3.63	2.00	1.30	3.05	00.00	5.20	5.45	5.00	4.19
	5.17	*3.58*	*5.00*	*4.31*	*1.94*	*1.33*	*3.23*		*3.17*	*3.04*	*2.87*	*2.51*
3. Other Capital Receipts	7.06	10.85	8.91	22.55	23.91	11.96	19.64	45.05	52.94	49.60	49.31	32.99
	12.01	18.43	13.70	26.78	23.25	12.20	20.81	42.10	32.30	27.62	28.29	19.79
4. Net Revenue Position	5.42	4.17	00.00	3.45	00.00	12.01	00.00	1.01	2.29	1.22	1.62	5.31
(Surplus)	*9.22*	*7.09*		*4.10*		*12.25*		*0.94*	*1.40*	*0.68*	*0.93*	*3.19*
5. Sinking Fund	1.14	0.81	0.71	1.48	0.89	0.82	0.70	0.79	0.72	0.99	0.97	0.78
	1.94	*1.38*	*1.09*	*1.76*	*0.87*	*0.84*	*0.74*	*0.74*	*0.44*	*0.55*	*0.56*	*0.47*
6. Net Earnings of Reserve Fund	0.13	0.73	1.98	0.18	0.94	1.72	2.71	0.01	3.24	2.88	2.54	4.52
	0.22	*1.24*	*3.05*	*0.21*	*0.91*	*1.75*	*2.87*	*0.01*	*1.98*	*1.60*	*1.46*	*2.71*
7. Repayment, Replacement &	3.80	3.88	4.06	4.19	4.26	4.52	4.21	4.28	4.37	4.55	5.32	5.65
Maintenance Fund	*6.47*	*6.59*	*6.24*	*4.98*	*4.14*	*4.61*	*4.46*	*4.00*	*2.66*	*2.53*	*3.05*	*3.39*
8. Withdrawals from Reserves	0.49	00.00	0.73	00.00	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.83		*1.12*		*2.95*							
9. Opening Balance of Cash & Funds	24.53	17.32	21.84	25.70	49.88	44.29	50.27	40.41	66.38	72.79	82.84	81.17
(Cash+Investment)	*41.76*	*29.43*	*33.58*	*30.52*	*48.50*	*45.16*	*53.28*	*37.77*	*40.49*	*40.53*	*47.53*	*48.70*
10. Change in Working Capital	00.00	00.00	3.75	00.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00	00.00
			5.77									
Total	**58.76**	**58.86**	**65.03**	**84.20**	**102.85**	**98.06**	**94.36**	**107.00**	**163.92**	**179.58**	**174.28**	**166.67**
	100.00	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***

Note : *Italic figures indicate percentages.*

Source : *Compiled and calculated from the Administration Reports and Annual Accounts of Calcutta Port for the above years.*

Funds Flow Statement of Cal. Port Table -4.1(b)

(Rs. Crores)

B. Application	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
1. Net Revenue Position (deficit)			5.55		13.06		22.56					
			8.54		*12.70*		*23.91*					
2. Repayment of Loans	6.48	2.04	5.84	3.31	9.51	5.78	4.60	5.66	7.11	7.42	5.70	7.82
	11.03	*3.47*	*8.98*	*3.93*	*9.25*	*5.89*	*4.88*	*5.29*	*4.34*	*4.13*	*3.27*	*4.69*
3. Capital Investments	19.41	25.67	27.23	28.02	24.33	29.31	24.46	24.98	60.58	55.77	82.14	68.54
	33.03	*43.61*	*41.87*	*33.28*	*23.66*	*29.89*	*25.92*	*23.35*	*36.96*	*31.06*	*47.13*	*41.12*
4. Sinking Fund (Invested & not Invested)	1.14	0.81	0.71	1.48	0.89	0.82	0.70	0.79	0.72	0.99	0.97	0.78
	1.94	*1.38*	*1.09*	*1.76*	*0.86*	*0.84*	*0.74*	*0.74*	*0.45*	*0.55*	*0.56*	*0.47*
5. Changes in Working Capital	14.41	8.50	0.00	1.51	10.76	11.88	1.63	9.18	22.72	32.56	4.30	10.22
	24.52	*14.44*		*1.79*	*10.46*	*12.12*	*1.73*	*8.58*	*13.85*	*18.13*	*2.47*	*6.13*
6. Closing Balance of Cash and Funds (Cash & Invest.)	17.32	21.84	25.70	49.88	44.30	50.27	40.41	66.39	72.79	82.84	81.17	79.31
	29.48	*37.10*	*39.52*	*59.24*	*43.07*	*51.26*	*42.82*	*62.04*	*44.40*	*46.13*	*46.57*	*47.59*
Total	**58.76**	**58.86**	**65.03**	**84.20**	**102.85**	**98.06**	**94.36**	**107.00**	**163.92**	**179.58**	**174.28**	**166.67**
	100.00	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***	***100.00***

Note : *Italic figures indicate percentages.*

Source : *Compiled and calculated from Administration Reports and Annual Accounts of Calcutta Port for the above Years.*

(12.25 percent), and 1988-89, at Rs.1.01 crores (0.94 percent), respectively. Insignificant shares in total fund-sources were however exhibited by sinking funds, net earnings of the reserve fund; repayment, replacement & maintenance funds, and withdrawals from reserves, the latter being seen only in the years 1981-82, 1983-84 and 1985-86.

It is of interest also to note the changes in working capital. Working capital has been defined as the difference between current assets and current liabilities, and in this sense, an increase in working capital is taken as an application and a decrease as a source of funds. The table shows that changes in working capital had appeared as a source of funds only in 1983-84, amounting to Rs.3.75 crores or 5.77 percent of total sources for that year. In every other year, current assets exceed current liabilities, representing an application rather than a fund-source, as seen in Table 4.1(B).

In Table 4.1(A) concerning sources, it is consistently seen that the major source of funds were opening balances of cash and investment. The contribution of these was more than 40 percent in peak years. Their maximum proportion in relation to total sources was 53.28 percent (Rs.50.27 crores) in 1987-88; the trend in percentages is, however, mixed. Starting at the level of Rs.24.53 crores at the commencement of the study, opening balances fluctuate as they eventually reach Rs.81.17 crores in 1992-93. However, out of the cash and investment that constitute opening balances, the contribution from the latter was very insignificant. For example, in 1992-93, out of an opening balance of Rs.81.17 crores, the share of investment was only Rs.0.52 crores. It may thus be remarked that opening balances for the port, although large, are not of the nature of a surplus that may be directed towards investment, but are used up as normal working capital.

Most of the funds otherwise obtained were used primarily to finance capital investment, since, apart from closing balances of cash and funds, the maximum share went to capital investments which in this case referred to Plan investment for Calcutta and Haldia, debt charges incurred on the Haldia dock project, debt charges on channel dredging, corrective works, recessional dredging, and investment on other non-plan works for Calcutta and Haldia, and on the fishing harbour. Capital investment in 1981-82 was Rs.19.41 crores, (33.02 percent) which rose to Rs.68.54 crores (41.13 percent) in 1992-93. The maximum level of capital investment of Rs.82.14 crores in 1991-92 registered as 47.13 percent of the total application of funds, and the general trend is for capital investments to rise in absolute terms, particularly since 1989-90.

Significant funds were generally committed to changes in working capital, indicating increase in current assets. Shares of these were high at the commencement of the study-period, e.g. in 1981-82 and 1982-83, when they were of the order of Rs.14.41 crores (24.52 percent) and Rs.8.50 crores (14.44 percent), respectively. The proportion committed each year is however seen to be unstable, and the commitment in 1992-93 the becomes Rs.10.22 crores (6.13 percent).

Fund deficits in the years 1983-84, 1985-86 and 1987-88 swallowed a portion of available funds. In 1987-88, the deficit was Rs.22.56 crores, or about 24 percent of total sources. Funds are also committed for repayment of loans and to invested and non-invested sinking funds. Though the shares of the latter were insignificant over all years, the repayment of loans varied between a minimum of Rs.2.04 crores (3.47 percent) in 1982-83, and Rs.9.51 crores (9.25 percent) in 1985-86. Closing balances of cash and funds have generally accounted for nearly half of the total fund applications, except in the initial period of study.

The most important trends to be noted in the table are those of capital investments and of closing balances. The two have risen considerably over time in both absolute and percentage terms, and marked acceleration is noted towards the end of the study period. Since Government loans had tapered down by the time, much of the capital invested has been raised from other sources, particularly the Port's internal sources, as will be shown later.

Although the foregoing discussion reveals changes in the sources and applications of funds at Calcutta Port over the years, a broader picture can be obtained by considering movements in the flow of funds consolidated over the entire period of study, as shown in Table 4.2.

It is clear that out of total loans of Rs.273.19 crores including loans from Government, intercorporate loans and commercial borrowings, repayments of Rs. 71.27 crores only have been made. Funds sourced from Government grants and other capital receipts were Rs.372.99 crores, but capital investment to the tune of Rs.470.44 crores has been made. The difference on this account of Rs.97.45 crores, or around 20 percent of total capital investment has been met largely from loan sources. A cumulated net deficit remains unresolved after taking surpluses into account, and is of the order of Rs.4.67 crores.

Current liabilities have generally been much higher than current assets created. Assets, which exceeded liabilities only in 1983-84, implied a total fund source on this account of Rs 3.75 crores, while cumulated applications against this item were Rs.127.67 crores over the twelve-year study period. Again, considering consolidated balances of cash and funds, closing balances were generally higher than opening balances. Cumulated closing balances amounted to Rs.632.22 crores over the study period, against the cumulated opening balances of Rs.577.42 crores. Balances in hand have thus tended to increase from year to year.

Briefly considering the percentage distribution in the table, it is interesting to note that the major share, excluding opening and closing balances, goes to other capital receipts and loans on the sources side, and capital investments on the applications side. Percentage shares of cumulated capital receipts and loans were about 25 percent and 20 percent, respectively, while cumulated applications to capital investment were 34.75 percent.

4.4 Port Capital at Calcutta Port

The financial future of a company or enterprise may be predicted by examining its funds flow statements over the years, since "few things determine the future of the company as directly as the way it spends its money.[9] Separate study is therefore necessary of the items on which Calcutta Port spends most of its i.e. capital investments, denoting capital assets and other investments.

4.4.1 Capital Assets

The nature of assets owned by Calcutta Port includes landed properties; docks, quays, jetties, landing stages, etc.; buildings, sheds and other structures; bridges, roads, sewers and water supply; railways and rolling stock; cranes; heavy and light plant and machinery; heavy and light floating craft; buoys and other marine equipment; and dredging capital including river-training works.

Of the above, capital investments made in order of importance in 1990-91 were nearly 26 percent on capital dredging including river-training works; nearly 17 percent on docks, quays, etc.; and

Table - 4.2

Sources and Application of Funds in Calcutta-Haldia Port during 1981-82 to 1992-93.

(Rs. in crore)

Sl. No.	*Sources*	*Amount.(Rs.)*	*Sl.No.*	*Applications*	*Amount. (Rs.)*
1. a)	Loan from Government	235.62 *17.41*	1.	Repayment of Loans	71.27 *5.27*
b)	Inter Corporate Loan	23.33 *1.72*	2.	Capital Investments	470.44 *34.75*
c)	Commercial Borrowings	14.24 *1.05*	3.	Net Revenue Position (Deficit)	41.17 *3.04*
2.	Contribution from Government	38.22 *2.82*	4.	Sinking Fund (Invested and not invested)	10.80 *0.80*
3.	Other Capital Receipts	334.77 *24.73*	5.	Change in Working Capital	127.67 *9.43*
4.	Net Revenue Position (Surplus)	36.50 *2.70*	6.	Closing Balance of Cash & Funds (Cash + Investment)	632.22 *46.71*
5.	Sinking Fund	10.80 *0.80*			
6.	Net Earnings of Reserve Fund	21.58 *1.59*			
7.	Repayment, replacement & Maintenance Fund	53.09 *3.92*			
8.	Withdrawals from Reserves	4.25 *0.32*			
9.	Change in Working Capital	3.75 *0.28*			
10.	Opening Balance of Cash & Funds (Cash + Investment)	577.42 *42.66*			
		1353.57 ***100.00***			**1353.57** ***100.00***

Note : *Italic figures indicate percentages.*

Source : *Compiled and calculated from Administration Reports and Annual Accounts of Calcutta Port for the above Years.*

nearly 13 percent on heavy floating craft. There were, moreover, some capital works not yet complete but in progress - termed capital works-in-progress - which also comprised a large part of capital investment.

One another point may be noted here. The actual time taken for completion of projects is usually longer than planned. As a result, actual expenditure on projects is far in excess of original estimates, because of cost overruns. Time-budgeting is very important within capital budgeting for the development of an enterprise, but it is generally noted that there is lack of care and attention in this respect in PSUs, and especially in Indian Major Ports. The Draft Fifth Five-Year Plan' s comment indicates Government's awareness that "many of the important port programmes were not worked out in sufficient detail and a large number of projects were consequently dragged for beyond their scheduled dates of completion, resulting not only in cost escalation but also in some bottlenecks regarding smooth operation in country's overseas trade".

4.4.2 **Capital Investments**

Another reason for large magnitudes in capital investment is because port operations today are far more capital-intensive than previously. Going through records of fund applications at Calcutta and Haldia Port over the period from 1981-82 to 1992-93, it can be seen that the maximal share in these comprises capital investments made against port development projects. Occasional investments were however sometimes made in non-port operations. Although surpluses achieved by major ports are often invested outside the port for generation of income, it must be kept in mind that the ports are sustained through huge Government loans which might otherwise have served the development of other backward economic sectors. Instead of outside investments by each port, it would therefore be wiser if a common port development fund were constituted from excess funds and surpluses generated at major ports, which could then be committed to development of such major ports as require these. Investing ports would earn minimum returns expectable from outside investments, which would derive from interest charges paid by borrowing ports.

4.5 **Capital Structure**

While examining the capital structure of a major port such as Calcutta, it is important contextually to know the sources of finance to a PSU. The largest component of corporate capital derives from the issue of equity shares in the open market. But since major ports constitute a kind of PSU, such issue of equity is not possible. The bulk of capital at a major port has traditionally derived from loans from Government, although the proportionate share of these has decreased in recent years. Though the grants that Government also provides to major ports against specific projects are not repayable, all loans are to be repaid, along with interest realisable.

Another portion of port capital that has become increasingly important is covered by internal sources for each major port. Subject to the prior approval of the Union Government, the port can also issue debentures in the open market to raise debenture loans. A portion of capital at a major port is also made up of loans from the International Bank for Reconstruction and Development (IBRD, or World Bank), or from other international financial institutions; such sources are termed as external loans *vide* section 86 of the Major Port Trust Act, 1963. Section 29(i)(c) of the Act also provides that expenditure incurred by Government before formation of the Port Trust is to be treated as capital expenditure and is to be repaid along with interest to Government, after a specified period. Thus the capital structure of major ports in India

Table - 4.3.

Capital Structure of Calcutta-Haldia Port during 1980-81 to 1990-91

(*Rs. Crores*)

Year.	*Internal source*			*Loans from Government*			*Debt servicing*			*External Loans.*			*Debenture Loans*			*Inter Corporate Loans*			*Total*			
	Rs.	*%*	*Index.*	*Rs.*	*%*	*Index*	*Rs.*	*%*	*Index*	*Rs.*	*%*	*Index.*	*Rs.*	*%*	*Index.*	*Rs.*	*%*	*Index.*	*Rs.*	*%*	*Index.*	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	
1980-81	121.3	26.38	100	225.53	49.02	100	77.91	16.93	100	6.75	1.47	100	28.55	6.20	100	0.00	0.00	0.00	460.12	100	100	
1981-82	131.59	27.59	108	225.83	47.34	100	89.86	18.84	115	5.35	1.12	79	24.37	5.11	85	0.00	0.00	0.00	477.00	100	104	
1982-83	149.12	29.16	123	231.82	45.33	103	101.81	19.91	131	4.27	0.83	63	24.37	4.77	85	0.00	0.00	0.00	511.39	100	111	
1983-84	165.49	30.55	136	237.52	43.85	105	113.75	21.00	146	3.18	0.59	47	21.76	4.01	76	0.00	0.00	0.00	541.70	100	118	
1984-85	197.13	33.22	162	248.13	41.81	110	125.69	21.18	161	2.36	0.40	35	20.14	3.39	71	0.00	0.00	0.00	593.45	100	129	
1985-86	226.67	35.87	187	247.81	39.21	110	137.64	21.78	177	0.57	0.09	08	19.24	3.05	67	0.00	0.00	0.00	631.93	100	137	
1986-87	259.18	38.05	214	254.65	37.39	113	149.58	21.96	192	0.00	0.00	0.00	17.69	2.60	62	0.00	0.00	0.00	681.10	100	148	
1987-88	284.78	39.78	235	253.12	35.36	112	161.53	22.56	207	0.00	0.00	0.00	16.45	2.30	58	0.00	0.00	0.00	715.88	100	156	
1988-89	332.00	42.90	274	253.26	32.73	112	173.47	22.42	223	0.00	0.00	0.00	15.15	1.95	53	0.00	0.00	0.00	773.88	100	168	
1989-90	390.82	45.56	322	266.47	31.06	118	185.42	21.61	238	0.00	0.00	0.00	15.15	1.77	53	0.00	0.00	0.00	857.86	100	186	
1990-91	454.35	47.51	374	271.73	28.41	120	197.36	20.64	253	0.00	0.00	0.00	14.55	1.52	51	18.33	1.92	100	956.23	100	208	

* Charges on Govt. Loans + Capitalised Int.

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

comprises (a) internal sources; (b) Government loans; (c) external loans; (d) debenture loans; (e) intercorporate loans; and (f) Government grants.

The aggregate capital position of Calcutta Port over the period from 1980-81 to 1990-91 is examined in Table 4.3. The table shows that total capitalisation of Calcutta Port had increased from a level of Rs.460.12 crores in 1980-81, to Rs.956.32 crores in 1990-91, the index of increase being 108 points over eleven years. The maximal increase took place between 1989-90 and 1990-91, amounting to nearly Rs.100 crores or 22 index points. The overall capital structure of Calcutta Port also presented in the table reveals the sources of port capital, their percentages to total capitalisation, and indices compared to the base year 1980-81 as calculated and shown.

In 1980-81, loans from Government amounted to 49.02 percent of the total capital base, followed in importance by internal sources at 26.38 percent. Accrued debt charges liable to be repaid against previous loans constituted 16.93 percent, and debenture loans and external loans were minimally present at 6.20 percent and 1.47 percent, respectively. At the end of the period of study, percentages of internal sources and debt-servicing charges had risen, while those of loans from Government and debenture loans had declined. Although loans through public debentures had been secured by Calcutta Port throughout the period of study, their relative share gradually decreased from the maximal 6.20 percent to 1.52 percent. This would indicate partial repayment of debenture loans through every year, with the exception of 1982-83 and 1989-90 when no decrease in percentage took place. External loans had vanished, to be replaced in the last year i.e. 1990-91 by a small quantum of intercorporate loans at 1.92 percent. Intercorporate loans taken from other major ports had been a recommendation to reduce the heavy burden of Government loans. After 1985-86 till the last year of study there were no drawals of external capital or loans from foreign sources for Calcutta Port. The position indicated is that the IBRD loans were repaid and that no fresh loans had been taken, except for the small quantum of Rs.18.33 crores from intercorporate sources.

Though loans from Government were the dominant capital source in the first half of the study-period, their relative share gradually declined and from 1986-87 they fell to second position after internal sources. At the end of the study period, in 1990-91, their share was 28.41 percent only. Internal sources, on the other hand, became the dominant source from 1986-87 onwards, their contribution to the total capital base rising from Rs.121.38 crores (26.38 percent) in 1980-81 to Rs.454.35 crores (47.51 percent) in 1990-91.

Accumulated debt-servicing charges on Government loans capitalised but not repaid, which were utilised on Haldia Dock and on channel dredging, have been shown as a source of capital finance. The share of these to total capital base had gradually increased till 1987-88 and then started to decrease. The percentage shares of such charges in 1980-81, 1987-88 and 1990-91 were 16.93 percent, 22.56 percent and 20.64 percent, respectively, over the period.

Surveying the time-trends in capital finance, it may be remarked that the overall evolution of capital structure reflects the declining reliance placed on external borrowings and greater reliance on self-generated funding. This is borne out by comparing indices. Internal sources over the eleven years have risen by 274 index points, against the overall index increase of 108 points, indicating rapid acceleration in the above process. Government loan funding has, in comparison, increased at a trickle by only 20 points, while the quantum of debenture loans has been halved. Another manifestation of the financial crisis imposed by the inability of Calcutta Port to meet debt-servicing obligations is shown by the trend in accumulated debt charges; because of the large amount of previous borrowings, these have increased by 153 index points over eleven years. The increasing pressure on the Port to meet capital requirements from its own sources is therefore understandable.

4.6 Sources of Port Capital

4.6.1 Internal Sources

Earlier studies have indicated many sources for PSU capital. However, the accepted financial principle is that capital funds should mainly be internally sourced for any enterprise, whether it is private or public in organisation. The reason that underlies this principle is that capital funds secured through borrowings have to be repaid , while those deriving from internal sources impose no such obligation. Internal sources are created by ploughing back the profits or surpluses of the enterprise. Ports are not an exception to this principle, and it has been indicated above, from the example of Calcutta Port, that internal funds now occupy a major share in the total capital structure.

The composition of these internal sources for Calcutta Port is shown in Table 4.4 which also provides the relative allocational breakup of these funds between the Calcutta Dock System (CDS) and the Haldia Dock Complex (HDC). The table thus reveals the relative position of internal sources for both port-complexes.

From the table with reference to Calcutta Port it is clear that internal sources comprise reserve & surplus, on one hand, and depreciation on the other. Internal sources composed of reserves & surpluses have shown an increasing trend in both absolute and proportionate terms over the years, corresponding to the slow absolute rise and decreasing trend in the depreciation provision. Between 1980-81 and 1990-91, reserves & surpluses grew nearly six-fold by Rs.309.5 crores, rising from 51.09 percent in the base-year to 81.77 percent in the final year. The provision for depreciation increased by Rs.23.47 crores between the same years, while its share in total internal sources gradually declined from 48.91 percent to 18.23 percent.

The patterns observed would indicate that asset-utilisation has been better in the later years of the study, especially after the Port came under pressure to finance capital investments from internally-generated resources, although the rate of asset-acquisition and replacement is likely to have slowed down, accounting for the slow increase in the depreciation component. Although the buoyant position in reserves and surpluses is partly the result of vastly improved cargo handling at the Port, particularly at HDC, a larger part is contributed by non-operational activities, as shown later below.

Dividing the total internal sources of Calcutta Port between the CDS and HDC, it can be observed that the sharp increase in internal sources has primarily been from increased handling operations at the HDC, particularly after 1987-88. Between 1981-82 and 1990-91, internal sources from HDC rose by Rs.240.22 crores compared to Rs.82.54 crores for CDS. This follows the completion of Plan projects at Haldia, and thus a gradual shift in operations to it, which would account for the declining trend of total internal sources generated from CDS, from 82.33 percent in 1981-82 to 42.01 percent in 1990-91. The HDC share rose from only 17.67 percent to 57.99 percent over the identical period.

It may be said in conclusion that self-reliance at a major port e.g. Calcutta, would mean that capital structure at the port should reveal an increasing component of internal sources. Ports in India should in any case assume more responsibility in maintaining their viability and profitability by reinvesting a part of their earnings in port development. This would free Government resources, which could then finance other aspects of national development.

It would be pertinent at this stage to study the composition of port reserves and surpluses. The reserve & surplus component of internal sources may be classified into capital revenue, revenue reserve, reserve provision for liabilities, and the residual, i.e. surplus. Capital reserves are created from

Table - 4.4.

Internal sources of Calcutta-Haldia Port during 1980-81 to 1990-91 and the share of CDS & HDC.

(Rs. crores)

Year.	*Calcutta-Haldia Port.*			*Share of CDS*		*Share of HDC*	
	Reserve & surplus.	*Depreciation*	*Total*	*Internal Source*	*%*	*Internal Source*	*%*
1980-81	62.01	59.37	121.38	NA		NA	
	51.09	*48.91*	*100*				
1981-82	69.83	61.76	131.59	108.34	82.33	23.25	17.67
	53.07	*46.93*	*100*				
1982-83	86.00	63.12	149.12	118.63	79.55	30.49	20.45
	57.67	*42.33*	*100*				
1983-84	99.26	66.23	165.49	127.75	77.19	37.74	22.81
	59.98	*40.02*	*100*				
1984-85	127.51	69.62	197.13	145.09	73.60	52.04	26.40
	64.68	*35.32*	*100*				
1985-86	153.34	73.33	226.67	152.34	67.21	74.33	32.79
	67.65	*32.35*	*100*				
1986-87	182.26	76.92	259.18	159.97	61.72	99.21	38.28
	70.32	*29.68*	*100*				
1987-88	207.51	77.27	284.78	166.07	58.32	118.71	41.68
	72.87	*27.13*	*100*				
1988-89	251.73	80.27	332.00	170.62	51.39	161.38	48.61
	75.82	*24.18*	*100*				
1989-90	311.18	79.64	390.82	179.35	45.89	211.47	54.11
	79.62	*20.38*	*100*				
1990-91	371.51	82.84	454.35	190.88	42.01	263.47	57.99
	81.77	*18.23*	*100*				

Note : *NA denotes not available*
Itelic figures indicate percentages

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

Table - 4.5

Reserves in Calcutta-Haldia Port during 1980-81 to 1990-91.

(Rs. Crores)

Year.	Capital Reserve.			Revenue Reserve.			Capital + Rev. Reserve		
	Rs.	%	Index.	Rs.	%	Index	Rs.	%	Index
1.	2	3	4	5	6	7	8	9	10
1980-81	NA			NA			-		
1981-82	NA			NA			-		
1982-83	52.10	63.41	100	30.07	36.59	100	82.17	100	100
1983-84	58.45	61.82	112	36.10	38.18	120	94.55	100	115
1984-85	78.17	65.89	150	40.47	34.11	135	118.64	100	144
1985-86	98.24	68.26	189	45.67	31.74	152	143.91	100	175
1986-87	119.92	69.80	230	51.88	30.20	173	171.80	100	209
1987-88	138.25	70.16	265	58.80	29.84	196	197.05	100	240
1988-89	178.19	73.85	342	63.09	26.15	210	241.28	100	294
1989-90	229.10	76.44	440	70.62	23.56	235	299.72	100	365
1990-91	281.99	78.32	541	78.05	21.68	260	360.04	100	438

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

the non-operational activities of an enterprise and are therefore an unexpected reserve, while revenue reserves are created from the operational-surplus balances and are therefore an anticipated reserve. Since the major part of the reserve & surplus of an enterprise is constituted by capital and revenue reserves, a comparative study between the two is made for Calcutta Port in Table 4.5.

The table points to the slowly increasing share and the sharply accelerating magnitude of the capital reserve component in revenues and surpluses of the Port. While the share of this rose from 63.41 percent in 1982-83 to 78.32 percent in 1990-91, the absolute increase was by Rs.229.89 crores. On the other hand, the share of revenue reserve had increased from 36.59 percent to 21.68 percent during the same period, with a smaller absolute increase of Rs.47.98 crores. It would therefore appear that the escalation in reserves & surpluses at Calcutta Port was sourced primarily from non-operational activities, since the growth in revenue reserves was more moderate and showed up a decline in relative terms. This decline in proportion of revenue reserves would imply that capital finances at the Port are becoming increasingly dependent on non-operational activities, rather than on port activities, and/or that the Port is otherwise unable to plough back a part of its surplus balances into future port development.

4.6.2 **Loans from Government**

Loans from Government have traditionally been the major source of capital finance in the Indian major ports due to lack in their own resources. The terms of such loans involve repayment of the principal along with interest charges over the long run. Table 4.6 below shows the amount of loans received by Calcutta Port from Government for development of the CDS and HDC.

Table - 4.6
Governmental Loans to Calcutta-Haldia Port & CDS & HDC Share, 1980-81 to 1990-91

(Rs. crores)

Year.	*Loans from Government.*		
	for CDS	*for HDC*	*Total*
1980-81	NA	NA	
1981-82	NA	NA	
1982-83	74.55	157.27	231.82
	32.16	*67.84*	*100*
1983-84	76.50	161.02	237.52
	32.21	*67.79*	*100*
1984-85	84.29	163.84	248.13
	33.97	*66.03*	*100*
1985-86	85.68	162.13	247.81
	34.57	*65.43*	*100*
1986-87	93.42	161.23	254.65
	36.69	*63.31*	*100*
1987-88	92.89	160.23	253.12
	36.70	*63.30*	*100*
1988-89	94.09	159.17	253.26
	37.15	62.85	100
1989-90	94.08	172.39	266.47
	35.31	*64.69*	*100*
1990-91	96.29	175.44	271.73
	35.44	64.56	100

Note : *Italics indicate percentages*

Source : *Compiled & calculated from Administration Reports &Annual Accounts of Calcutta-Haldia Port for the above years*

A major part of Government loans availed over the study-period by Calcutta Port were for the development of the Haldia Port Complex, throughout the period of study. Percentage allocations to HDC ranged between 67.84 percent to 62.85 percent, although there was a very small increase in percentage allocation for CDS over the period. In absolute terms however, the Government loan component at CDS has grown by Rs.21.74 crores, compared to Rs.18.17 crores for HDC, Haldia having a better operational performance and therefore greater generation of internal funds. The share of CDS has varied between 32.16 percent and 37.15 percent over the period. Ongoing constructions at the HDC during the early 1980s for which sufficient internal sources are not available have led to the higher requirement of Government loans.

4.7 **The Ownership of Port Capital**

The foregoing analysis has investigated the capital structure of Calcutta Port and its components. The study now goes on to categorise capital from another standpoint, i.e. the ownership of capital. By standard financial classifications, *owners' capital* or *owned capital* includes internally-sourced reserves, surplus and depreciation. *Outsiders' capital* or *loaned capital* includes externally-sourced finances. In the case of Calcutta Port, the first category covers the Port's internal sources, while loans from Government, from other external institutions and against debentures comprise the second, which also includes accumulated capitalised but unpaid debt-servicing charges on Government loans utilized for the HDC and on channel dredging. The ratio between the two capital sources is traditionally called the *debt-equity ratio* and measures the relation between debt and equity in the capital structure of an enterprise. However, since major ports cannot issue equity on the open market, the ratio is renamed here as the ratio of loaned capital to owned capital. The ratio in any case indicates the proportion between external and internal drawings of capital.

At the Indian major ports, under favourable conditions when traffic volumes are increasing, a high ratio may be adopted to take advantage of cheaper debt capital. On the other hand, in situations where traffic volumes and revenues are decreasing, a lower ratio is more desirable. Financial institutions like the Industrial Development Bank of India (IDBI) and Industrial Finance Corporation of India (IFCI) prescribe the norm of 2:1 as the appropriate ratio for the private sector, while PSUs are expected to maintain a desirable ratio of 1:1.[10]

Table 4.7 shows the composition of capital by ownership, and the ratio of loaned capital to owned capital for Calcutta Port over the period from 1980-81 to 1990-91. The dominance of loaned capital over owned capital is brought out, although the magnitude of this dominance has decreased over the study-period. Total capital at the Port has grown enormously by Rs.496.20 crores over the eleven years, but the greater part of this increase i.e. Rs.332.97 crores or 67.1 percent, has been raised by the Port from internal sources. The remainder, i.e. Rs.163.23 crores, has been externally-sourced. This serves to highlight the effort made by the Port authority to raise internal finances, particularly over the later period, after the offtake from Government loans slowed down. Percentage composition of of loaned capital declined from 73.62 to 52.49 percent over the period, at the end of which owned capital covered nearly half the total capital sources at the Port.

A study of the ratio of loaned capital to owned capital indicates its sharp decline from 2.8 in 1980-81 to the level of 1.1 by 1990-91, which has brought it very close to the prescribed IDBI and IFCI norm for PSUs, and is therefore an indicator of good performance on this count at Calcutta Port. The quantum of owned capital in the capital structure of the Port has mainly increased through increased non-

operational fund generation and the ploughing back of operational surpluses, particularly over the last years of the study when pressure developed on the Port to raise its own capital resources.

Table - 4.7
Ratio of Loaned Capital to Owned Capital at Calcutta-Haldia Port, 1980-81 to 1990-91

(Rs. crores)

Year	Loaned Capital	Owned Capital	Total Capital	Ratio
1980-81	338.74	121.38	460.12	2.8:1
	73.62	*26.38*	*100*	
1981-82	345.41	131.59	477.00	2.6:1
	72.41	*27.59*	*100*	
1982-83	362.25	149.14	511.39	2.4:1
	70.84	*29.16*	*100*	
1983-84	376.22	165.48	541.70	2.3:1
	69.45	*30.55*	*100*	
1984-85	396.33	197.12	593.45	2:1
	66.78	33.22	100	
1985-86	405.26	226.67	631.93	1.8:1
	64.13	*35.87*	*100*	
1986-87	421.92	259.18	681.10	1.6:1
	61.95	*38.05*	*100*	
1987-88	431.09	284.79	715.88	1.5:1
	60.22	*39.78*	*100*	
1988-89	441.88	332.00	773.88	1.3:1
	57.10	42.90	100	
1989-90	467.04	390.82	857.86	1.2:1
	54.44	*45.56*	*100*	
1990-91	501.97	454.35	956.32	1.1:1
	52.49	*47.51*	*100*	

Note : *Italics indicate percentages*

Source : *Compiled & calculated from Administration Reports & Annual Accounts of Calcutta-Haldia Port for the above years*

Comparison between ratios of loaned capital to owned capital at CDS and HDC, reveals which port complex has a stronger capital structure. The breakup of capital into the two ownership-categories and resulting ratios are shown in Table 4.8. It is clear from the table that the ratio of loaned capital to owned capital at CDS was 1.1 or below, over the entire period of study, i.e. even lower than prescribed IDBI/IFCI norms. The slack on this account was made up at HDC, where loaned capital considerably exceeded owned capital over the identical period. At the commencement, in 1980-81, loaned capital was nearly ten times more than owned capital at Haldia. However, the ratio at HDC had been falling rapidly and was nearly in line with the norm by the end of the period under examination.

Considering absolute trends, the growth in owned capital at CDS over the eleven years has been by Rs.82.54 crores, against Rs.51.77 crores of loaned capital. At HDC, the corresponding growth figures are Rs.240.22 crores of owned capital, against Rs.104.79 crores from loaned capital. This would

be explained by a number of factors. The early development of Haldia Dock Complex (HDC) was fully dependent on external sources of capital. CDS was not dependent on external sources to the same extent as HDC which was a developing port, and which moreover with time took over a number of categories of port operations from CDS. The net result has been that improved operational performance and surpluses at HDC rapidly increased owned capital and permitted the complex to considerably lower its degree of dependence on external funds. In the case of CDS, it would appear that port development financed by external means was relatively stagnant, and also that the scope for the complex to increase owned capital was somewhat circumscribed by the development of the HDC, which diverted a large part of development capital away from CDS.

Table - 4.8
Ratio of Loaned Capital to Owned Capital
of CDS & HDC , 1980-81 to 1990-91

(Rs. Crores)

Year	Calcutta Dock System(CDS)			Haldia Dock Complex (HDC)		
	Loaned Capital	Owned Capital	Ratio	Loaned Capital	Owned Capital	Ratio
1	2	3	4	5	6	7
1980-81	NA	NA		NA	NA	
1981-82	114.01	108.34	1.1:1	231.40	23.25	9.9:1
1982-83	120.37	118.63	1:1	241.88	30.49	7.9:1
1983-84	121.06	127.75	0.9:1	255.16	37.74	6.8:1
1984-85	128.83	145.09	0.9:1	267.50	52.04	5.1:1
1985-86	129.96	152.34	0.8:1	275.30	74.33	3.7:1
1986-87	138.00	159.97	0.9:1	283.92	99.21	2.9:1
1987-88	138.67	166.07	0.8:1	292.42	118.71	2.5:1
1988-89	140.99	170.62	0.8:1	300.89	161.38	1.9:1
1989-90	143.42	179.35	0.8:1	323.62	211.47	1.5:1
1990-91	165.78	190.88	0.9:1	336.19	263.47	1.3:1

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

4.8 The Analysis of Port Funds

Funds are technically defined as working capital or net current assets, and in this sense are working-capital funds, as distinct from actual cash. The traditional financial statements are balance sheets and income statements. But for studying changes over time in the financial position, the funds flow statement is more appropriate, since it is a complementary report on financial operations, revealing changes in asset, liability and shareholder equity levels and sources and applications of funds over selected period.

In Indian ports in general, port borrowings constitute the most important source for capital-funds, comprising loans from Government, intercorporate loans, and commercial borrowings. Government is a major source of both grants and loans for CHP, especially because of ongoing work on the development

of Haldia. Other capital receipts such as sinking funds, net earnings of the reserve fund; repayment, replacement & maintenance funds, etc. contribute negligible amounts. In the case of working capital balances, current liabilities have exceeded current assets, and they thus represent fund-application rather than a fund-source.

Opening balances for CHP, are not a surplus that may be directed towards investment, but are applied as normal working capital. Most funds obtained externally are used to finance capital investment, including Plan investment, miscellaneous debt charges on loan-financed dredging, corrective works, etc. and other non-Plan investment. For CHP, capital investments and closing balances have risen considerably in both absolute and percentage terms, with marked acceleration marked towards the end of the study. Since Government loans have tapered over this time, much of the capital involved is now drawn from internal and other sources, Thus the major fund-sources other than opening and closing balances, are other capital receipts and loans., while the major fund-applications are capital investments on major capital-works such as dredging, dockyard structures and vessels. In the case of construction projects particularly, overruns in execution times add heavily to costs. Time-budgeting - although an integral component of financial management of capital applications - is generally seen to be lacking in Indian PSUs, and major ports.

Much of capital investment is on port development projects, although occasional investments are on non-port operations. Government grants towards specific port project investments are also declining proportionally, to be replaced by a larger quantum of loan-capital. Since these are to be repaid with interest, debt charges have risen across the board.

The capital structure of Indian major ports thus comprises internal sources, Government loans, external loans, debenture loans, intercorporate loans, and Government grants. It is interesting to note that internally-sourced capital has slowly become dominant among these, although not all of this is port surplus, Accumulated debt-servicing charges due on Government loans but not yet repaid, are also seen in the capital structure as an internal capital source. Surveying time-trends, the overall evolution of CHP's capital structure reflects declining reliance on external borrowings and greater reliance on self-generated funding, in keeping with the accepted financial principlethat capital funds for any enterprise should be mainly internally sourced.

CHP's internal sources comprise reserve & surplus, as well as depreciation. Of these the former show an increase while the latter reveals a proportionately decreasing trend. This would indicate that asset-utilisation has been better in the later years of the study. The sharp increase in internal sources has primarily been from increased handling operations at the HDC, but for the CDS, this escalation is rooted in non-operational activities. Ports in India do need in any case to assume more responsibility in maintaining viability and profitability by reinvesting part of their earnings in port development, thus freeing Government resources for national development.

In lieu of the traditional debt-equity ratios of financial analysis, reference has to be made to the ratio between external and internal capital sources in the case of major ports, which cannot issue corporate equity. Under conditions where traffic volumes are buoyant, a high ratio would take advantage of cheaper debt capital. This is seen to have initially been the case at HDC, where loaned capital has generally dominated owned capital. At CDS, this ratio has been much lower than even IDBI/IFCI norms. CDS is not as dependent on external sources as HDC, which is a developing port, and which has been taking over several port operations from CDS. Improved operational performance and surpluses over time at HDC rapidly increased owned capital and permitted lowered dependence on external funds.

In the case of CDS, the scope for this was circumscribed by port development at HDC, which diverted a large part of development capital away from CDS.

Building on the preceding analyses of funds flow statements, capital assets, port investments and capital-structure planning, the study now progresses to a consideration of various features relating to cost and revenue structures at CHP. This permits closer scrutiny of the distinction between operating and non-operating costs and revenues. It has been noted in the foregoing, that CDS performance improvements are more the effect of rising trends in the latter, rather than the former.

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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 byType 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	33.64	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 (1980-81to 1992-93)

(Rs. crores)

Year	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	8.33	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 port[3]. 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)

(Rs. crores)

Year	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 occured 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)

(Rs. crores)

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 yea*

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 postion 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)

	Traffic		*Op. Revenue*	
Year	*million tonnes*	*Index*	*million Rs.*	*Index*
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 toonages 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 5.15

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

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

Source : *Compiled and Calculated from Administration Reports and Annual Accounts of Calcutta-Halida 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 ythe 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 upby 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-rvenue relationship will be explored in the next chapter, both from the viewpoint of operating and non-operating components.

References:

1. Raj, A.B.C.; **Corporate Financial Management'**; Tata McGraw-Hill; New Delhi 1978; pp.136

2. U.S. Department of Transportation & Maritime Administration: **A Report to the Congress on the Status of the Public Ports of the United States'**; Washington DC 1982; pp.17

3. Report of the Seminar on Port Pricing; op. cit.; pp.1

CHAPTER-6

COST-REVENUE RELATIONSHIPS WITHIN PORT ACTIVITIES

6.1 Introduction

The previous chapter made a study of revenue and cost, trends, both in isolation and in relation to traffic and to activity-wise classification. Such study alone is however not enough since effective conclusions cannot be drawn about the surplus/deficit on account of each activity class. Such wider conclusions would provide better indicator of financial performance of major ports as the contribution from each port service to the overall surplus/deficit would be revealed. For such purposes the relationship between revenue and expenditure within each category of services provided by the ports forms the focus for this chapter.

6.2 Operating Items

Functional classification of operating revenue and expenditure at all major ports groups these under the four major heads mentioned earlier, namely, cargo handling and storage; port and dock facilities; railway workings; and estates. Expenditure on management and general administration is indicated separately, as it is not attributable to any particular activity. For the purposes of this study, management and general administration expenditure is apportioned among the four functional heads on the basis of revenues accruing from them.

Expenditures at selected major ports on each service as a percentage of income from that service over the period from 1980-81 to 1991-92 as shown in Table 6.1. The table indicates that *cargo handling and storage* have been the most paying services. At all major ports including Calcutta, revenues derived from cargo handling and storage charges were far in excess of expenditures incurred on them over the entire period of study. While expenditure on cargo handling and storage services constituted between 47 percent and 67 percent of revenues thereof at Calcutta Port, in the case of Bombay, Madras and Visakhapatnam Ports, the range was between 53 to 66 percent in Bombay, 46 to 67 percent at Madras, and 40 to 62 percent at Visakhapatnam ports.

At the opposite end, expenditures incurred in providing *port and dock services* at Calcutta Port were far in excess of revenue derived from them throughout the study-period, with a low of 110 percent occurring in 1981-82 and a high of 128 percent in 1983-84 (except in 1984-85 and 1985-86). For Bombay Port too, port and dock facilities had been a losing proposition. Madras Port, on the other hand, experienced the reverse. Port and dock facilities here, generated surpluses without exception throughout the period of study. At Visakhapatnam Port, port and dock facilities showed a mix of surpluses and deficits.

Table 6.1

Expenditure of Selected Major Ports on Each Service as Percentage of Income from that Service (1980-81 to 1991-92)

Port/Service	*1980-81*	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1985-86*	*1986-87*	*1987-88*	*1988-89*	*1989-90*	*1990-91*	*1991-92*
Calcutta Port:												
Port and Dock Facilities	117	110	113	128	115	123	122	115	113	120	115	126
Cargo Handling and Storage	59	58	50	61	49	63	58	67	48	47	50	51
Railways	237	222	197	151	205	193	181	167	165	163	140	122
Estate Rentals	56	47	52	70	58	54	72	73	62	60	60	61
Bombay Port:												
Port and Dock Facilities	110	114	119	106	92	93	107	117	108	102	119	113
Cargo Handling and Storage	53	53	53	62	59	60	64	66	58	56	55	59
Railways	299	351	420	377	553	497	409	459	476	467	497	479
Estate Rentals	44	48	40	31	33	34	38	42	40	150	135	116
Madras Port:												
Port and Dock Facilities	94	91	97	91	78	71	82	71	85	85	83	70
Cargo Handling and Storage	58	61	65	67	49	50	49	54	46	49	48	52
Railways	84	102	121	96	88	82	80	68	59	62	66	62
Estate Rentals	149	236	150	167	224	133	225	151	156	81	74	65
Visakhapatnam Port:												
Port and Dock Facilities	119	135	140	144	101	88	100	122	88	82	92	106
Cargo Handling and Storage	59	57	61	62	53	48	55	60	56	40	53	52
Railways	175	147	138	160	141	184	113	103	94	99	97	100
Estate Rentals	124	112	78	73	58	72	82	73	93	107	88	163

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

Deficits are seen to have been a regular feature in *railway workings* at Calcutta, Bombay and Visakhapatnam Ports throughout the period of study. In 1991-92 the expenditure on railways was 122 percent of revenue from that service at Calcutta Port, 479 percent at Bombay Port, and just equivalent to revenue at Visakhapatnam Port. Madras Port was in a relatively better position as in most years income from this head surpassed expenditure.

With respect to *port estates*, Calcutta Port showed a significantly better picture compared to other major ports, generating surpluses throughout the period of study. At the next position was Bombay Port which also showed surpluses before 1989-90, the more recent trend being in favour of deficits. At Madras, port estates were a losing area till 1988-89, after which they turned around to become a paying activity till the end of the study-period. The position at Visakhapatnam Port was generally of surpluses in peak years and deficits in others, with the most recent trend being towards deficits.

The foregoing analysis indicates activities at ports on which surpluses or deficits have been registered. It suffers however from one serious limitation. Since it is in relative terms, it does not indicate the actual quantum of contribution each activity is making to the overall operating surplus for the year. Hence an attempt is made in the following section to assess in absolute terms the profitability or otherwise of the main port activities i.e., cargo handling and storage, port and dock services, port railways and port estates, as also reasons thereof.

6.2.1 Cargo Handling and Storage

Cargo handling and storage charges contribute a major share from charges realised to port revenues. As expenditure too, they are the major component and are also most paying service rendered at all major selected ports, as shown earlier. Handling and storage charges on general cargo, storage of goods in warehouses, cranage, lighterage, POL handling charges, demurrage fees on general cargo, and other miscellaneous charges are all included in this category.

Table 6.2 presents the economics of *cargo handling and storage* activities at Calcutta Port over the study-period. The table also shows in percentage form, the contribution of surplus from this service to total operating surplus. It is apparent from the table that the activity has been able to meet cost of operations and leave a substantial surplus in all years of study. This surplus commenced at Rs. 22.04 crores in 1980-81 rising slowly to Rs. 24.57 crores in 1987-88, and then jumped to Rs. 64.06 crores in the very next year, eventually reaching Rs. 80.47 crores in the last year of study 1992-93. The service has thus been making an enormous contribution to the overall operating surplus of the port. This is borne out by the percentage contributions of this surplus to total operating surplus. What is of even more interest is that these have been more than 100 percent through the entire period under study which implies that surplus on cargo handling and storage activity has actually exceeded total operating surplus. In 1985-86, it was in fact more than double of the total operating surplus. The overall implication of such high percentages is that surpluses earned on this account have been partly swallowed up by losing activities. However the percentage of surplus on cargo handling and storage is found to decline towards the end of the study, due both to the rising surplus on other port activities, as well as a tapering off in the rate of growth of the surplus on cargo handling and storage. Maximal growth of the surplus was achieved in 1988-89.

Table 6.2
Economics of the Activity 'Cargo Handling and Storage' in Calcutta-Haldia Port (1980-81 to 1992-93)

(*Rs.crores*)

Year	*Revenue*	*Expenditure*	*Surplus*	*% of Surplus to total operating*
		Surplus.		
1980-81	53.79	31.75	22.04	163
1981-82	58.43	33.85	24.58	132
1982-83	75.22	37.34	37.88	127
1983-84	63.30	38.47	24.83	196
1984-85	86.95	42.54	44.41	128
1985-86	71.62	45.33	26.29	203
1986-87	82.32	47.39	34.93	173
1987-88	73.72	49.15	24.57	217
1988-89	124.24	60.18	64.06	118
1989-90	136.00	63.72	72.28	124
1990-9	146.26	72.50	73.76	114
1991-92	142.98	72.33	70.65	129
1992-93	157.76	77.29	80.47	115

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

Support for the above remarks is found in the following table which reveals the dominance of this activity over total operating surplus.

Table 6.2.1
Surplus on Cargo Handling and Storage Activities In Relation to Total Operating Surplus During 1980-81 to 1992-93

(*Rs.crores*)

Year *Surplus*	*Total operating Handling and Storage'*	*Surplus on 'Cargo*
1980-81	13.49	22.04
1981-82	18.68	24.58
1982-83	29.75	37.88
1983-84	12.65	24.83
1984-85	34.80	44.41
1985-86	12.94	26.29
1986-87	20.14	34.93
1987-88	11.30	24.57
1988-89	54.07	64.06
1989-90	58.25	72.28
1990-91	64.87	73.76
1991-92	54.62	70.65
1992-93	70.04	80.47

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

The table indicates that at CHP, the surplus from *cargo handling and storage* activities was greater than the total operating surplus generated by all port activities throughout the study-period. "All activities' here mean cargo handling and storage, port and dock operations, railway operations and estate rentals. In 1980-81, where the total operating surpluses were of the order of Rs. 13.49 crores, the amount of surplus from cargo handling and storage activities was Rs.22.04 crores. Similarly, in the last year of study-period 1992-93, total operating surpluses stood at Rs.70.04 crores against a surplus of Rs.80.47 crores from cargo handling and storage. The performance in the years 1984-85 and 1988-89 was particularly satisfactory because of the sharp increase in proportionate surplus from this activity relative to the immediately previous year.

Table 6.3
Surplus on the Activity 'Cargo Handling and storage' in selected Major Ports
(1980-81 to 1992-93)

(Rs.crores)

Year	Bombay Port		Madras Port		Visakhapatnam Port	
	Surplus	% of Surplus to total op. Surplus	Surplus	% of Surplus to total op. Surplus	Surplus	% of Surplus to total op. Surplus
1980-81	30.10	96	12.88	95	10.66	142
1981-82	37.01	102	12.63	98	12.22	148
1982-83	42.33	94	12.50	104	10.82	157
1983-84	30.17	71	13.39	95	11.50	159
1984-85	40.90	75	32.10	92	19.17	100
1985-86	44.04	77	35.23	87	24.00	104
1986-87	38.99	82	37.79	91	24.06	102
1987-88	41.17	93	33.65	81	21.14	113
1988-89	63.80	87	48.07	87	30.84	89
1989-90	75.92	122	50.10	87	48.25	92
1990-91	83.43	131	55.74	86	34.61	92
1991-92	79.64	129	54.14	77	40.77	110
1992-93	NA	-	NA	-	NA	-

Note : *NA denotes Not Available*

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

Assessment of the comparative position *vis-a-vis* cargo handling and storage activities at other major ports is made through Table 6.3. For Bombay Port, the surplus on this account commenced at Rs. 30.10 crores in 1980-81, and eventually rose to Rs. 79.64 crores, increasing more than two and half times over the study-period. However, unlike at Calcutta Port, surpluses from this activity - although generally higher in magnitude - tended to be lower than total operating surpluses until 1988-89, and only exceeded them after 1989-90.

Surpluses from cargo handling and storage at Madras Port have been quite substantial in terms of quantum, although lower than total operating surplus earned by the Port, except in 1982-83. Visakhapatnam Port was in a better proportionate position because surpluses from the activity stayed above total operating surplus except between 1988-89 to 1990-91. However, the magnitude of the surplus from cargo handling and storage was considerably lower than that at other major ports over the period.

The analysis just concluded is based on cargo handling and storage operations, and therefore does not identify individual characteristics of cargo handling operations at each port. Revenue and cost in respect of cargo handling vary considerably from cargo to cargo. Revenues from the handling of POL products for example are substantially higher than the costs incurred on handling these. As a result, a port handling a large proportion of POL traffic will derive a substantial surplus from this. Conversely, ports having to handle iron ore traffic need to spend huge sums on iron ore handling costs. For the ports of Calcutta and Haldia, the principal imports are POL products constituting 46 percent of total imports at CDS and 68 percent at HDC, or 49 percent of total traffic (imports + exports) for the Port as a whole, and this obviously reflects in the financial surpluses of the Port under this head. Conversely, the fact that POL-handling is much less at Madras (39% of traffic) and Visakhapatnam (33% of traffic) *[see Table 3.12]*, lends a lot of credence to their performance, since they do not therefore enjoy the intrinsic cost advantages that specialisation in POL-handling give to Calcutta and Bombay Ports, and at the same time account for around 16 percent each of the total iron-ore traffic from Indian major ports.

Certain suggestions now offer themselves regarding cargo handling and storage activities at Calcutta Port. Delays in clearance of cargo from the Port sometimes occur due to shortage of railway wagons and paucity of storage space. This can not only affect the efficiency of port operations but may also result in loss of foreign exchange to Government in the form of demurrage and detention charges to ships. To circumvent this, the number of rail wagons needs to be increased and more warehouses need to be built. The tendency has also been observed for consignees to keep their shipments at the port for unduly long periods since storage charges are relatively low. Non-clearance of cargo on such grounds uses up storage and is therefore detrimental to efficient port operation. It has therefore been suggested that demurrage charges be raised to punitive levels so as to act as a deterrent to such non-clearances. Storage charges themselves could similarly be raised to augment port revenues.

6.2.2 **Port and Dock Services**

Port and dock services occupy next place after cargo handling and storage facilities in terms of their order of importance in port operations. Port services such as pilotage, towage, berthing, mooring, water supply to ships and dry dock facilities are all included in this category.

Table 6.4 presents the economics of *port and dock services* at Calcutta Port over the period of study. The activity is observed to have been a losing proposition for the Port throughout the period, with deficits ranging between Rs.3.87 crores and Rs.20.43 crores. Both revenues and expenditure on such services have increased considerably over time, but the cumulative increase in expenditure by Rs.86.50 crores between 1980-81 and 1992-93 has far outweighed the increased port revenue of Rs.72.03 crores. Consequently deficits have risen over the period, as evinced by the table. It is also noted that the bulk of expenditure increases on port and dock services have occurred towards the end of the study-period, indicating high-cost operation which is unmatched by revenue-performance, where growth is much more moderate.

Table 6.4
Economics of the Activity 'Port and Dock Facilities' in Calcutta-Haldia Port (1980-81 to 1992-93)

(Rs.crores)

Year	Revenue	Expenditure	Surplus/Deficit
1980-81	33.87	39.60	-5.73
1981-82	39.13	43.00	-3.87
1982-83	37.16	41.82	-4.66
1983-84	36.79	47.01	-10.22
1984-85	43.47	50.16	-6.69
1985-86	49.35	60.78	-11.43
1986-87	51.94	63.27	-11.33
1987-88	61.52	70.55	-9.03
1988-89	61.78	69.77	-7.99
1989-90	63.67	76.44	-12.77
1990-91	70.07	80.51	-10.44
1991-92	79.69	100.12	-20.43
1992-93	105.90	126.10	-20.20

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

For comparison, surpluses or deficits recorded against this activity at selected major ports between 1980-81 to 1992-93 are presented in Table 6.5.

Table 6.5
Surplus/Deficit on the Activity 'Port and Dock Facilities' in Selected Major Ports (1980-81 to 1992-93)

(Rs.crores)

Year	Bombay	Madras	Vizag.	Calcutta
1980-81	-1.26	0.38	-1.46	-5.73
1981-82	-1.97	0.62	-2.74	-3.87
1982-83	-2.78	0.21	-3.29	-4.66
1983-84	-1.02	0.83	-3.35	-10.22
1984-85	2.01	2.87	-0.11	-6.69
1985-86	1.88	4.39	1.82	-11.43
1986-87	-1.95	2.93	-0.03	-11.33
1987-88	-5.36	5.32	-3.39	-9.03
1988-89	-2.97	3.18	2.71	-7.99
1989-90	-0.82	2.93	4.51	-12.77
1990-91	-6.64	3.61	1.96	-10.44
1991-92	-5.51	9.04	-1.66	-20.43
1992-93	NA	NA	NA	-

Note : *NA denotes Not Available*

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

Deficits are observed at Bombay Port in all years except between 1984-86, when there were marginal surpluses. Madras Port is better placed showing surplus balances on the activity throughout the period of study, this surplus rising from Rs.0.38 crores in 1980-81 to Rs.9.04 crores in 1991-92. Visakhapatnam recorded deficits till 1987-88, except for the marginal surplus in 1985-86, but had continuous surpluses since 1987-88 until a deficit recurred in 1991-92. In terms of quantum, deficits recorded at Calcutta are considerably higher than at any other selected major port.

While probing into the reasons for deficits in these services at CHP, it may be noted that port and dock facilities are permanent in nature and, as such, idle-facility costs would assume a significant proportion in the event of non-realisation of expected traffic. However, scope exists for revamping existing facilities, which, besides providing better quality of services, would also reduce operating costs. Availability of good port and dock facilities would in any case attract more traffic to the Port. Port authorities should therefore take every step to see that deficiencies in facilities are removed and that they are maintained in good condition at all times. This will go a long way in improving facilities on offer at the Port and in lowering the Port's operating costs. This assumes special significance in view of the fact that most major ports in India are old and as a result, their facilities are antiquated and need improvement.

Another reason underlies the deficit balances occurring against port and dock services. In advanced countries, most of such services are provided by private undertakings, except for major port services such as pilotage, etc. that are provided by the port authority. In most developing countries however, the picture is entirely opposite. Here all port and dock services i.e. pilotage, towage, berthing, cargo handling and storage, weighing, navigational aids and the like are provided by port authorities. Port expenditure thus becomes overburdened with the costs of these and the result is an overall deficit on port and dock services. UNCTAD, in a study of 81 ports in 68 countries of North and South America, Western Europe, the Middle East, Africa, Asia and Australia has observed this trend. It might therefore be advisable for Indian major ports to leave the provision of minor facilities to private enterprise and concentrate more on provision of basic facilities like adequate draft, deeper channels, modern navigational aids and so on, in order to adapt themselves to the rapid changes that are taking place in shipping technology. Wherever possible, the ports should allow portusers to provide their own facilities and thus relieve themselves of part of the fiscal burden.

In elaboration of the preceding statements, a comparative listing of the responsibilities of the private sector and the public authority, on account of different port services in developing and developed countries may be reproduced here which bears out the observation that the responsibilities for provision of most port services in developed countries lie with the private sector.

Providers of the Main Services in Ports in Developing and Developed Countries

Ports in Developing Countries.	*Ports in Developed Countries.*
a) Port authority generally responsible for:	a) Port authority generally responsible for:
Navigational aids	Pilotage
Pilotage	
Towage	
Berthing/Unberthing	
Fire-fighting	
Cargo-handling on-quay	

Ports in Developing Countries.	*Ports in Developed Countries.*
Storage Weighment of goods Tallying of goods	
b) Other Public bodies generally responsible for: Marine insurance	b) Other Public bodies generally responsible for: Navigational aids Marine insurance Fire-fighting
c) Private undertakings generally responsible for: Stevedoring Tallying of goods Repair of ships Surveillance of cargo	c) Private undertakings generally responsible for: Towage Berthing/Unberthing Stevedoring Cargo-handling on-quay Storage Repair of ships Surveillance of cargo Tallying of goods Weighment of goods

Source: United Nations Conference on Trade and Development, *Port Pricing*, New York, 1975, pp.14

In concluding this part of the analysis, it might be said that the most paying activity for ports is, by and large, *cargo handling and storage* and that ports are observed to incur considerable deficits on the provision of port and dock facilities. If existing port and dock facilities are not adequate to the needs of shippers, they show little interest in using the port which results in reduction of the revenues derived from cargo handling and storage. Thus in order to attract more traffic to the port and to increase its revenues, adequate facilities on port and dock must be provided either by the port authority or by private agency.

6.2.3 **Port Railways**

Port railways play a vital role in port development. The growth of a port is greatly influenced by its access to various forms of transport by railways, roads and waterways. Although road transport has become increasingly important in handling port traffic, the railways would continue to handle a significant share of port-bound traffic at Indian major ports became of the substantial proportion of bulk cargo in such traffic. It is to be noted in context that "adequate and cheap communications with the hinterland are of vital importance for the smooth flow of traffic to and from the Port"[1].

In regard to railway operations, the major ports of India may be divided into two classes. In the first category are the six major ports at Calcutta, Bombay, Madras, Visakhapatnam, Paradip and Mormugao, at which port railways are owned and operated by the respective Port Trusts. The five remaining major ports of Kandla, Cochin, Tuticorin, New Mangalore and Nhava-Sheva form a second category, where port railways are owned and directly operated by the Indian Railways.

Table 6.6
Financial Results of the working of 'Port Railways' at Calcutta-Haldia Port (1980-81 to 1992-93)

(Rs.crores)

Year	*Revenue*	*Expenditure*	*Surplus/Deficit*
1980-81	3.74	8.87	-5.13
1981-82	4.63	10.30	-5.67
1982-83	6.66	13.14	-6.48
1983-84	7.29	11.04	-3.75
1984-85	5.91	12.09	-6.18
1985-86	6.54	12.65	-6.11
1986-87	7.34	13.26	-5.92
1987-88	9.95	16.59	-6.64
1988-89	9.53	15.72	-6.19
1989-90	10.40	16.98	-6.58
1990-91	12.07	16.94	-4.87
1991-92	14.48	17.71	-3.23
1992-93	17.99	20.46	-2.47

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

Table 6.6 indicates the financial results of the working of port railways at Calcutta Port between 1980-81 to 1992-93. It is seen that - like port and dock services - port railway operations have been in a losing position throughout the period of study, with deficits ranging between Rs.2.47 crores and Rs.6.64 crores. Although revenues from railway operations increased from Rs.3.74 crores in 1980-81 to Rs.17.99 crores in 1992-93, expenditure on port railways has outweighed these, increasing from Rs.8.87 crores to Rs.20.46 crores over the same years. The happier note is that over the last three years of the study, this deficit has shown a decreasing trends, with the rate of increase in revenue being sharper than that of expenditure. This is clear in the table.

Comparative financial results of the working of *port railways* at the selected major ports is shown in Table 6.7. Like CHP, the Port of Bombay had also shown deficits throughout the period of study, with the amount of deficit increasing nearly three times over the study-period. Visakhapatnam Port showed a similar trend except between 1988-91 when there were surpluses on railway operation. Madras on the other hand, earned surpluses on railway operations throughout the period except in 1981-82 and 1982-83 when there were deficits. The quantum of surplus in the later years of study has been significant and rising.

The remedies to overcome problems of this nature which CHP faces with regard to railway operations relate to whether its port railways should be transferred to the Indian Railways; whether its port railways are overstaffed and/or unnecessarily burdened with uneconomical sidings, whether the terminal charges levied are adequate, and whether freight rates can be increased. These are now dealt with consecutively.

Table 6.7
Surplus/Deficit of 'Port Railways' in selected Major Ports
(1980-81 to 1992-93)

(Rs.crores)

Year	Bombay	Madras	Vigaz	Calcutta
1980-81	-3.45	0.38	-1.46	-5.13
1981-82	-4.07	-0.06	-1.07	-5.67
1982-83	-4.67	-0.55	-1.11	-6.48
1983-84	-4.35	0.12	-1.64	-3.75
1984-85	-5.66	0.58	-1.54	-6.18
1985-86	-6.00	1.02	-3.59	-6.11
1986-87	-5.93	1.39	-0.93	-5.92
1987-88	-6.79	2.87	-0.25	-6.64
1988-89	-7.21	4.53	0.69	-6.19
1989-90	-8.30	4.49	0.13	-6.58
1990-91	-9.12	4.46	0.39	-4.87
1991-92	-9.66	6.14	-0.01	-3.23
1992-93	NA	NA	NA	-

Note : *NA denotes Not Available*

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

Ownership:

An important but contentious issue attaches to whether port railways in the first category of six Indian major ports mentioned above should be transferred to the Indian Railways, in line with port railways at the other major ports, or whether ownership of these should be retained by the respective Port Trusts. Both sides to the issue have their own merits and demerits. The following advantages might be claimed in support of retention of ownership:

a) port railways are a part of port infrastructure, and thus help in the coordination of various activities involved in timely loading and unloading of cargo;
b) such coordination leads to quicker turnaround times for ships berthing at the port;
c) port-owned railways are attuned to the fluctuating needs of their parent ports;
d) priorities for movement of goods can be administered more effectively in the case of port railways.

On the other hand, support for the transfer of ownership of port railways to the Indian Railways is based on the following:

a) savings in time, equipment and manpower associated with railway operations can be effected, since duplication and formalities would be avoided in respect of many port services;
b) administration by the Indian Railways would expectedly bring about greater operational efficiency and economy, on account of specialised management.

Having discussed these implications of the transfer of ownership of port railways to the Indian Railways, the Major Ports Commission recommended the retention of port railways by the concerned ports, in cases where these were operated by the Port Trusts, and sought review of this issue after a period of 10 years from the date of its Report.[2]

Staffing:

It has generally been observed that port railways are overstaffed; hence possibilities for pruning manpower in areas where this is feasible have to be explored. In addition to such strategies, new recruitment has to be banned until the staff-strength on port railways is commensurate with workload. If it is eventually decided to transfer ownership to the Indian Railways, problems of another dimension will arise. Port employees on port railways are better placed relative to railway employees in terms of pay-scales, and naturally would not acquiesce to reduction in pay. On the other hand, if such staff were paid higher wages as before, this would lead to friction and existing Indian Railways staff would in turn place a demand for higher wages. To resolve this problem, the possibilities for absorbing the port railway staff in other posts at the ports would have to be explored.

Uneconomical operations:

It is found also that port railways are sometimes burdened unnecessarily with uneconomical sidings, which are uneconomical in operation. To overcome this unwarranted situation, port railways should seek and be provided the earliest opportunity to abandon such sidings.

Terminal charges & Freight rates:

Indian Railways have been revising the overall freight rates periodically, to maintain financial soundness in their operations. Viewed in this light, the claims of port-owned railways for the levy of higher terminal charges is genuine. The Major Ports Commission also recommended that "the Ministry of Railways should view the claim of the Port Railways more pragmatically and that revisions in the freight rates made by Railways from time to time should be simultaneously followed by a *pro-tanto* adjustment in the terminal charges to be paid to the Port Railways.[3] A follow-up on this recommendation would go a long way in restoring viability and eliminating deficits in the operation of port railways.

6.2.4 Estate Rentals

Another important activity at ports comprises the leasing-out of port-owned estates. A port earns revenue from its estate rentals, but also incurs some expenditure on the maintenance of its estates.

The economics of estate rental activity at CHP over the period of study are next explored. Table 6.8 indicates that such rentals are profitable, particularly in case of CDS *(as shown in Ch.3)*, with surpluses of rental-revenues over expenditures being generated throughout the study-period, and the amount of surpluses earned also increasing more than five-fold from Rs.2.31 crores in 1980-81 to Rs.12.24 crores in 1992-93. Rental-activity has expanded particularly after 1988-89, as seen in the marked rise of rental-revenues following this period, accompanied by a late tendency for estate-related expenditure also to rise. However, surpluses have been growing almost continuously.

Comparison between selected major ports regarding surpluses/deficits on estate rentals over the study-period forms the subject of Table 6.9. The table indicates initially better relative placement compared to CHP for Bombay Port because of the greater quantum of surpluses generated in the initial period. However, Bombay has lately been showing a markedly deficit position, unlike CHP which has generated surpluses throughout. Madras on the other hand, reveals deficits in most years of study, except over the last three years when marginal surpluses are indicated. Visakhapatnam has held a marginal position throughout in terms of estate rentals, as evinced by more-or-less alternating deficits

Table 6.8
Economics of the Activity 'Estate Rentals' at Calcutta-Haldia Port
(1980-81 to 1992-93)

(Rs.crores)

Year	Revenue	Expenditure	Surplus/Deficit
1980-81	5.28	2.97	2.31
1981-82	6.93	3.29	3.64
1982-83	6.31	3.31	3.00
1983-84	6.03	4.24	1.79
1984-85	7.74	4.48	3.26
1985-86	9.16	4.97	4.19
1986-87	8.68	6.21	2.47
1987-88	9.01	6.60	2.41
1988-89	10.93	6.75	4.18
1989-90	13.50	8.07	5.43
1990-91	15.92	9.50	6.42
1991-92	19.47	11.85	7.62
1992-93	25.56	13.32	12.24

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

Table 6.9
Surplus/Deficit of 'Estate Rentals' in Selected Major Ports
(1980-81 to 1992-93)

(Rs.crores)

Year	Bombay	Madras	Vigaz	Calcutta
1980-81	5.87	-0.12	-0.22	2.31
1981-82	5.30	-0.29	-0.16	3.64
1982-83	10.26	-0.18	0.48	3.00
1983-84	17.77	-0.24	0.74	1.79
1984-85	17.20	-0.47	1.55	3.26
1985-86	17.16	-0.17	0.92	4.19
1986-87	16.31	-0.40	0.56	2.47
1987-88	15.42	-0.23	1.23	2.41
1988-89	20.01	-0.30	0.23	4.18
1989-90	-4.73	0.28	-0.24	5.43
1990-91	-3.79	0.43	0.71	6.42
1991-92	-2.67	0.72	-2.17	7.62
1992-93	NA	NA	NA	-

Note : *NA denotes Not Available*

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

and surpluses of limited magnitudes. Comparatively, therefore, Calcutta is better-placed among the four selected major ports, with most of its revenues generated from the metropolitan properties of CDS. Deficit balances indicated for the other ports in the table could be overcome by increasing rentals, if possible to a considerable level.

6.3 **Finance & Miscellaneous Items (Non-Operating Items)**

As had earlier been stated, costs and revenues fall into the two categories of operating and non-operating types. Relationships between operating costs and revenues have already been analysed and commented upon in the preceding chapter. Non-operating income and expenditure - also termed *finance and miscellaneous items* - although not directly related to port operations, play a significant role in determining the eventual financial performance of a port. This is because a surplus on this head either augments operating surplus or else wipes out the operating deficit, and, conversely, a deficit on the account either reduces operating surplus or else escalates the operating deficit. Most of non-operating income at ports derives from income on investments, while the interest payable against loans constitutes the bulk of non-operating expenditure.

Table 6.10
Surplus/Deficit on 'Finance and Misc. Items' at Calcutta-Haldia Port
(1980-81 to 1992-93)

(Rs.crores)

Year	*Revenue*	*Expenditure Deficit op. Surplus*	*Surplus/ Deficit to*	*% of Surplus*
1980-81	4.96	15.18	-10.22	76
1981-82	5.36	17.87	-12.51	67
1982-83	6.39	24.25	-17.86	60
1983-84	5.00	20.82	-15.82	125
1984-85	10.54	28.44	-17.90	51
1985-86	9.86	24.71	-14.85	115
1986-87	17.71	26.44	- 8.73	43
1987-88	13.38	37.74	-24.36	215
1988-89	21.50	35.87	-14.37	27
1989-90	23.78	33.59	- 9.81	17
1990-91	26.59	41.96	-15.37	24
1991-92	45.52	55.35	- 9.83	18
1992-93	28.25	53.61	-25.36	36

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

Table 6.10 presents the economics and surpluses /deficits on the *finance and miscellaneous* item at Calcutta Port between 1980-81 to 1992-93. Continuous deficits have been a consistent phenomenon under this head, which have ranged in amount between Rs.8.73 crores and Rs.25.36

crores. Till 1986-87, there was a large quantum of deficit which generally increased beyond Rs.10.22 crores at the start of the period, before suddenly falling to Rs.8.73 crores in 1986-87. However in the very next year i.e. 1987-88, the accounting deficit shot up to Rs.24.36 crores, partly on account of inclusion of capital transfers to reserves for replacement, rehabilitation and modernisation of capital assets, and reserve for development, repayment of loans, and contingencies, within *finance and miscellaneous expenditure*, in accordance with Government instructions. After another decline, the last year of study saw the deficit reach a level of Rs.25.36 crores. In the alternate years 1983-84, 1985-86, and 1987-88 the amount of such deficits had even exceeded total operating surpluses, with the deficit in 1987-88 rising to more than double the operating surplus. Thus whatever operating surplus was generated by port operations was swallowed up by these huge deficits, which still left undesirable net deficits for the port.

The major reason for the pattern of deficits observed appears to have been the tendency for finance and miscellaneous expenditure to rise pronouncedly over the study-period, as a result of ever-increasing application of funds towards new Plan projects and towards meeting debt charges on other Port projects which are now funded increasingly from returns on previous fund investments by the port itself. Revenues on this account have risen, particularly in the later years, but show much more instability. The peaking of the revenue item to Rs.45.52 crores in 1991-92, appears to be attributable to an inflow of interest realised on short-term investment, also reflected in the sharp upswing in investment applications of port funds in that particular year seen in Table 4.1, previously. This is also borne out by reference to the schedules to the revenue accounts (Annual Accounts) of CPT, where under *finance and miscellaneous items*, actuals for the year 1990-91 show interest receipts on investments of the form of fixed deposits, cash balances, etc. to have risen sharply relative to the previous year.

Table 6.11
Surplus/Deficit on 'Finance and Misc. Items' at Selected Major Ports
(1980-81 to 1992-93)

(Rs.crores)

Year	*Bombay*	*Madras*	*Visakhapatnam*	*Calcutta*
1980-81	3.61	-8.45	-10.48	-10.22
1981-82	10.38	-9.85	-10.28	-12.51
1982-83	20.56	-1.68	-8.65	-17.86
1983-84	16.14	-2.05	-10.26	-15.82
1984-85	0.23	-5.39	-11.16	-17.90
1985-86	15.51	-3.73	-14.41	-14.85
1986-87	32.87	-6.34	-15.43	-8.73
1987-88	25.18	-5.27	-10.87	-24.36
1988-89	29.56	-2.92	3.42	-14.37
1989-90	12.23	1.70	-12.98	-9.81
1990-91	-2.55	8.27	-3.59	-15.37
1991-92	-8.56	17.25	1.59	-9.83
1992-93	NA	NA	NA	-

Note : *NA denotes Not Available*

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

The comparative position of selected major ports regarding surplus/deficit on finance and miscellaneous items between 1980-81 to 1992-93 is presented in Table 6.11.

Bombay Port is seen to be best-placed among major ports in this regard, earning large surpluses in all but the last two deficit years. i.e. 1990-91 and 1991-92. The amount of such surplus ranged from a high Rs.32.87 crores in 1986-87 to a deficit Rs.8.56 crores in 1984-85. When the net effect of non-operating items is considered, the operating surplus for Bombay was thus augmented in almost all years by the non-operating surplus. Receipts of large sums of interest from huge investments previously made, and the relatively lower burden of interest payable on loans were the principal reasons which placed Bombay Port on such good financial footing.

Madras and Visakhapatnam ports too, like CHP, however generally had continuous deficits under the finance and miscellaneous items head. An exception in the last three years of study commencing 1989-90 is found in case of Madras Port, where rising surpluses have been generated. Visakhapatnam Port has only generated surpluses on this head in the two nonconsecutive years 1988-89 and 1991-92. Heavy interest obligations on Government loans were the primary reason behind the deficits.

6.4 **Trends in Port Costs & Revenues**

Analysis of revenue and expenditure within each category of port services indicates surplus or deficit activities, but not the actual contribution from each activity to overall operating surplus for the port. The main port activities i.e. cargo handling and storage, port and dock services, port railways and port estate rentals need also to be assessed in terms of absolute profitability.

Cargo handling and storage is the most paying port-service at all major selected ports. At CHP, the magnitude of on this was considerably lower than at other major ports. Revenue and costs associated with cargo handling vary considerably from cargo to cargo. At CHP, delays in clearance of cargo occur due to wagon shortages and paucity of storage space. Demurrage charges might be raised to punitive levels to act as a deterrent to non-clearances, while raising storage charges would augment port revenues.

Port and dock services are next in order of importance to port operations. Deficits on these at CHP are considerably higher than at other major ports. Port and dock facilities are of permanent nature and idle-facility costs are high when shortfalls in traffic occur. Unlike advanced countries where most port and dock services are privatised, ports in developing countries are observed to incur considerable deficits on the provision of port and dock facilities. Inadequacies in facilities are disincentives to portusers, resulting in reduction in cargo handling and storage revenues. To attract more traffic and to increase revenue, adequate facilities on port and dock must be provided either privately or by the port authority.

Port railways play a vital role in port development, but have generally incurred losses. The remedy may be to transfer CHP port-railways to the Indian Railways, to reduce staffing and uneconomical sidings, and to raise terminal charges and freight rates. CHP is better placed however in terms of the leasing-out of port-owned estates, because of revenues generated from the metropolitan properties of CDS.

The bulk of non-operating income and expenditure at ports derives from income on investments, and from interest payments against port loans. Deficits have occurred because finance and miscellaneous expenditure has risen pronouncedly with application of funds to new Plan projects and

towards meeting debt charges on other Port project-loans. Although non-operating revenues have risen, they show more instability. Bombay Port is best-placed among major ports in this regard. CHP had continuous deficits because of heavy interest payable on Government loans.

Following analysis of operating and non-operating cost-revenue relationships, assessment needs now to be made of operational performance and profitability, and physical performance variables at CHP, in comparison to other major ports. This is accomplished in the next chapter.

References:

1. Report of the Commission on Major Ports; 1970; p.91

2. Ibid., pp.93-94

3. Ibid., pp.93

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

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

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)

(Rs.crores)

Year	*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. Upti1 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.[1]

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 uptil 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 PortsTotal*	*%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 Statisitcs 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)

(days)

Types of Vessels	*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

(days)

Year	*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
Total	**0.75**	**1.99**	**2.32**	**2.04**	**1.78**	**1.92**

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.[2] 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)

(days)

Types of vessels	*Year*	*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 SelectedMajorPorts (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.[3]

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)

(tonnes)

Types of Vessels	*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 consisent 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

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CHAPTER-8

THE CONCLUSIONS FROM THE STUDY

Sound financial management in ports increases trade and commodity export volumes and opens up future development opportunities for the hinterland. Major ports in the country have today moved far beyond the situation they were in at Independence, when intensive overuse, lack of proper maintenance and inadequacy of port-assets left them in a poor and dilapidated state. Draft limitations precluded the handling of modern bulk carriers and tankers, the size of which had grown beyond the drafts available at ports. Loading and unloading operations were still manual in nature, as the ports were not equipped with mechanical facilities, causing unnecessary delays to shipping and mounting congestion at ports. Port development and diversification has received continuous attention in intersectoral investment allocations under the Plans to correct such imbalances.

In such a context, the exploration made in the study of financial management at Calcutta-Haldia Port over the previous chapters holds forth new insights on the future directions of port development and shipping in India. These are summarily presented below.

8.1.1 The Objects of Financial Management

The object of enterprise is to secure the greatest possible returns to capital. The three major decisions that constitute this involve selection of plant and assets in the investment portfolio, selection of capital-sources which finance investment, and selection of the purposes to which the profits of enterprise are to be selectively allocated. Financial Management directly concerns all activities reflecting decisions on asset acquisition or disposal, and thus governs both acquisitions and allocations of funds. Financial management principles are applicable to port-undertakings, which provide saleable services requiring vast prior investment. Effective management of port finances ensures the provision of quality port services which are operational at all times.

India is a maritime country and considers the sea vital to its economic and strategic interests. The present study has focused on the ports of India, of which 11 ports currently qualify as major ports, 23 as intermediate ports and 141 as minor ports. A major port is one declared as such under law or Act of Parliament. The Port of Calcutta was established during the rule of the East India Company and became a Major Port together with Bombay and Madras in 1921. Visakhapatnam and Cochin were also declared Major Ports during British rule. Over the planning period after Independence, six other major ports have been established at Kandla, Mormugao, Paradip, Mangalore, and Tuticorin and at Nhava-Sheva (now known as Jawaharlal Nehru Port). HDC was commissioned in 1977 as an integral part of Calcutta Port administered under a common Port Trust with the Government-appointed trustees representing various interests. The Port of Calcutta has 14 departments, based primarily with CDS. The HDC has 8 divisions. Port development in India has concentrated on rehabilitation and

modernisation of existing facilities at major ports, on augmentation of their berthing capacities, and on improvement in auxiliary facilities and technology to allow for optimal capacity utilization.

Financial management is the broad area of focus for the present study. Because of the dominance of the public sector within large-scale enterprise in the Indian mixed economy, financial management literature has focused on aspects of corporate financial behaviour, capital structure planning, capital budgeting, management of working capital, and the financial management of public sector undertakings (PSUs). No studies exclusively address financial management at Calcutta Port, and the few Committee Reports which discuss major port finances are neither exhaustive nor purposeful in their comment. Existing literature on CHP is also not adequate to a study of financial management of the port, although a number of single studies have focused on its operational features. A third area in the available literature spans aspects of port planning and management, and the role played by ports in the economic development of port-hinterlands and of the country. Reviewing the studies, it becomes apparent that poor port-performance at Calcutta is ascribed variously to physical, institutional, technological and managerial problems, or to economic and policy considerations. No study explores financial management problems as a factor in this.

This unresearched problem is covered in the present study. The CPT administers the contiguous, mutually complementary subsystems of CDS and HDC, and these are therefore considered within a unified study-frame, rather than individually.

8.1.2 Financial Management for Port-Undertakings

Effective financial management is imperative for successful enterprise. Through relatively cheaper services, a well-managed port can increase export and import flows by making trade with external markets more competitive.

The finance function is a decision-making process that follows analytic comparison of the alternative uses and sources of funds. The executive finance function applies administrative skills to planning and execution, and therefore to formulation of asset-management policies, estimation and control of cash requirements and flows, allocation of net profits, assessment of the need and sources for external finance, and the monitoring of financial performance. The incidental finance function brings financial decisions at the executive level into effect, therefore involving supervision over of cash receipts and payments, custody and security over cash balances, securities, etc. and the maintenance of records and periodic reporting.

Major ports cannot be efficiently run without creating surplus balances to cover costs of port development and asset-replacement, and unforeseen contingencies. Port commissions therefore recommended a minimum rate of return on capital employed at all major ports, which would to give them a financial buffer for asset creation. However, implementation of this recommendation at Indian major ports leaves something to be desired.

The exercise of financial control by executive management depends on periodic internal or external accounting and on audit reports from financial management which relate to physical or financial performance, or to variations between actual and standard costs. Financial management at CHP is under immediate charge of the Financial Adviser & Chief Accounts Officer (FACAO), under the overall control of CPT. Financial operations at CDS and HDC are attended to by several

sectional divisions of the financial authority. All major ports maintain systematic accounts, in which four principal port activities, namely, cargo handling and storage, port and dock facilities, port-railway workings and estate rentals contribute both revenue and expenditure items. A fifth activity, namely, management and general administration occurs only on the expenditure side. Finance and miscellaneous incomes and expenditures are carried as separate accounting heads.

Major ports submit annual budget estimates to the Union Government for sanction. Proper budgetary control which compares current actuals on performance with budget estimates and initiates corrective action when deemed necessary can contribute positively to the efficiency of major port operations. Traffic forecasts made by the Research and Planning Department assist the formulation of a revenue budget referring to operating and non-operating expenditures that recur annually. Past actuals guide the formulation of an expenditure budget. Planning the acquisition and allocation of long-term investment funds is called capital-budgeting, which at major ports oversees both development works and maintenance. The capital budget is framed within port development programmes under the Five-Year Plan. Funds-flow statements indicate fund sources and commitments on a chronological basis and are most useful in financial analysis. Accounting ratios computed from them serve as sharper financial yardsticks. Trend percentages which indicate change over time in financial and operating data also assist the financial analyst. Cost-accounting based on evaluation of marginal costs and/or standard cost forms a supplement to other financial assessment methods of budgetary control. Operations Research is used to assess implications of alternative management decisions. Efficiency or performance audits appraise operational performance in terms of efficiency of operation.

8.1.3 The Calcutta-Haldia Port

CHP is one of the four largest operational major ports in India, but is the only riverine port among them. Its hinterland of about 80,000 sq.km. is rich in resources and is extensively served by communications. The port was founded by Job Charnock as British trading headquarters on the Hooghly river in 1690, as it offered the best upriver anchorage to oceangoing vessels. Under CHP, the CDS comprises the two dock-systems of Kidderpore (KPD) and NSD, and an oil-jetty. HDC is a much later development commissioned in 1977 to overcome problems of navigational access and congestion of facilities at CDS. Average berth occupancy for CHP is lowest at KPD which is the oldest facility, and considerably higher at NSD and at HDC. The CPT is one of the largest estate-owning major ports in India, with its holdings in the city of Calcutta making it the single largest landowner in the metropolis. These properties offer substantial rental income to the CPT.

Calcutta-Haldia Port has comprehensive facilities such as modern computerised container terminals, mechanised dry, liquid and grain bulk-handling, and heavy-lift and break-bulk general cargo handling, and has a large storage infrastructure in its two dock systems at Calcutta and Haldia. Adequate dry-docking facilities are also provided. Dredging and pilotage requirements for maintenance of the long navigational channel are met partially by the CPT's own river-craft. CPT-owned port-railways at Calcutta and Haldia serve import and export cargo and uplink the industrial and commercial sidings of the oil refinery and fertiliser plant at Haldia, and the FCI foodgrain storages and the SAIL steel stock-yards at Calcutta. CHP is also linked to its vast hinterlands in the states of West Bengal, Bihar, Orissa, Assam, Uttar Pradesh, Madhya Pradesh and the neighbouring countries of Nepal and Bhutan, through the chain of National Highways and the Eastern and South-Eastern Railways, as well as through air links and inland waterways. CHP is thus rated the largest terminal port in South Asia.

The Port has however been perennially plagued with problems of upriver navigation past the changing bars and bends in the Hooghly estuary, caused by heavy siltation which subjects the navigational channel to sudden fluctuations in draft and alignment. Of the 17 river-bars in the Hooghly between Calcutta and the Sandheads, 12 are on the upper stretch between Calcutta and Diamond Harbour, and 5 between Haldia and the sea. Constant dredging estimated at 22mcm annually is necessary involving high capital and recurring costs, which are an additional burden on CHP, unlike at other Indian major ports. Although the Union Government subsidises 90 percent of the recurring costs, the most-repeated contention is that as a national waterway, the river is used not only by the Port but by others as well, and so all dredging costs ought to be subsidised.

HDC was commissioned to ease the navigational and access problems of Calcutta Port and lies 104 km. downriver from the city. Maximum loaded drafts of ships are higher at 13.7m. for HDC, against 7.9m. for CDS, and vessels upto a length of 201.2m. can berth there, compared to 152.4m. at CDS. Berth occupancy is consequently higher, with highest rates being achieved for coking coal and general cargo (92 percent). Although HDC is also the single-largest landowning authority in the Haldia township, the share of income from estates accruing to it is modest, because low rental values have to be maintained to attract port-based users to Haldia.

CHP is an import-based port. POL comprises 68 percent of all imports from the port, followed by coking coal at 23 percent. Thermal coal constitutes 75 percent of the port's exports, followed by varying quantities of iron and steel, tea, jute products, etc. Traffic at CHP has doubled from 9.51 MT in 1980-81 to18.34 MT by 1992-93, primarily because of increased activity at HDC, but also because of increase in POL and coking coal imports and the relocation of exports of thermal coal to Tamilnadu from Paradip port to Haldia. The major share in CHP cargo volume derives from operations at HDC, with CDS volume either declining or improving only marginally.

Principal commodities passing through CHP are POL, coking coal, fertiliser, fertiliser raw materials, and foodgrains. POL registered 62 percent of total imports and 16 percent of total exports at CHP in 1992-93, and accounted for 49 percent of total commodity traffic. For comparison, POL traffic at Bombay, Madras and Visakhapatnam registered respectively at 69 percent, 39 percent, and 33 percent of total traffic handled.

Over its long history, CHP's financial results are a mixture of the good, bad and indifferent. High costs of establishment, channel dredging and maintenance, replacement and maintenance expenditure on the large fleet of CPT vessels, modernisation costs, and heavy debt charges impose a financial burden that is compensated by a steep port-tariff. CHP has thus, from inception, been a high-cost port. Sharp increases in costs and deficits in the 60s and early 70s led port management to concentrate on revenue maximisation in subsequent decades. The more favourable financial results since are also reflective of sharply increasing port-tariffs, as of better operational performance in recent years. Improvements in the financial position have also followed reduction in manpower and increased income from traffic and estates.

With HDC having consistently contributed the maximal share of total CPT revenues, the belief has arisen that, over time to come, Haldia will gradually supplant Calcutta as a port. Manpower under CPT has traditionally been high, although the Haldia dock-operations are highly-mechanised. Total manpower has nevertheless been declining at CDS because of natural attrition caused by superannuation, and successful implementation of the Voluntary Retirement Scheme (VRS), although manpower at HDC has been increasing because of expansion of the port. The financial position of the

CPT can however be further strengthened by increasing incomes from storage charges and estates, and by economy measures in establishment, reduction of the interest burden and better management of port railways.

8.1.4 The Analysis of Capital Structures

Funds - as net current assets - are technically working-capital funds distinct from actual cash. Analysis of changes in the flow of funds over time is conducted on the Funds Flow statement, which complements financial analyses by revealing changes in assets, liabilities and the sources and applications of funds that occur over a selected period. Port borrowings - comprising loans from Government, intercorporate loans, and commercial borrowings - have been the most important fund-sources for the Indian major ports. Port development work is partially financed from Government plan-grants. A considerably smaller share is contributed by other capital receipts such as sinking funds; net earnings of the reserve fund; repayment, replacement & maintenance funds, etc. Working capital balances are generally negative, and thus represent a fund-application rather than a fund-source.

Most funds obtained externally by the CHP are used to finance capital investment, including Plan investment, miscellaneous debt charges on loan-financed works, and other non-Plan investment. Besides its opening and closing balances, the major fund-sources for CHP are its other capital receipts and loans, while the major fund-applications are capital investments on major capital-works such as dredging, dockyard structures and vessels. Capital investment at CHP has risen considerably in both absolute and percentage terms with marked acceleration towards the end of the study, but since Government loans and grants have tapered over this period, much of the funds required are now drawn from internal and other sources. Delays in execution of construction projects add heavily to costs, and time-budgeting needs to be made an integral component of financial management at the Indian major ports.

The capital structure of Indian major ports therefore comprises internal sources, Government loans, external loans, debenture loans, intercorporate loans, and Government plan-grants, with internal sources acquiring slow dominance among these. Accumulated debt-servicing charges on Government loans which have not yet been repaid also enter the capital structure as an internal capital source. Surveying time-trends, the overall evolution of CHP's capital structure reflects declining reliance on external borrowings and greater reliance on self-generated funding. Asset-utilisation has been particularly better in the later years of the study. The sharp increase in internal sources has primarily been from increased handling operations at the HDC. At CDS, such escalation is rooted more in non-operating activities, eg. estate rentals.

External capital has generally dominated internally-owned capital at HDC which has taken advantage of buoyant traffic volumes and also of cheaper development finance because of the larger quantum of Government plan-assistance. But at CDS the ratio of external to internal capital is lower than even IDBI/IFCI norms. Port development at HDC has thus diverted a large part of development capital away from CDS.

8.1.5 Cost Trends

Although port profits could theoretically be increased by either increasing revenues or by decreasing costs, there are practical limitations to the increase of tariffs. Revenues of ports may be stepped up either by escalating tariffs and docking charges, or by attracting more traffic and raising port turnover. The stress, in the present situation, has to be placed on cost reduction. For increase in revenues, the best way open to CHP would be through reduction rather than escalation of tariffs, in order to bid away extra traffic from neighbouring ports. Indiscriminate cost reduction can however also 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. Differential patterns observed in the structure of major port capital are attributable to differences between major ports in indebtedness. With Bombay, Madras and Visakhapatnam Ports having higher interest repayments against capital projects, non-operating costs contribute a higher component to their capital structure. The CHP capital structure is less weighted by debt charges.

Operating cost patterns at CHP are more or less 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, and are increasing in magnitude. However such mounting port costs are also seen all over the world. CHP operations appear as more labour-intensive, with salaries and wages comprising more than half of operating costs. The overall high-cost nature of the port is thus related to both workforce and non-workforce related operations.

With reference to non-operating income, peaking of interest receipts reflects 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. Traffic increase has been consistent. CHP also has the highest operating revenue yield per tonne of traffic, because of the considerably higher proportion of general cargo handled which yields higher revenue than bulk cargo.

8.1.6 Cost-Revenue Relationships

Although cargo handling and storage are the most paying port-service at all major ports, their magnitude at CHP is considerably lower than at other ports. Wagon shortages and paucity of storage space delay the clearance of cargo. The raising of demurrage charges to punitive levels to act as a deterrent to non-clearances, while upward revision in storage charges would augment port revenues.

Next in order of importance to port operations are port and dock services. CHP deficits on these are considerably higher than at other major ports, particularly when traffic shortfalls occur. Ports in developing countries also incur considerable deficits from having to provide all port and dock facilities at high capital and operating costs, without any private sector involvement. Port railways

too generally incur losses, which could be remedied by transferring port-railways to Indian Railway ownership, or by raising terminal charges and freight rates and reducing staffing and uneconomical sidings. In terms of the leasing-out of port-owned estates, CHP is better placed however, because of revenues generated by its metropolitan properties.

Non-operating income and expenditure of ports mainly derives from income on investments and interest payments against port loans. With application of funds to new Plan projects and towards meeting debt charges on other Port project-loans, deficits have occurred, since the rise in non-operating revenues has been slower. CHP particularly shows continuous deficits because of high debt charges on Government loans taken for port development.

8.1.7 Ratio Analysis

Financial analysis has been supplemented in the present study by applying standard financial ratios to the special context provided by port data. Gross surpluses of all major ports have risen considerably over the last eighteen years, and are a reflection of improvement in port management in India. However, at CHP, this increase in net port surplus has largely been drawn from HDC to the detriment of CDS. CHP has been the most consistent among major ports in generating operating surplus, but runs large non-operating deficits because of heavy debt-charges to loan-capital and towards meeting employee-benefits.

Despite occasional tariff revisions, the return on investment at CHP has been lower than recommended by the Major Ports Commission, and net surplus margins are low. The situation prevails because of non-realisation of targeted traffic, and procedural delays in revision of tariffs. Timely revision of charges and diversification of cargo operations in favour of high-valued general cargo, accompanied by cost-economies in port-stores and wages would all improve finances and raise port incomes,

A port's operational efficiency is also reflected in physical performances. About 14 percent of shipping operations at Indian major ports and the maximal share of tanker traffic is accounted for by CHP. The CDS share has however declined steadily, even as that of HDC has been increasing. Pre-berthing detention at CDS has generally been lower than at other major ports, and creditable progress has also been made in this regard at HDC too, where detention time has declined even as the number of vessels calling there has risen. Recent commodity-wise pre-berthing detention figures also show relatively better placement for CHP compared to other major ports.

Average turn-round time at HDC has declined as the port has developed but is uncommonly high at CDS, because of its general cargo operations. Labour unrest has at least partially accounted for unsatisfactory idle time rates at HDC, which however has realised the highest ratios for port output per ship berth-day for all categories of traffic, ultimately reflecting on the profitability of its operations.

8.2 Findings from the Study

After Calcutta Port came into existence in 1870-71, port traffic began at 3.27MT. The 10MT and 11MT marks were crossed in 1912-13 and 1928-29, respectively. At Independence, in 1947-48, cargo volume was 7.06MT or 38 percent of total port traffic in the country. For three decades thereafter there was almost no improvement in total cargo volume handled at 9.44 MT in 1951-52 and 9.51 MT in 1980-81. After this however, total volume of cargo handled began to increase, and CHP achieved a doubling in traffic to 18.34 MT by 1992-93, primarily because of the commissioning of HDC. CDS handled 43 percent of CHP traffic in 1980-81, and only 28 percent in 1992-93. The major share of traffic was being handled at HDC. However, over the long time-horizon, the volume of cargo traffic at Calcutta Port increased from 10.9 MT in 1928-29 to 18.3 MT in 1992-93, thus rising by only 7.4 MT (68%) over the long period of 64 years. Cargo volumes handled at other major ports rose by 141.2 MT (641.8%) over an identical period, indicating their burgeoning operations and importance. Traffic growth at Bombay, Madras and Visakhapatnam since Independence have been 350 percent, 1122 percent, and 1788 percent, respectively, and their individual traffic volumes all exceed CHP's.

Certain technological, physical, institutional and managerial limitations have been found to shape the decline in importance of of Calcutta port and underutilisation of its capacity, even as Haldia has grown in importance. Demand factors in the hinterland as well as policy-variables such as Government transport policy have their effect as well. However, some observers have held the view that the decline of the port is not explainable entirely by technological factors, and economic reasons predominate, along with problems of dredging and maintaining the downriver shipping channel.

The hinterland has undergone vast transformation since Calcutta Port was founded. From the export of pre-industrial commodities and handicrafts during the port's early days, the port became import-based, unloading manufactured goods from Europe for commercial distribution, and exporting raw material. It was only with the advent of cash crops and plantation crops like jute and tea that the port turned to commodity exports again. Gradual industrialisation saw the coming into being of exports in jute textiles, accompanied by coal, manganese and iron ore, and later, finished steel, but the import-dominance has remained. Hinterland-development follows the development of a port provided the port can be efficiently operated. But an efficient port must have dependable finances in the form of reserve funds for port development and maintenance. The return earned by a port must be adequate to the payment of debt charges and to meeting replacement needs of assets and equipment. As an inefficient, high-cost port, CHP may render it impossible for its hinterland to capture or maintain markets abroad for exportable items of cargo, and may also make the cargo imports required by the hinterland extremely costly and uneconomic.

8.2.1 Capital Needs & Planning

Dependence on debt-capital is a major characteristic of Indian corporates, and this is particularly true of Indian ports as public undertakings. However the nature of emphases on financial management in the PSUs is contextually quite inappropriate for a study of Indian major ports. The motive of the PSU is to earn a profit, while the principal motive of a major port is to render services to port-users, for economic development of the hinterland as well as the country. Unlike studies which stress improvement of financial management of PSUs with the object of making them profit-oriented,

the present study has sought to analyse weaknesses in the financial management of Indian major ports and to suggest remedies whereby such problems are overcome and the ports can earn the prescribed minimum rate of return.

Financial planning involves determination of requirements and finance for capital-structure and working-capital needs, capital-expenditure planning, and of credit, proft and dividend policy. Capital charges at a port include expenditures on port-properties, port-equipment and port-installations, as also the capital costs of dredging. Although ports were enjoined to operate so as to meet all financial obligations on fixed capital, working capital and debt charges, the obligation is not clearly spelt out in the Port Trust Acts, beyond committing the ports to make an annual provision for fulfilment of all liabilities either by readjustment of expenditure or increase of tariffs. The absence of a proviso prescribing a standard rate of return to be earned in the governing Acts encourages a balancing of budgets, without realistic provision for future liabilities. As pointed out in the Rochdale report, operation of other modes of transport services as state or municipal undertakings accentuate this tendency. In view of the fact that replacement costs of port assets are greatly in excess of their original costs because of inflation and technological obsolescence, mere depreciation provisions are often inadequate to meet actual costs at the time of replacement. The Major Ports Commission's recommendation of a minimum rate of return to be earned by ports is not wholly complied with because it lacks the force of law.

8.2.2 Sources of Capital

Loans from Government were a major fund source at the beginning of the study, registering at 22.38 percent of total fund-sources and rising to 32.45 percent in the mid-period. Thereafter a sharp decline set in and in the last year of study, they registered at only 7.69 percent of total sources. In 1980-81, loans from Government amounted to 49.02 percent of the total capital base, followed in importance by internal sources at 26.38 percent. Accrued debt charges liable to be repaid against previous loans constituted 16.93 percent, and debenture loans and external loans were minimally present at 6.20 percent and 1.47 percent, respectively. At the end of the period, percentages of internal sources and debt-servicing charges had risen, while those of loans from Government and debenture loans had declined.

Government grants made to port schemes were a minor fund-source mainly for river training works. Other capital receipts which contributed 42.10 percent of fund-sources in the mid-period, but fell thereafter to only 19.79 percent in 1992-93.

The major source of funds were opening balances of cash and investment with their contribution being more than 40 percent in peak years. However, their use has been as normal working capital, with the investment component being negligible.Fund deficits in particular years swallowed a portion of available funds, at times as high as 24 percent of total sources. Funds committed for repayment of loans ranged between a minimum 3.47 percent and a maximum 9.25 percent. Closing balances of cash and funds generally accounted for nearly half of the total fund applications, except in the initial period of study.

It is clear that out of total loans of Rs.273.19 crores including loans from Government, intercorporate loans and commercial borrowings, repayments of Rs. 71.27 crores only have been made. Funds sourced from Government grants and other capital receipts were Rs.372.99 crores, but

capital investment to the tune of Rs.470.44 crores has been made. The difference on this account of Rs.97.45 crores, or around 20 percent of total capital investment has been met largely from loan sources. A cumulated net deficit remains unresolved after taking surpluses into account, and is of the order of Rs.4.67 crores.

Surveying the time-trends in capital finance, it may be remarked that the overall evolution of capital structure reflects declining reliance placed on external borrowings and greater reliance on self-generated funding. This is borne out by comparing indices. Internal sources over the eleven years have risen by 274 index points, against the overall index increase of 108 points, indicating rapid acceleration in the above process. Government loan funding has, in comparison, increased at a trickle by only 20 points, while the quantum of debenture loans has been halved. Another manifestation of the financial crisis imposed by the inability of Calcutta Port to meet debt-servicing obligations is shown by the trend in accumulated debt charges; because of the large amount of previous borrowings, these have increased by 153 index points over eleven years. The increasing pressure on the Port to meet capital requirements from its own sources is therefore understandable.

8.2.3 Capital Assets & Utilisation

The nature of assets owned by Calcutta Port includes landed properties; docks, quays, jetties, landing stages, etc.; buildings, sheds and other structures; bridges, roads, sewers and water supply; railways and rolling stock; cranes; heavy and light plant and machinery; heavy and light floating craft; buoys and other marine equipment; and dredging capital including river-training works. The average age of CPT's vessel fleet is 22 years, and over the next fifteen years at least 37 vessels and river-craft would have to be replaced. Of the above, capital investments made in order of importance in 1990-91 were nearly 26 percent on capital dredging including river-training works; nearly 17 percent on docks, quays, etc.; and nearly 13 percent on heavy floating craft. Dependence on the DCI for dredging work has gradually increased, as the CPT's own dredging capacity and dredging fleet has remained static, in the absence of capital structure additions. The effect has been to increase both total costs and unit cost per cum. of dredging.

The analysis would indicate that asset-utilisation has been better in the later years of the study, especially after the Port came under pressure to finance capital investments from internally-generated resources, although the rate of asset-acquisition and replacement is likely to have slowed down, accounting for the slow increase in the depreciation component. Although the buoyant position in reserves and surpluses is partly the result of vastly improved cargo handling at the Port, particularly at HDC, a larger part is contributed by non-operational activities.

It would be pertinent at this stage to study the composition of port reserves and surpluses. The reserve & surplus component of internal sources may be classified into capital revenue, revenue reserve, reserve provision for liabilities, and the residual, i.e. surplus. Capital reserves are created from the non-operational activities of an enterprise and are therefore an unexpected reserve, while revenue reserves are created from the operational-surplus balances and are therefore an anticipated reserve.

The analysis points to the slowly increasing share and the sharply accelerating magnitude of the capital reserve component in revenues and surpluses of the Port. While the share of this rose from 63.41 percent in 1982-83 to 78.32 percent in 1990-91, the absolute increase was by Rs.229.89

crores. On the other hand, the share of revenue reserve had increased from 36.59 percent to 21.68 percent during the same period, with a smaller absolute increase of Rs.47.98 crores. It would therefore appear that the escalation in reserves & surpluses at Calcutta Port was sourced primarily from non-operational activities, since the growth in revenue reserves was more moderate and showed up a decline in relative terms.

Comparison between ratios of loaned capital to owned capital at CDS and HDC, reveals which port complex has a stronger capital structure. The ratio of loaned capital to owned capital at CDS was 1.1 or below, over the entire period. The slack on this account was made up at HDC, where loaned capital considerably exceeded owned capital over the identical period. At the commencement, in 1980-81, loaned capital was nearly ten times more than owned capital at Haldia. However, the ratio at HDC had been falling rapidly and was nearly in line with the norm by the end of the period.

The early development of HDC was fully dependent on external sources of capital. CDS was not dependent on external sources to the same extent as HDC which was a developing port, and which moreover with time took over a number of categories of port operations from CDS. 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.

8.2.4 Operating Costs

The sharpest increase in operating costs in both absolute and proportionate terms has been in costs of port and dock facilities. 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 major ports. The share of costs on port railways in overall operating costs has declined, since the pace of their absolute increase was slower than that of overall operating costs. Costs on rentable land and buildings increased much more, but have a modest share in overall operating costs at CHP. Management and general administration costs at Calcutta Port have escalated sharply.

i. Traffic and Operating Costs : When cost increases are more than would be warranted by increased traffic, the operating surplus may decline. Operating costs at CHP have escalated three-fold against two-fold increase in traffic. Even when traffic stayed almost equal between consecutive years, operating costs appreciated considerably. Average operating costs per tonne of traffic handled are much higher for CHP than at other major ports.

ii. Operating Cost by Type: Salaries and wages are seen to have constituted the major component in operating costs. The share of general expenses in operating costs at CHP has increased considerably, from around a quarter of total operating costs to nearly half. Although the port has made an effort to trim its labour-force, a similar effort to control general expenses is not apparent. This is the major operational area where cost-economy needs to be achieved.

iii. Non-operating Cost: Major ports revenues depend on rate structure of the port concerned, and quantum and composition of the traffic handled by it. Port tariffs can also be classified into charges levied on vessels, and charges levied on cargo.

iv. Operating Revenue: 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.

v. Traffic and Operating Revenue : At CHP, operating income has risen much more sharply than physical volume of traffic. In fact, even when traffic registered a fall in certain years, this was not associated with any consequent reduction in operating revenue. 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. In index-terms, against tonnage-increase of 93 points, operating income at CHP has increased by 218 points, with as much as 177 point growth is concentrated in an eight-year period, when the corresponding growth in tonnages is by only 65 points. This is borne out by the CHP's having the highest operating revenue yield per tonne of traffic among all major ports. CHP and Bombay port have a considerably higher proportion general cargo in the cargo structure, and are able to generate higher operating revenue per tonne of traffic.

8.2.5 Financial Performance

Major findings on financial performance from the ratio analysis showed the following:

i. *Operating ratios* declined at most major ports, but the operating ratio for CHP has generally been higher than at the other ports. The decline followed revision of port charges. Timely enhancements of tariffs, accompanied by diversification of cargo in favour of general cargo to raise port incomes, and cost-economies would help major ports to improve their operating ratio.

ii. *Return on capital employed* at CHP was very low, till recently. Since the return on capital employed depends on net surplus earned at a port, such low returns are attributable to continuous growth in capital employed, and/or to substantial decline in net surplus. The gap between recommended and realised rates of return has been very wide, because of non-realisation of expected traffic volume and much lower traffic capacity utilisation than at other ports.

iii. 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. The net surplus margin at CHP has been much lower than at other ports, and despite mid-period improvement, has begun to fall again. There is thus an urgent need for measures to increase operating income and decrease operating costs in order to improve financial performance.

iv. *Turnover on capital employed* at CHP has grown slowly, because of slow increase in total port income. The efficiency of fixed asset creation at a port should be assessed in relation to the resultant operating income. *Turnover of fixed assets* at CHP shows increasing trends, corresponding to growth in operating income.

8.2.6 Physical Performance

i. In terms of the number of *vessels sailing*, Haldia is specialised towards receiving tankers and dry-bulk vessels and CDS towards break-bulk vessels and tankers, with port specialisations having evolved according to the needs of local industry and the port hinterlands. Although CDS still receives a larger number of vessels, its share in the number of ships calling at CHP has declined steadily, while that at HDC has been rising.

ii. CDS however offers lowest *pre-berthing detention* over all major ports, particularly for dry-bulk carriers. Detention periods at HDC are also low generally, especially for container vessels, and have declined considerably. Detention at other ports tends to be much higher.

iii. *Turn-round Times*

Lower average turn-round times indicate greater operational efficiency for a port, offering an incentive for ships to call there and leading to favourable traffic trends. Ports with higher turn-round times also contribute to losses in the form of demurrage and detention charges. Turn-round time depends on the nature of cargo and packaging and parcel-size, methods of cargo handling and general waiting time of a vessel at anchorage.Because of navigational difficulties, CDS has invariably had a higher average turn-round time than other ports. The inward journey from the Sandheads to CDS takes about 30 hours, including pre-berthing detention while waiting for the tide. The outward journey after loading/unloading takes about 40 hours. However, HDC has the lowest turn-round time averaged for all types of ships. Highest turn-round time at HDC has been for break-bulk carriers. For CDS, the highest overall turn-round is for dry-bulk vessels and lowest turn-round for liquid-bulk vessels.

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 Modern mechanised cargo-handling equipment lowers berthing times, and consequently turn-round time. 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. Adoption of the following measures might reduce turn-round times at CHP:

a) speedy removal of cargo from wharves;
b) nurturing of a disciplined and trained labour force;
c) modernisation of methods of cargo handling; and
d) planning of port facilities commensurate with latest traffic trends.

v. *Rates of Idle-time to Time at Working Berth*

Ships of all types lost more time at CDS compared to other major ports in India, particularly for dry-bulk and tanker vessels. For container vessels, much less time is wasted. Idle time rates at HDC were also not satisfactory. The important reason behind high rates of idle time at CHP has been labour unrest leading to substantial loss of working hours.

8.3 Financial Management for the Future

Approximately 626.28 hectares (46.9 percent of the CPT's metropolitan estates) are leased out for various industrial and commercial purposes, leaving 720.75 hectares are in the Port Trust's

direct use. More than half of lands leased-out are under long-term lease. Land-consultancy reports to the CPT in 1983 observed that permissible floor area ratio in CPT properties is generally much higher than is under present use, representing uneconomic utilisation. A 15-20 year time-frame was recommended for phasing out CPT lands to proper economic and social use. The credit for net surpluses at CDS has been the continuously rising estate incomes and surpluses.

It may be said that self-reliance at a major port would mean that capital structure at the port should reveal an increasing component of internal sources. Ports in India should in any case assume more responsibility in maintaining their viability and profitability by reinvesting a part of their earnings in port development. This would free Government resources, which could then finance other aspects of national development. Instead of outside investments by each port, it would therefore be wiser if a common port development fund were constituted from excess funds and surpluses generated at major ports, which could then be committed to development of such major ports as require these. Investing ports would earn minimum returns expectable from outside investments, which would derive from interest charges paid by borrowing ports.

8.4 The Privatisation Issue

A wide variety of practices prevail with regard to ownership and management of ports throughout the world. In countries like Syria, Kuwait and Iran, ports are owned and operated by the State. Ports in the United States on the other hand may be owned and operated by the Federal and State Governments, by local port authorities and municipalities, and by rail and road corporations and private companies. Ports in the United Kingdom are owned by public authorities, municipalities or by private companies. In India, as indicated chapter1, major ports are administered under the Acts of Parliament and the Port Trusts are conceived primarily as autonomous bodies.

World Bank studies indicates that privately-owned port operations are not necessarily more efficient than public-sector ones. The world's most efficient port in terms of its productivity, profitability and growth is Singapore, which is under public-ownership. Privatisation of ports should be encouraged in two possible situations only, i.e. when

i) huge investments are required on updating port facilities and technology, through sophisticated equipment and infrastructure, such as container terminals, mechanised handling and deep-dredged berths, basins and approach channels, all of which involve high capital cost, which a developing port cannot raise on its own.

ii) management is poor and unprofessional under public ownership, and management expertise exists in the private sector.

Privatisation can take the three forms of private ownership over the entire port, private ownership of the development of a berth in a port on a 'build, operate & transfer basis'; and private ownership over the operations of a berth, which has been provided by the port. The first and second modes of private ownership commits the private entrepreneurs to massive investments with long gestation periods and uncertain returns, which they may be reluctant to make. The mode most likely to succeed is therefore the third, and is the mode of privatisation followed at Hongkong, Rotterdam, and Antwerp are the instances of third type of privatisation where container handling and equipment are private operations.

Models of private sector involvement in port operations from West Europe and USA reveal that port infrastructure has been provided by Government and local bodies at their own cost, while port operations are managed by private lessees of the ports. Infrastructural investments are made as needed by the economy and society and not for the ports alone. Hence rental returns on the capital investment involved is not charged on the lessees. Leases are on short-term basis so that competition is maintained, and the landlord port is assured of the best returns.

In India, privatisation may be encouraged in the development of intermediate and minor ports. The second possible area for privatisation is onshore and on-ship cargo handling through stevedores. The third possible area is long-term and short-term leasing out of berths, container terminals and ship repair facilities. But the best process is that infrastructure should lie in the hands of port authority and operations in the hands of private agencies.

Thinking on privatisation at Indian ports is not new. The Major Port Trusts Act, 1963, provides in Section 42(1) that a major port can privatise cargo handling operations with the approval of the Central Government. The Major Ports Reforms Committee (1986) also examined the issue of privatisation in ports. The Seventh Five-Year Plan document comments on the need to define conditions under which private investment is permissible at Indian ports, in order to incorporate the latest technology under overall administrative control of the port authority. One of the enunciated thrust areas in the Eighth Plan (1992-97) has been the encouragement of private sector participation in selected port activities, and Government has in recent policy statements, welcomed participation of private capital even in the core sectors of the economy that previously reserved for the public sector.

As a conclusion, the privatisation exercises already made or to be made in Indian port operations may be listed. Long leases on berths at HDC have been given to SAIL and TISCO. A newly-constructed berth of the HDC and a KPD berth under CDS have been made over under lease to private parties, the same also being done for the dry-dock facilities at CDS and Mormugao Port. Further privatisation efforts on the agenda of major ports include the handing over of dry-dock facilities at Cochin, Tuticorin, JNPT and Bombay; multipurpose cargo berths at Tuticorin, JNPT and Kandla; container terminals at Visakhapatnam, JNPT, Mormugao, New Mangalore and Kandla and the container transhipment port at Vallarpadam near Cochin; the coal jetties at Paradip, Tuticorin and Ennore (which is the satellite port to Madras); mechanised handling facilities at Visakhapatnam, JNPT, HDC and Kandla, and oil and chemical handling at Kandla, New Mangalore and Cochin; and warehousing and storage facilities at JNPT, Bombay, CDS and Kandla.

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