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**Strategic Planning For
The Development of
SriLankan Liner Industry**

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D.M.Ratnayake
Sri Lanka

A paper submitted to the Faculty of the World Maritime University in partial satisfaction of the requirements for the award of a

MASTER OF SCIENCE DEGREE

in

GENERAL MARITIME ADMINISTRATION

The contents of this paper reflect my own personal views and are not necessarily endorsed by the University.

Signature.....*D.M. Ratnayake*.....

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ABSTRACT

This study presents a three step process

- (1) Analysis of environment: provides an understanding of the industry, the Ceylon Shipping Corporation, the market, the competition, and other environmental factors such as technological developments and legal and regulatory issues.
- (2) Strategy development: Synthesizes the analysis of environmental elements in order to determine the effects of their interaction on the organization.
- (3) Development of the strategic plan provides a strategy which is both comprehensive and possible to implement.

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INTRODUCTION

During the past decade the liner shipping industry in Sri Lanka experienced a period of virtually unprecedented changes. Advances in intermodal and vessel technologies, high inflation levels, fluctuations in currency exchange rates, unstable energy supplies and prices, volatile interest rates, political instability in many world areas and unpredictable regulatory environment have all combined to introduce a level of uncertainty unparalleled in recent business history. In few other instances have an industry's leaders been so challenged to think and act innovatively, in short to plan strategically.

Strategic planning can provide the powerful management tool required to deal with the challenges of future change and uncertainty. Although over the last decade a considerable amount of mystique has come to be linked with "Strategic Planning", the planning of business strategy in the end remains based on a few simple but essential truths.(1)

-In order to plan successfully, a planner must understand the nature of demand for his organization's goods or services

-The planner must also understand the distinctive capabilities of both his own organization and his competitors, as well as competitors' likely future strategies and potential responses to actions taken by the organi-

zation.

-Finally, the planner must devise a strategy that best meets customers' needs, maximizes his organization's advantages and exploits competitors' weaknesses.

Effective planning must be issues-oriented. That is it focuses on those issues or problem areas that threaten to "make or break" a organization in the foreseeable future. In the course of developing a planning approach to meet the specific needs of Ceylon Shipping Corporation, a number of such strategic issues were identified. Some of these are not unique to C.S.C.'s particular situation but reflect the types of concerns that virtually all Sri Lanka liner operators may currently face in planning for the future such as:

- Highly cyclical market conditions. In very few other industries does a manager face a market subject to the complex swings in cyclical supply and demand that confront most liner operators. Trade levels to a large extent are subject to the strength of the economies of the trading partners as reflected in domestic demand & exchange rate differentials. As their economies move through their cyclical phases, their trade levels and demand for shipping services are affected. In this environment long-range strategic planning is essential. An ability to position oneself to take full advantage of opportunities during periods of high demand and to protect one's position during slumps will be critical to long-term success.

- Uncertainty: Ceylon Shipping Corporation will increasingly conduct their planning in an atmosphere of

uncertainty. In addition to uncertainty in such areas as the economy, interest rates, and fuel costs, which are faced by all business decision makers, the liner operator must make long-term decisions in a legal and regulatory environment whose future structure is by no means clear. The over tonning of certain trades and the consequent erosion of rate levels are additional, seriously destabilizing factors, without the means to deal with the numbing effects of uncertainty, the operator may find himself immobile - dangerous in a time when competitors are unlikely to be standing still.

- Regulatory constraints: The present regulatory environment state own national line of SriLanka, significantly inhibits the development of economical and effective capital equipment strategies. For example, a national line on a trade with developed nations may require modern container tonnage for several years to cover a transition to containerization.
- Competitive cost disadvantages: The Sri Lankan national shipping industry must deal with a significant competitive disadvantage in high capital cost and lack of knowledge in modern technology and know-how, thereby increasing the cost disadvantage of the Sri Lankan national carrier.
- Accelerated obsolescence: A modern liner vessel should have an operational life of 20 to 25 years. However, competitive and technological forces on some trades may lead to a useful deployment of only half that time on a particular trade route. Access to a capability to redeploy vessels to less technologically advanced trades as part of an overall phased strategy of vessel

deployment are two methods of dealing with this issues which are available to Ceylon Shipping corporation to only a limited degree.

In response to these types of major issues, strategic planners within C.S.C. will typically face such important decisions as:

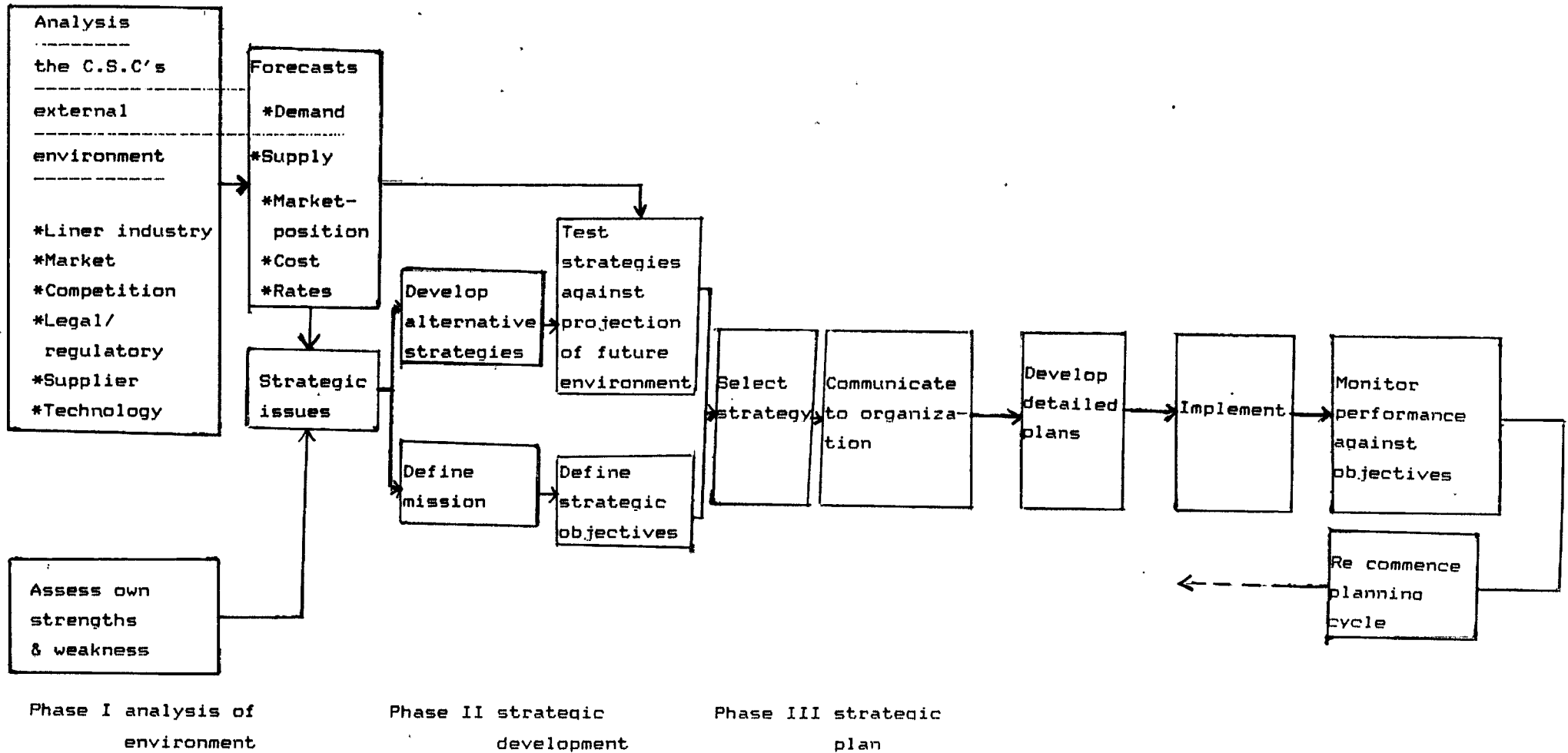
- Matching equipment and technology to evolving market requirements.
- Determining means to improve the productivity of physical assets, capital and human resources.
- Assessing the need for new industry organization strategy and structure to better confront competitive realities and underlying economic relationships.
- Developing the managerial talent and organizational strengths required to implement strategy.
- Obtaining sufficient capital to undertake needed investment
- Restructuring the legislative and regulatory framework and associated industry practices that impede progress

I have only mentioned a few of the issues and concerns that Ceylon Shipping Corporation must respond to over the coming years. Success will go to those who have developed strong competitive advantages in terms of market position, equipment and operations and regulatory structure. Attaining that level of advantage is only likely to be achieved through a commitment to careful

and thorough strategic planning. The document that follows sets forth an approach to strategic planning designed to assist the leaders of the Sri Lankan shipping industry to effectively meet the challenges of the 1980s and the beyond.

This study was written not only to satisfy the partial requirements for the M.Sc degree but also to be used by the Ceylon Shipping Corporation and Third World countries who are struggling to overcome their shipping problems. This study concerns a very fundamental problem experienced more in the developing countries including Sri Lanka than in the developed countries. It therefore presents a structure and methodology for strategic planning which has been specifically designed to meet the needs of the Sri Lankan Shipping industry which has experienced a period of virtually unprecedented change in the past decade.

Table I-1
STRATEGIC PLANNING PHASES & SEQUENCES



CHAPTER I A STRUCTURE FOR STRATEGIC PLANNING

Recent history underscores the high level of unpredictability that the operator of a liner fleet is likely to face over the next decade. Wars, strikes, volatile fuel prices and scarce supplies can play havoc with the most carefully planned strategy. However, effective strategic planning can help mitigate much of the destabilizing impact of the unforeseen.

This chapter outlines a structure for planning that will enable the SriLankan liner industry to deal with the challenges of the future. As illustrated in Exhibit I-1, the planning process consists of three phases: first, an analysis of business environments, second; the development of objectives and strategies, third; the implementation of the selected strategy.

The sequence and interaction among the various steps within the planning process are illustrated in Exhibit I-1. The process begins with an analysis of the various "environments" within which the Ceylon Shipping Corporation operates. This analysis provides a base for the projection of the corporation's future environments. Against this projection, an assessment of the corporation's capabilities is overlaid to determine issues of strategic importance, those factors which may play a critical role in the corporation's future success. Alternative strategies are designed to address the challenges of the strategic issues. These strategies are rigorously tested in the context of the future environ-

ment to select the most effective. Finally, the cycle is completed with the implementation of the selected strategy. Monitoring performance against strategic objectives will lead to the identification of new strategic issues. The process would then begin anew.

Effective planning leads to the development of strategies which Ceylon Shipping Corporations.

- (1) Align the corporation's resources to focus strengths on areas of opportunity while avoiding threats
- (2) Ensures enough flexibility to respond to the unforeseen; and
- (3) Provides "yardsticks" that monitor the corporation's progress towards strategic objectives.

An established planning process also provides a capability to respond quickly to meet the challenge of short-term crises as well as long-term planning needs. Quick reactions are built into the system through the early-warning sensors inherent in the continuous process of collecting and analyzing strategic information. Additionally, management will have become experienced in interpreting and acting upon the analysis of strategic information. The existence of a strategic plan also helps ensure that short-term decisions do not overcorrect the organization's course in moments of crisis and that short-term decisions are made in light of longer term goals and objectives.

At the outset the level of focus of the strategic plan-

ning process must be determined. The question of focus of course depends on the priorities and long-term mission of the organization. For a example, an organization with a particularly troubled service may decide to concentrate initially on that service and later expand the planning focus to incorporate other services. On the other hand, a organization that provides a wide range of transportation services must integrate its liner shipping strategy within the broader focus of an overall transportation strategy.

For simplicity, I will focus on strategic planning from the viewpoint of an operator within the liner industry alone. However, many of the planning concepts and approaches discussed are transferrable to the planning of strategy for transportation services other than liner shipping.

Having determined at what level to focus planning, it is important to identify preliminary issues of concern to the organization. Early identification of issues helps determine the type and level of analysis necessary. Timing of the planning process must also be determined so that critical reporting and decision deadlines are met.

With this overview in mind, let me now take a more detailed look at the separate elements within the process.

Phase One: Analysis of Environments

The first phase of the planning process consists of an analysis of important factors and trends within the

organization's environment. This analysis then forms the basis for a projection of the likely future environment. The environmental analysis has been separated into five major segments: industry, market, organization, competition, and other environmental factors. While a number of these segments, such as industry and competition overlap to some degree,, the segments are sufficently distinct that they may be initially approached on a separate basis and subsequently integrated into a comprehensive forecast of the future environment.

The Industry

An analysis of the liner industry provides the strategic planner with a frame of reference against which the performance of the organization itself can be assessed for a C.S.C. carrier. The industry may be analyzed initially in domestic terms, with the analysis then expanded to include a comparison with C.S.C.'s foreign counterparts. The performance of the organization will have the greatest bearing on establishing performance guidelines for the C.S.C. as well as determining the industry's overall attractiveness from an investment viewpoint. A comparison of the performance of firms in the foreign liner industry with that of the Sri Lankan industry may suggest institutional differences that inhibit or promote profitability.

An important benefit of an analysis of the total industry is that the identification of key factors behind the success and failure of the industry, both SriLankan and foreign, may produce useful insights into the planner's own organization. For instance, relative market share and individual organizations cost structures can be

investigated to see if there is an observable link between market share and profitability. The application of technologies for example, intermodal transportation, containerization, Ro/Ro may also be a contributing factor to the success or failure of members of the industry. Productivity measurements for capital and labour inputs can identify areas in which successful organizations are achieving an advantage. Finally, an analysis of industry stability in terms of growth and profits over time will identify levels of risk in the industry and its consequent attractiveness to new entrants or supplies of capital.

The Organization

The next step is to conduct an internal assessment of the organization's strengths and weaknesses relative to others in the industry. A prime objective of the internal evaluation is to identify areas of competitive advantage that may be used to exploit future opportunities. However, the process should also seek to identify areas of weakness, which then may dictate future strategies to decrease the C.S.C's vulnerability. Particular performance criteria that should be assessed include:

- Profit-to-sale and return-on-investment ratios;
- Market share;
- Level of vessel capacity utilization;
- Capital and labour productivity;
- Customer satisfaction level and indicators of efficient service levels (Transit time voyage frequency, equipment delivery time, cargo damage, pilferage rates etc.)

The Market

A forecast of demand for liner services on each of the C.S.C's trade routes is clearly a critical component of any long range planning exercises. The forecast must encompass the volume and type of cargoes likely to move in the future as well as the mode by which they will be carried.

As a first step, the trade should be profiled over time by major commodity and shippers groups in order to observe any trends and shifts in the relative importance of those market segments. Additionally, trends in the Sri Lankan share of a foreign trading partner's total external trade should be tracked over time.

Also historical trends in the level of container and Ro/Ro carriage on a particular trade will provide a useful base for projecting the relative importance of the various liner cargo modes on the trade in the future. Such a projection must be based upon the suitability of forecast commodity movements to carriage by the respective modes as well as identified developments in transportation infrastructure (ports and inland) and known competitor's plans for the introduction of certain vessel types.

Of course, in developing a trade forecast, it is necessary to go beyond the analysis of historical trends in commodity movements and look at the underlying economic and other forces that derived from demand for the goods moving on a trade route. Therefore the need for shipping services is a direct function of economic conditions and government policy in both the importing and exporting

nations. A projection of trade levels between specific countries may involve forecasts of economic growth, exchange rates, inflation levels, and the outlook for the major sectors of the economy, such as industry and agriculture.

Particularly in the case of trades with developed nations, a knowledge of planned major industrial or agricultural development projects will prove valuable in producing a reliable trade forecast. The building of a power station, a dam, or a manufacturing factory, may initially generate requirements for substantial imports of capital goods later on; the project may become a major generator of exports.

Competitors

The critical element in analyzing competitors is to identify and understand their present strategy and then the likely direction of their future strategies. Analysis should be directed to the identification of areas of relative strength and weakness among competitors, thus indicating potential opportunity and threats to the organization. The planner should seek insights into how specific competitors may react in the future to changes in the environment or to a specific strategy adopted by the organization.

One of the key aspects of competitor analysis is the profiling of a competitor's position relative to the company in terms of important business attributes. These attributes include size and type of vessel capacity, market segments served, technology, pricing and market role. Important insights that may be obtained from com-

petitor analysis include:

- The existence of linkages between factors such as market share or mode of operations and financial performance;
- Likely vessel replacement strategies which may be indicated by the age and deployment of assets as well as by financial performance;
- Compatibility of competitor's perceived strategy on a trade route with its total interests; all markets served by a competitor should be analyzed to determine such factors as the competitor's flexibility in vessel deployment, his previous actions in situations possibly analagous to conditions on the particular trade route, and the level of priority the particular trade may hold in the competitor's total sphere of operations.

Other Environmental Factors

The complexity of the business environment in which a liner company operates requires that a number of other factors be analyzed. The other primary areas requiring attention are: the legal and regulatory environment, key supplies of goods and services, and technology.

An analysis of the legal and regulatory environment should focus on both domestic and international developments. The objective is to identify areas that may support the corporation's operations or provide limiting constraints. This analysis may then be used to help structure strategies that gain maximum advantage from the environment and to develop legislative initiatives

which would produce a more friendly environment for the organization.

Analysis of key suppliers focus on the identification of areas of major risk to the C.S.C. key suppliers are those who could, through interruptions in supply or major increase in price of their goods or services, seriously damage the C.S.C's operations. These suppliers include waterfront and seagoing labourers, terminals, vessels and capital equipment manufactures and full suppliers.

An awareness of major developments in technology is critical to the strategic planner. A new transportation technology quickly exploited by the organisation (C.S.C.). It may lead to a competitive advantage for the organization. If ignored, that technology may be developed into a source of strength by a competitor.

Phase two: Strategy Development

During the second phase of the planning process, the separate elements of analysis carried out earlier must be combined or "synthesized" in order to determine the effects of their interaction in shaping the future environment and the organization's ability to prosper. A number of different analytical approaches may be required to integrate the several components of the analysis carried out earlier. In creating an image of the organization's future environment, a number of issues which are likely to be critical to the organization's future success will be identified. These strategic issues provide the focal point for the development and evaluation of alternative strategies.

Corporate Mission and Strategic Objectives

When corporate mission defines what an organization's plans will be. Strategic objectives are yardsticks that indicate the success of the company in fulfilling that mission. The projected future environment provides a frame of reference for an expression of the organization's mission and strategic objectives. A statement of corporate mission need to include: (1) what markets the organization will serve; (2) what customer needs will be met, and (3) how the company will provide its services. Strategic objectives are more specific and should reflect the organization's perceptions of the future business environment and its own ability to prosper within that environment.

Effective strategic objectives provide a basis for allocating resources and evaluating the organization's performance. They should provide measurable bench marks for tracking and controlling performance in order to identify or anticipate a need for mid-course corrections. To be successful, they must obtain the commitment of the personnel responsible for implementing strategies directed towards those objectives.

Strategic objectives need to be sufficiently specific to serve as valid measures of performance, however, they must also be varied enough in the criteria they set to preclude the manipulating or results through games-playing, such as boosting growth at the expenses of profits, or delaying plant replacement in order to maximize short-term investment.

Strategic Issues

Strategic issues are major changes in the C.S.C. environment that are considered likely to have a significant impact on the C.S.C.'s future. Early in the process, it is likely that the environmental analysis will identify a number of strategic issues. Such issues generally fall into the following area:

- Changes in the amount or nature of commodities moving on the trade;
- Competitor behavior;
- Developments in technology;
- Legal and regulatory constraints and support systems;
- The organization's ability to meet future challenges.

The Selection of Strategy

The development of strategy focuses on means by which the organization can meet the challenges posed by the strategic issues and attain its strategic objectives. In order to avoid the danger of preselecting a less than optimal strategy, a number of alternative strategies should be developed. In order to obtain broad perspective on the problems and potential solutions faced by the organization, these strategic options should be obtained from a variety of areas and people. The process of developing a number of options, which are then subjected to vigorous and unbiased testing, will help build confidence and generate a consensus in the final choice

of a strategy.

Each strategic option should possess enough economic detail so that resource requirements, cash flows, and market position are clearly defined over the planning period. Potential conflicts or paradoxes within a strategy, i.e. growth versus short-term profitability, should be explicitly recognized, and their resolution made clear.

Computer simulation provides a highly effective means of integrating the diverse elements produced by the strategic analysis. Simulation tests the strategic options under projected environmental conditions over the full span of the planning period. Assumptions on future operating cost and rate conditions can be loaded into an interactive computer model to project financial, market share, and capacity utilization results for the organization over the planning period. The model also provides a capability to test the sensitivity of strategic options to variations in key assumptions.

The projected performance of each of the strategic alternatives should be assessed against selected criteria, such as financial measures of internal rate of return and reported results. Other criteria include consistency with strategic objectives, flexibility of response to unforeseen changes in the environment minimization of downside risk, and effective utilization of human and capital resources.

In the process of testing and evaluation, it is possible that additional strategic issues may emerge, requiring a loop back to the development or refinement of further strategies to deal with the new issues.

Phase Three: The Strategic Plan

The third and final phase of the planning process culminates in a plan which is both comprehensive and capable of implementation of primary importance in this phase in the communication of the underlying assumptions as well as the details of the strategic decision to all those concerned with its implementation. Responsibility must be clearly allocated to those expected to carry out the strategy. Many of these individuals may already have participated in the development of the strategy. Their involvement will significantly ease the process at this critical stage by instilling confidence in the selected strategy.

Development of Business Plan

A series of detailed business plans will transform the strategy from the abstract to the concrete. These plans are normally integrated parts of formal planning documents, such as five-year and annual plans. Such plans include:

The Marketing Plan should identify and prioritize specific customer needs to be served and, where applicable, the particular customers and/or market segments on which sales efforts will be focused.

The Competitive Plan should state assumptions with respect to competitors actions and reactions, and develop the specific actions the organization should take to forestall, bypass, overwhelm or co-opt, any competitive actions that could prove damaging to the strategic plan.

Such actions may include forming coalitions, taking pre-emptive action, or other means to forestall or align the actions of competitors with the desired directions and goals of the strategic plan.

The Operations/Service Plan should detail how the

organization will carry out its strategy in terms of vessel/land based operations in order to meet the level and phased development of services called for in the strategy.

The Financial Plan should include short-term detail

from which budgets and financial controls can be developed. It should detail cash flows in specific revenue and cost areas and identify requirements and possible surplus of scarce cash resources.

The Technology Plan should describe how the organiza-

tion will utilize and further develop its knowledge and expertise in the transport of liner cargoes. Procedures to acquire and develop new transportation technologies should be detailed.

The Organization/Personnel Development Plans should

help structure the organization to meet the demands of the strategic plan. Plans should be prepared dealing with how the organization's human resources will be developed in order to carry out the strategy most effectively.

The Corporate Development Plan should synchronize the

needs and the contributions of the liner shipping unit with those of the rest of any multi-business unit corporation. The liner unit must develop in a direction and

at a pace that is in accordance with overall corporate goals and resources.

Each of the business plans can be taken to the appropriate level of detail required to formulate one-year plans and budgets. This final critical step carries the objectives and broad detail of the strategic plan through to the implementation stage.

Monitoring Performance

Included within the strategic plan and its offshoots the business plans, are a number of yardsticks by which to gauge and monitor progress. These yardsticks provide an early-warning system as well as a set of signposts for strategic direction should the environment alter so that the original strategic plan becomes unworkable. The yardsticks provide an early indication of any major differences between plan and reality. Such an indication will send the planner back to the appropriate point in the planning process to deal with the new issue.

CHAPTER II INFORMATION REQUIREMENTS

The strategic planning process is driven by information. Without accurate and planning-oriented data, the planning process may deteriorate to a groping in the dark, with decisions guided primarily by intuition and hearsay. The essential analysis of the C.S.C.'s environments conducted in phase I particularly, requires data collected on a regular and systematic basis.

The information needs of the strategic planner are many and varied, but may be summarized as falling into the following categories:

-Information on the industry in which the C.S.C. operates

This information can provide insights into the

success and failures of similar companies, the factors behind such events, and major trends on an industry-wide basis. Such knowledge can prove useful in determining the market valuation of firms within the industry and associated problems of capital formation.

-Financial and operational data on the C.S.C. itself

This information can be used to compare the C.S.C.'s performance to industry yardsticks and help determine special strengths and weaknesses within the C.S.C.

-Information on key suppliers of goods and services

such as labour, fuel sources equipment, new developments in technology and the legal and regulatory environment. -Finally, and of central importance to the

identification of future areas of opportunity and threat, information on the supply and demand aspects of the markets in which the C.S.C. competes or may in the future compete. Essentially, this entails a knowledge of the C.S.C.'s competitors and customers.

Although I will generally deal with these various database areas separately, it must be noted that during the strategic planning process the areas cannot always be compartmentalized and analyzed separately but need to be integrated and synthesized. They are interrelated, and in order to project the future environment for the C.S.C., one must understand these interrelationships in order to view the total picture.

Table II-1 provides a summary of the suggested major components of a strategic information database. This means of storage for these data may range from collecting hard-copy annual reports or press clippings on competitors to computerizing trade and market-share data. The maintenance of such an information base plays a useful function and in a regular strategic planning function and in a crisis situation when solid, timely, and easily accessible data may be critical in making a short-fused decision.

Specific means by which the data may be stored, retrieved and then analyzed are dealt with in the following chapters which deal with various components of the strategic analysis of C.S.C. and the environments within which it operates.

Table II-1

Required Data	Potential Data Sources
Competition/Capacity Data	Domestic & Foreign Busi-
Up-to-date information on competition including:	ness/Industry Publications conference statistics
*Fleet configuration capacity, and development.	contacts with common customers, suppliers & agents.
*Annual deployment of capacity by capacity	Financial Times
type on competitive trades.	World Shipping Year Book
	----- for foreign competitors
	annual periodical
	results related to shipping
*Trade in cargo modes- containers ro/ro, breakbulk, neobulk, bulk etc	
-frequency	
*Newbuldings	
*Financial data as available for foreign-flag competitors.	
*Market share.	
*Intelligence on potential strategic moves	
*Ownership, management.	
Other Environmental Data	SriLankan & foreign
	press
Up-to-date information on political & economic conditions within present & potential markets. Parti-	& publications; economic data from sources such as the IMF, OECD, UN; area analysis by major banks.

cular factors to focus on:

- *SriLankan regulatory & promotional policy affect-maritime industries
- *Trading patterns of Sri-Lanka & foreign trading partners over time.
- *Political stability of trading partners
- *International agreements or policies such as the UNCTAD liner code that may have significant impact upon trades after the 1989 review conference of the Code.

Developments in technology likely to affect the industry.

Information on new technological development that may have an impact upon marine transport & related areas.

- *Developments in maritime transport mode such as containers, ro/ro vessels bulk/container vessel.
- *Developments in port terminal & inland cargo-handling-facilities in terms of new technologies & the introduction of existing/new technolo-

local agents/representative.

Technical journals, naval architects press.

Marine transport industry general & technical publications; contact with naval architects, port planners, transportation economist government officials.

gies to ports/countries of previously underdeveloped infrastructure.

*Developments in alternative transport modes such as rail, road & air. In terms of cost effectiveness, a major development in one of the first two may have an impact on intermodal transportation

A major development in air transport may pose a competitive threat to cargoes presently moving by sea.

Information on key suppliers of critical goods & services.

*Longshore labour & terminal facilities likely cost & potential disruptions

*Ship board labours.

*Fuel costs & availability

*Capital equipment cost & availability vessels, containers etc.

Labour & terminal contracts, major oil fuel projections & other studies.

Table No 2

 Major Components of a Strategic Information Base
 for the Ceylon Shipping Corporation

Required Data	Potential Data Sources
Industry Data	
----- Financial & operating data on other foreign liner operators CSC data -----	Annual reports
Detailed financial data on CSC liner operations including: *Revenue by port payers *Details of freight reve- nue & cargo tons by major shipper/consignees & comm- dity *History of per voyage results. *Cargo volume in tons & number of container units by port payer & market share. *Container units movements by FCL & LCL *Cargo handling costs by port per breakbulk cargo tons, per LCL cargo ton, & per container unit. *Stowage factors of major cargo types	Internal management accounts & reporting systems.

- *vessel operating costs
by vessel types
- *Port costs per vessel type
by port.
- *Container equipment costs
total & per unit type (20'
40' reefer etc) for owned &
leased containers.

Market Data

Historical trade data for
total trade & own market share.
*Commodity data at aggregate
level on country basis by trade
route time series up to 10
years.

SriLanka Freight
Bureau's trade statis-
tics

*Data as available for transit
cargoes. (non SriLankan origin/
destination)

Also:

Historical & forecast economic
data on Srilanka & trading
partners, focusing in particu-
lar on:

World Bank IMF

- GNP
- Industrial production
- sectorial economic activity
- Inflation rate
- Balance of payments
- Foreign trade (major imports
& exports)
- Foreign correnncy reserves
- Foreign debt burden
- Exchange rates (under or

over valued)	
--Investment levels (fixed investment in plant & equipment)	
*Government policy regarding imports/exports, i.e. imposition/removal of tariffs or export subsidies, etc.	Press & trade journals agents & local representatives
*History of freight rates	Conference & carrier tariffs
*Identification of customer needs	Market research & sales focus, surveys

CHAPTER III INDUSTRY AND C.S.C. ANALYSIS

This chapter focuses on two important steps that occur early in the planning process: analysing the industry in which the C.S.C. competes, and using the industry analysis as a reference point, analyzing the major strengths and weaknesses of the C.S.C. itself.

Industry Analysis -----

As suggested in chapter I, which discussed the general framework for strategic planning in the liner industry, a knowledge of the industry as a whole can be highly valuable in gaining insights into particular C.S.C.'s strengths and weaknesses. In addition to providing a yardstick with which to measure relative C.S.C. performance, an analysis of the firms that constitute the industry can also identify factors underlying both the success of the industry leaders and the failure of weaker firms.

The information on foreign flag carriers tend to be available only sporadically. An analysis of the industry areas however is valuable.

SriLanka Liner Industry -----

Table III-1 through III-3 provide an example of the type of financial data on C.S.C. operations that can be col-

lected from publically available information such as C.S.C. annual reports, and other sources. From this type of data, a planner can determine where his firm stands in terms of a number of performance yardsticks: growth, level of sales or net income, profit margin, return on assets and equity and debt-to-equity ratio. These data are most useful if a time series covering several years is developed, of different accounting practices are recognized. In many cases, analysis of the respective trends over time in a particular item will provide more meaningful insight into the differences between two organizations than a direct comparison of a single year's financial ratios.

Foreign Liner Industry

Similar data on foreign flag carriers can also be collected, as demonstrated by the examples in Tables III-4 and III-5, unfortunately such information tends to be publicly available only for operators within the OECD nations and in isolated instances for a few major carriers in Asia, Africa, and Latin America. Few reliable data sources have been discovered for the operators from the communist bloc and some developing nations (particularly Asian), who play an increasingly important part in the total industry. Nevertheless, such data as can be obtained on foreign flag operators will assist in developing an understanding of global industry trends, comparing the performance of C.S.C. liner operation with that of its foreign counterparts and performing competitor analysis.

Again care should be taken to place the data on a comparable basis. That is, liner operations should be separated from bulk or other non-liner operations. However, it

is also useful to assess the total size of companies involved in liner shipping issues such as horizontal or vertical integration (1) and the total asset strength of C.S.C. may be identified from analyzing C.S.C. in its total context.

Identification of Success Factors (2)

With the industry data collected, it is a relatively simple task to identify the specific firms that are the major successes and failures. However, it is a more complex task to identify the principle factors that contributed to their respective success or failure. The following indicators may help differentiate the strong from the weak:

- Trade routes served

- Level of competition and barriers to entry (National Shipping Policy (protectionism or free competition))

- Conferences, pooling agreements, bilateral shipping agreements

- Cargo-handling modes

- Intermodalism

- Relative size/existence of scale economies

- Market position

- Fleet capabilities and economics

-Capital structure (resources allocation, capital, manpower, trade, port-supporting industries-infrastructure etc.)

-Management is experience and skills and its organizational ability to take the right decision and exploits changing condition of the market to its advantage

-Vertical or horizontal integration.

As an example, in my analysis of the performance of the SriLankan liner industry, there emerged a number of factors that have not apparently contributed to the success of the Ceylon Shipping Corporation:

-Careful fleet planning and deployment to maximize vessel productivity;

-Fleet replacement programs geared to market needs, not to regulatory commitments;

-Involvement on trades where the SriLankan flag share is protected through pooling agreements;

-Relatively low debt burdens;

-The portfolio effect of involvement in a number of trades, which can offset weakness in one trade with strength in another as their individual economic cycles vary.

Ceylon Shipping Corporation Analysis

The primary goal of conducting a strategic analysis of the C.S.C. itself is to determine the C.S.C.'s particular strengths and weaknesses. This is a critical step, because any sound strategy must be based on exploiting one's own strengths while protecting or eliminating weaknesses in order to take advantage of identified opportunities in the market place. The performance yardsticks provided by the industry analysis offer one means of identifying or suggesting areas of strength or weakness within the organization. Of course, a great deal more information than this will be available at the planner's own organization. The industry analysis will suggest general areas, which may then be subject to a more detailed analysis within the organization itself.

The major focus of the C.S.C. analysis should be at the trade route or individual service level. The economics of each service should be analyzed to answer the following types of questions:(3)

- How do the corporation's cargo mix and the consequent rate levels compare to the mix and rate levels of the rest of the trade ?
- What are the breakeven capacity utilization and market share levels ?
- What has been the trend in operating margin in recent years ?
- What have been the trends in major cost elements relative to revenues ?
- What are the economics of different ship types in rela-

tion of each trade ?

Market Share

Trends in market share are important indicators of the strength of a liner operator's service on a particular trade route. Trade data may be derived from the foreign trade statistics produced by the Sri Lanka Central Freight Bureau, supplemented by conference trade statistics and agents' reports on intermediate (wayport) cargo. In view of the complex market environments in which a liner carrier operates, market share should be analyzed from a number of different viewpoints and on several levels of detail.(4) Illustrated with data from C.S.C., the following methods of analysis would all provide a planner with valuable insights into his market position.

-Table III-6 illustrates a time-series overview of market share (in cargo volume) by trade route served. The time series is particularly useful in identifying trends within a market and performing a comparative evaluation of different services.

-It is useful to analyze market share both in terms of cargo volumes and freight revenue, as shown in Table III-7. A large difference between share levels in cargo and revenue can have major strategic implications. For example, a large portion of a 5% increase in revenues achieved through improvements in cargo mix is likely to pass directly to the bottom line, thereby increasing even a successful liner operator's net income by as much as 50%.

-In order to develop strategy, the market should be seg-

mented to at least a region level (Table III-8) and by major commodities (Table III-9). The information revealed about market position in the various market segments may prove highly valuable in developing market and competitive strategies.

While market share on a tonnage basis can be relatively easily developed from available trade and carriers statistics, market share in terms of revenue requires somewhat more work to develop. Essentially, some assumptions need to be made regarding the freight rates obtained by other carriers in the trade compared with C.S.C. rate levels. As demonstrated in Table III-10 on a trade in which conference rates predominate, these rate levels may be applied to the balance of cargo carried by competitors in order to determine respective revenue market shares by cargo category in order to simplify the analysis, a reasonable approximation of revenue market share can generally be obtained by doing the analysis, at a four digit classification level, for the major commodities that make up the top 80-90 percent of the trade.(5)

A time series of average rate levels for a trade also may be developed on the same selected-commodity basis. In Table III-11, the average freight rate achieved by C.S.C. compared with the average for the total trade. The comparison indicates a gradual erosion in the carrier's cargo mix such that a previous strong market position has become a significantly weaker competitive position.

Clearly, relative market position in terms of cargo volumes and freight revenue can be an important determinant of strategy. A high market share in cargo tonnage suggests that a carrier has the potential to achieve some

scale economies in operations which still maintaining a competitive frequency. A higher market share in freight revenue than in cargo tons indicates that the carrier has a more profitable cargo mix than his competition.

Cost Analysis (6)

The strategic analysis of C.S.C.'s costs, which may reflect significant variations in the future movements in costs, should be focused on the major cost components. An understanding of past cost behavior is essential. Table III-12 and III-13 provide an example of one means of analyzing major cost components in terms of their relationship to revenues. C.S.C.'s cost structure in Table III-14 would indicate that the carrier has not been able to maintain pre-tax profit margins at 10% of revenue in spite of a major increase in foreign loans and investment for new buildings. Margins were maintained primarily by a reduction in the cargo handling shares of revenue as well as the share taken by depreciation and interest charges. The implication is that improvements in cargo handling efficiency and vessel productivity were the key ingredients in the maintenance of profit margin levels. The relatively fixed (on a per vessel basis) labour, interest, and depreciation charges decline as a percentage of revenue when the vessels generate more revenue without an increase in fleet size. In this carrier's case, strategies to control cargo-related and fuel expenses would offer the greatest potential positive impact on C.S.C. performance.

Where possible, operating costs should also be analyzed on a unit basis by vessel type on each service over a time series of several years, also inflationary effects

must be taken in consideration. Table III-13 provides an example of a breakdown of vessel operating costs on a per diem basis and of cargo handling, equipment terminal, and transportation expenses on a per-revenue-ton basis. Table III-14 is an analysis of the trend in major operating cost components relative to gross revenue per ton of cargo over a four-year period. The analysis indicates that cost controls in the area of voyage expense (cargo-handling, equipment, and port costs) have been primarily responsible for a significant improvement in the carrier's gross operating profit levels.

III-1

Example of Review of Operating Performance of (Hypothetical)
C.S.C Over the 1981-1985 Period
(Rupees in million)

	1981	1982	1983	1984	1985	Annual Compound Growth Rate 80-84
Revenue	544	716.4	1016.7	1322.3	1531.9	
Net Income	69	80.4	54.19	46.09	142.2	
Foreign Exchange Serving	157	225	217.18	46.1	142.2	

III-2

Example of Review of Financial Performance of
C.S.C Over the 1979-1983 Period

	1979	1980	1981	1982	1983
Assets	285.1	455.3	1015.5	1631.9	2644.1
Return On Assets	69	80.4	54.19	46.09	142.2

III-3

Example of Review of Debt-to-Equity Ratios of
C.S.C Over the 1979-1983 Period

	1979	1980	1981	1982	1983
Loan Capital	15.8	161	708.5	1324.9	2337.1

III-4

Example of Review of Foreign Liner Industry Financial Performance
of Selected Major Operators in the Region
(dollars in million)

	Revenue				Annual Growth Rate
	1981	1982	1983	1984	
Cobra	944.2	1220.9	1468	1629.9	22%
Norasia	800.5	930.9	721	1400	20%
SCI	946	1110	1300	1500	21%
BSC	500	650	670	680	5%

	Net Income				
	1981	1982	1983	1984	
Cobra	15	11	25	35	56%
Norasia	8	7.5	20.5	30.2	53%
SCI	47	28	50	48	44%
BSC	20	24	23	35	25%

111-5

Example of Foreign Liner Industry Hypothetical Financial Ratio
Analysis for Selected Operations
1980-1984

Line	Years	Profit Margin				percent
		1981	1982	1983	1984	1985
Cobra	6	5.2	4.9	5.2	6.1	
Norasia	4	5	4.2	5.1	6	
SCI	5.3	5.4	5	5.9	6.2	

Line	Years	Return On Assets			
		1981	1982	1983	1984
Cobra	1.5	0.6	0.4	2.2	2.9
Norasia	2.6	1.2	0.8	1.3	1.4
SCI	4.6	4.3	4	4.8	5

III-6

C.S.C Historical Market Share

(thousands of long tons)

	1979	1980	1981	1982	1983
In Bound Total Trade	3807085	4329533	3975851	4192499	4567415
In Bound C.S.C Tons	245645	303608	351111	287401	377465
In Bound Market Share	6.4%	7.0%	8.83%	6.85%	8.26%
Out Bound Total Trade	1234879	1269156	1248592	1370009	1157735
Out Bound C.S.C Tons	226953	286952	406097	604198	614626
Out Bount Market Share	18.37%	22.6%	32.52%	44.1%	53.08%

Sources: C.S.C Annual Report & Account 1983

Annual Report Central Freight Bureau of Srilanka

III-7

C.S.C Market Share Analysis
1983

Country or Area	Share of Total Liner Market		
	tons	Freight Revenue (million)	
Far East Container Service	34%	Rs.235.8	15.70%
U.K. Container Service	45%	Rs.685.0	45.62%
Red Sea Container Service	5.5%	Rs.52.1	3.47%
Arabian Gulf Container Service	13.7%	Rs.104.9	6.98%
Karachi/Cochin Container Service	0.9%	Rs.14.9	0.99%

III-8

C.S.C Share of Top Five Commodities
1984

Total market C.S.C C.S.C Market Share %

AA-----

		OUT BOUND	
TEA	607358	242943	40%
UBBER	144071	57628	40%
DESICCATED			
COCONUT	30331	12132	40%
FIBER	104800	41920	40%
GARMENTS	146024	36506	25%
SUNDRIES	384515	153806	40%

Country Analysis of total Trade & C.S.C Market Share
1983-1984 (U.K.)

	Total Trade (tons)		(C.S.C Share)	
			1983	1984
Tea	24172	34591	44%	50%
Rubber	8001	7101	50%	80%
D/C	12754	8877	60%	82%
Fiber	28231	22821	80%	70%
Cinamon	210	472	90%	90%
Plumbago	746	2097	62%	81%
Charcoal	3889	2414	56%	48%
Garments	5019	4453	76%	85%
Walltiles	504	922	67%	88%
Sundries	12412	16374	80%	85%

Source: Central Freight Bureau of Srilanka 1984

III-10

Selected C.S.C Outbound Liner Trade Route Analysis
(1983)

	Freight Tons		
	Total Ton	C.S.C	Other Carriers
U.K & Continent	560415	235374	325041
Far/East	160604	64242	96362
Arabian Gulf	74635	29854	44781

	Freight Revenue (m)		Average Rate Per Long Ton		
	C.S.C	Others	Total Trade	C.S.C	Other Carriers
U.K & Continent	685.0	1000.0	\$200	175	175
Far/East	235.8	900.8	210	200	200
Arabian Gulf	104.9	300	185	165	165

Source: C.S.C Annual Report & Accounts. 1983

Chart 4: CSC distribution of revenue
Dollar 1984

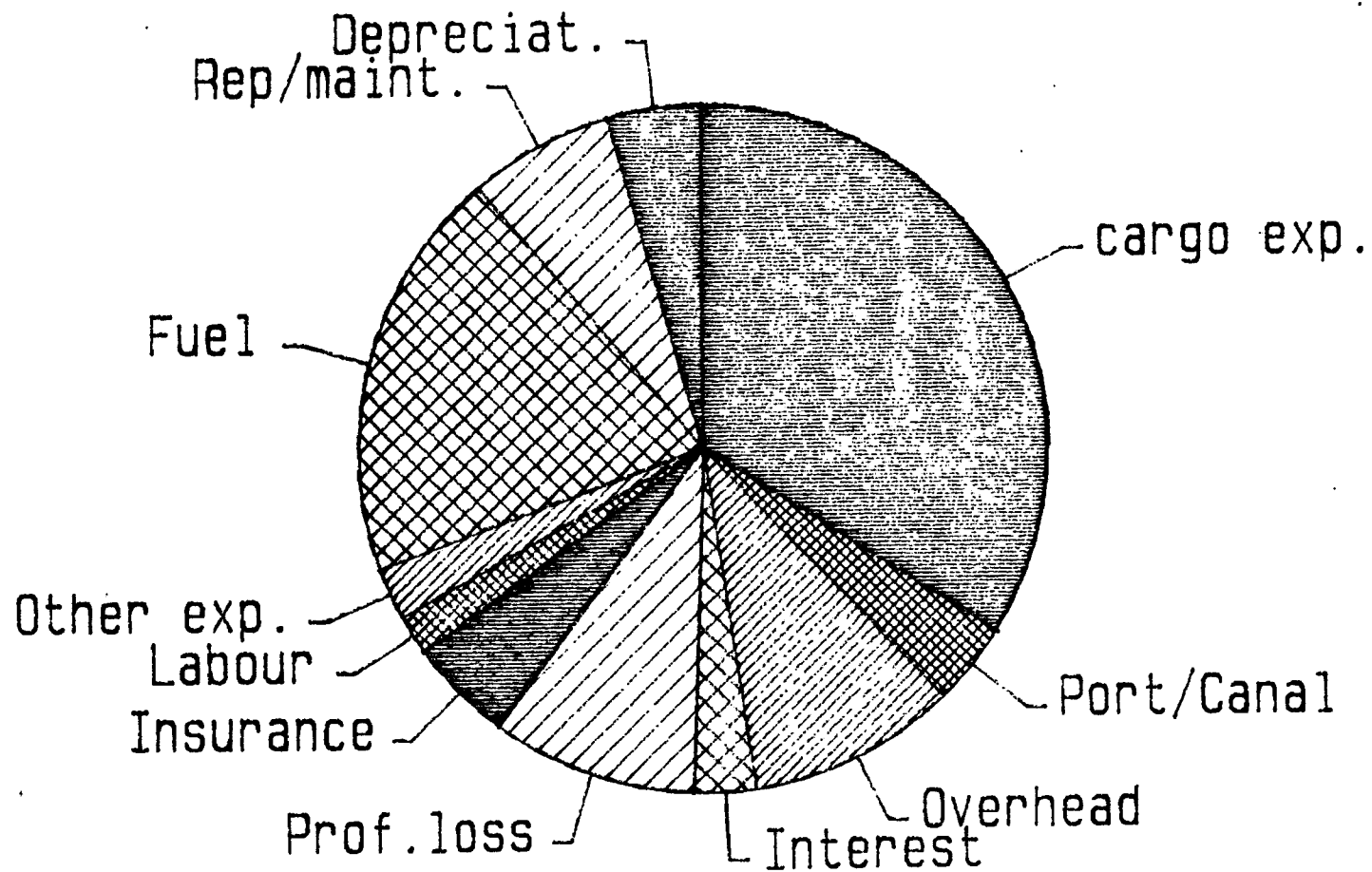
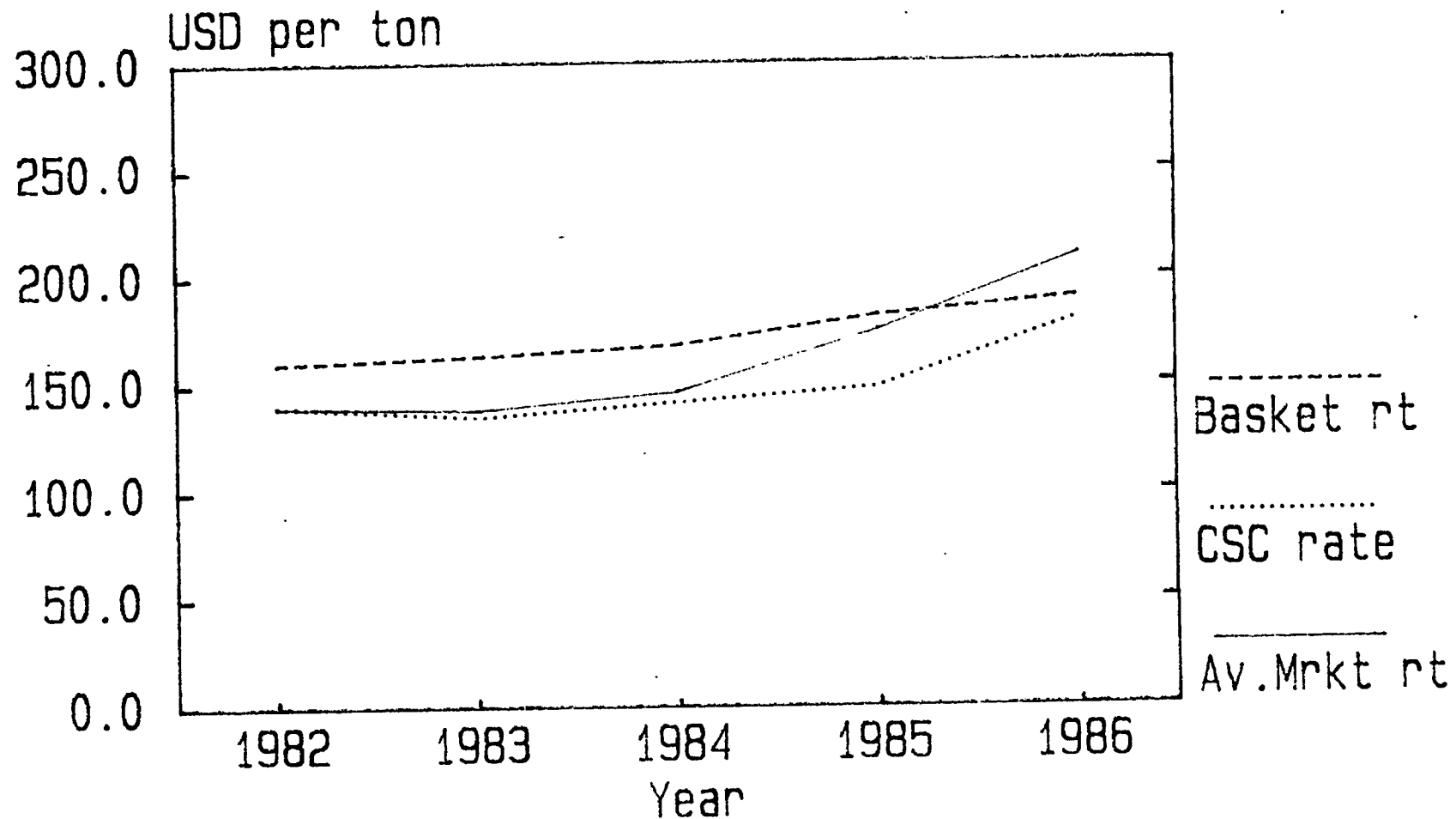


Chart 3: Liner trade/UK service-Hist
freight rate trends 1982-1986



Source: Annual Report.CFB.-Srilanka-

III-14

C.S.C Financial Performance
1980-1983

	1980	1981	1982	1983	Annual Growth Rate

Dollars Per Revenue Ton					

Revenue Including					
Surcharge	\$110	\$115	\$120	\$125	5%
Vessel Expense	\$50	\$65	\$57	\$68	8%
Voyage Expense	35	36	37	35	2%
Gross Profit	20	25	28	32	10%

Source: C.S.C Annual Report & Accounts 1983

C.S.C Analysis of Operating Costs

1980-1984

	1980	1981	1982	1983	1984	Average Annual Compound Growth Rate
Port Costs	\$1800	1900	2000	2100	2200	12%
Vessel Operating						
Wages, Insurance & Other Vessel	\$11,000	12,500	13,500	14,500	15,500	10%
Maintenance & Repair	\$1000	1500	1000	3000	2500	15%
Fuel	\$9000	12,000	15000	18500	20000	25%

Net Vessel Costs	\$22,800	\$27,900	\$31,500	\$38,100	\$40,200	
Per Revenue Ton						
Commision & Brokerage	\$4.00	\$3.50	\$4.25	\$3.00	\$4.10	8.0%
Cargo Handling Container Equipment	\$24.00	\$25.00	\$25.00	\$25.50	\$26.00	4.0%
	\$7.00	\$5.00	\$6.50	\$7.50	\$7.00	9.0%

Total Cargo Related Costs	25.00	33.50	35.75	36.00	37.10	

CHAPTER IV DEMAND ANALYSIS: TRADE FLOWS

In the context of strategic planning, the aim of market analysis is to develop an understanding of the factors underlying the demand for shipping services within specific market areas so that a soundly based projection of demand may be made several years into the future. Because of the complex nature of international trade, this is not an easy task. However, below are elements of one representative methodology that first identifies the key factors influencing the level of trade on a specific route, and then, projecting those factors, produces a forecast of that trade. The demand for liner services, in turn, is derived from the projected demand for liner cargoes.(1)

Market Definition -----

The first step is to define the market associated with the given trade route or service under study. In many cases the traditional definition of a trade route of the Ceylon Shipping Corporation may not be adequate. Numerous factors that may affect the trade route must be considered, for instance, the potential for diverting cargoes through foreign ports raises the possibility that trade should be examined on an origin-destination

basis rather than on a port-payers or coastal basis. Also, the analysis of commodities moving on the trade should not be restricted to cargoes currently carried by liner vessels. The growth of specialized carriers during the 1970's and the more recent deployment of container/-bulk vessels on a number of world trade routes suggest that there are no clear boundaries between liner and irregular trades. From a strategic viewpoint, to impose such a restriction on a market analysis at the outset could prove fatal in the long term in the form of missed opportunities and undetected competitive challenges. In effect, the initial level of market analysis should include virtually all commodity flows that could potentially move on the trade in particular, it should take into account the issue of the intermodel coastal diversion of cargoes. The market definition may then be refined to exclude those bulk cargoes that move in such large lots and between such ports that their integration into a liner service is precluded.

The next step is to segment the market by principal commodities -an essential step towards developing a strategy that focuses on specific market opportunities.

Commodity Profile

In order to structure the trade for a historical market analysis, a time series could be developed illustrating, the flows for the major commodities moving on the trade by country. Although the availability of historical data will generally dictate the length of the time series, ideally a period of at least ten years, or spanning two complete trade cycles, should be used, for a long-term time series the commodities moving on the trade can be

aggregated into a few commodity groups, such as food products, raw materials intermediate goods, capital goods, and consumer goods, as demonstrated in table IV-1. These commodity groups, defined on a country basis, from a historical liner trade data base from which future trade can be projected.(2)

This level of aggregation permits an analysis of trade trends by commodity types and simplifies an awesome level of details to a manageable level. The specific commodity groups chosen will depend on the nature of the available data as well as the profile of the trade, where specific commodities (such as consumer goods, intermediate goods, raw materials) play a major role in the trade, they may be included separately. Finally, recent trade data at the four digit classification levels, representing the top 80 to 90 percent of the trade, can also be developed and compared to an earlier similarly detailed profile in order to identify particular shifts in commodities moving on the trade (table IV-2).

CONTAINERIZABLE POTENTIAL

In view of the strong growth of containerization on virtually all liner trades over the past 20 years, the issue of the rate of penetration by containers into a trade must be addressed particularly on trades as the dominant transportation mode. Table IV-3 traces recent developments in containerization levels on a trade route. A knowledge of the current level of penetration of the container mode into the trade in question is an essential input into a projection of expected containerization levels in a trade.

The next step in an analysis of container potential on a trade is to assess the suitability of container carriage for the various cargoes. This can generally be accomplished by analyzing the relatively few commodities Table IV-4 illustrates that analysis of containerizable potential for the trade and for C.S.C carriers. The analysis of container potentials essentially consists of applying recent trade statistics to estimates of the containerizable potential of specific commodity groups. The containerizable potential estimates are based on operational experience with the stowage characteristics of the particular commodities on the route in question or on a similar trade. Table IV-4 also provides a profile of the containerizable potential of the particular cargo mix of the carrier relative to that of the total trade in conjunction with intelligence on competitors' present and planned fleet deployments and the development of port and inland container infrastructure will assist the planner greatly in the design and timing of a container equipment strategy.

Trade Forecast

Having established a data base that provides trends in major commodity groups over a period of time and a higher level of commodity detail for the most recent time periods (see Table IV-1). The planner is in a position to undertake an analysis of the factors that have helped determine the level of historical trade flows in order to develop a basis for forecasting. These factors may come from a wide range of areas: economic, political, and business environments, and social factors are the areas most frequently encountered.

In determining cause-and-effect' relationships the quantifiable impact of economic factors is generally much easier to identify than the more intangible influence of the others. But the importance of political business economics, and social factors must not be understated. Recognizing this risk, I shall first concentrate on the economic basis of trade and then the methods by which the more subjective nature of political, business environment and social factors may be incorporated into the analysis.

The forecasting method described herein involves an econometric approach employing computer modeling techniques.(3) The effectiveness of this method depends on the reliability completeness, and size of the database developed from available trade and economic data sources. An extremely limited database of economic information may only be sufficient to support a judgement forecast.

In general, aggregated data minimize gaps in information and provide smooth trends. Most economic data by countrywise are available only on a highly aggregated level and can generally be used in the form in which they are published. Trade route and commodity data, generally available on a four-digit level, need to be aggregated into or groupings consistent with the categories for economic information: e.g. food stuffs, capital goods and consumer goods. Aggregating the trade route data into usable categories is a crucial aspect of a successful forecast.

Within the constraints of the data, care should be taken in constructing the trade categories to ensure that they are consistent over time. For example, items often car-

ried on liner vessels such as tea, coconut, products, agricultural products, chemicals, and rubber may be aggregated into each category. One may then hypothesize that Srilankan exports of intermediate goods depend on the industrial production in the importing country. The next step would be to test this relationship with historical data and if it proves valid, forecast Srilankan exports of intermediate goods from projected industrial production in the importing country.

A crucial step in forecasting liner trade flows is developing a series of hypotheses about the relationship between specific liner trade commodity flows and economic phenomena. Unfortunately, there are no firm rules that allow the analyst to select immediately the best economic prediction of a given commodity group. Although the chosen economic variables may appear to be a logical predictor of cargo flows, in the modeling process one often finds that the variables explain only a limited amount of the variation in the commodity group sample. It then becomes a trail-and-error, empirical process to find the particular logically sound variables that gives the best results. Included at the end of this chapter are some further considerations that are useful when selecting economic variables to be used as predictions for future liner trade.

These relationships may then be tested with standard statistical techniques such as, liner regression analysis. One such technique identifies the economic variables of trade movements. It then uses forecasts of those economic variables that historically have been highly correlated with trade movements. It then uses forecasts of those economic variables to project trade movements

between specific countries Table IV-5 shows a sample trade forecast in its final form.

The resulting trade forecasts must be evaluated as to their reasonableness

-Are the forecasts reasonable with respect to history ?

-How do they compare with other forecasts of the same or similar variables ?

Often, the reasonableness of a forecast can be evaluated by comparing the forecast values with an economic or demographic variable that was not used to draw the forecast. For example, if a forecast of Sri Lanka's export of tea is derived by disposable incomes in the importing country, the forecast growth in consumer goods can be compared with expected increases in the level and age distribution of the population. A reasonable forecast of growth in consumer goods imports should be roughly consistent with growth in the consuming population with growth in disposable incomes. Unfortunately, a small databasis will not usually afford this type of reasonableness check because most or all of the available information will have been used in producing the forecast.

The final step is to apply the forecast growth rates by commodity type to the CSC liner carriage. Where possible, internal data from the CSC's own records should be aggregated into the same commodity groupings as employed for the trade projections. Applying commodity-group growth rates to the CSC's present cargo mix may result in an aggregated projected carriage growth for the CSC that differs from the rate forecast for the trade as a

whole. For example suppose the CSC has historically maintained a high market share in the rapidly growing capital goods segment and a low share in other commodity group segments. A projection of overall growth in the movement of capital goods and no growth in other segments would then be transposed into a fairly strong growth projection for the company, although little growth would be projected for the trade as a whole. Of course, CSC's market share under such a scenario would be increasing significantly, and the potential effects and countermoves by competitors to such a development would have to be closely analyzed.

Construction of the Economic Variable Database

The amount and quality of available economic information varies by country. In general, developed economics have a wealth of economic data so much, in fact, that it is often difficult to choose a manageable sized database. Lesser developed economies tend to have more limited economic information, so the analyst may have difficulty finding enough economic data to support a computer modeling effort that uses liner regression or other statistical techniques.

Whatever the economic information available the analyst must collect it in the form that is most likely to give credible results when the data are related to liner trade flows. In other words, the chosen economic variables should represent economic activities that are likely to require or be related to the specific commodity groups into which the trade data are organized. Following are some important considerations to take into account when assembling economic information and testing the hypo-

theized relationship.

-The economic variables chosen must be logically related to the commodity group to be forecast. A sound logical relationship between the dependent (commodity group) and independent (economic) variables remains the first rule governing variable choice. Developing an econometric relationship between a specific liner trade flow and a set of economic variables amounts to a test of the hypothesis that the particular economic events explain some proportion of the cargo flows. To have confidence in the resulting econometric relationship, one must also have confidence in the hypothesis that is being tested. For example, one may hypothesize that Srilankan imports of intermediate goods, such as garments materials, are directly related to the Srilankan industrial production (i.e. these imports tend to rise when industrial production increases). This is a satisfactory hypothesis because the hypothesized relationships make sense.

-The time periods for which the economic data are measured must correspond with the time units of the liner trade data. In the liner trades the most readily available data are on an annual basis. Economic information also tends to be most complete and available on an annual basis, while annual data are useful in that they obscure the variations in trade due to seasonal factors. It is often difficult to obtain a sufficiently extensive time series of annual liner trade data, if the analyst attempts to forecast commodity flows on the basis of quarterly data, so he must ensure that corresponding economic data are available. In addition, the analyst must take care to adjust for seasonal varia-

tions in the data.

Economic variables should be included on a constant

currency basis All economic data should be transformed

to constant currency units so that the resulting time
series measures real economic activity, undistorted by
price inflation trends. Most Srilankan economic variab-
les and many foreign economic databases are readily
available in deflated form. Price data (for specific
commodities, aggregate export prices, etc) are best
used in an index form that relates the price level in a
given year to the price level prevailing in some base
year, in other words, a form that indexes measured pri-
ce change relative to the price at a given point in
time. In fact, exchange rates are a form of price index
because they measure the value of one currency relative
to another at a given point in time.

Long-range trends in liner trade data tend to be rela-

ted to real economic activity while short-range, cycli-

cal variations about the trend tend to be explained by

short-term price fluctuations A great many liner tra-

de data show considerable variation over time because
of the multiplicity of factors that affect trade-condi-
tions. Given an extensive time series of liner trade
flows, one would have enough observations to be able to
apply smoothing techniques (such as a two-or three year
moving average) to the liner trade data to remove
short-run fluctuations and highlight the long-term
trend. But because the amount of liner trade data avai-
lable is usually limited, the analyst rarely has the
luxury of applying a data-smoothing technique and must
therefore look for explanatory variables to account for
the short-run fluctuations about the long-term trend.

Sometime these fluctuations are related to a specific, non economic event, such as a strike or port congestion. Such occurrence can be captured in econometric models through the use of "dummy" variables, variables that are activated at a specific point in time to explain a specific event. Use of dummy variables is amply covered in many standard textbooks on statistics and economic modeling. These variables are useful and valuable when used judiciously. More often, however, short-run fluctuations are related to changes in relative price levels, such as commodity prices and exchange rates. Therefore, the analysis should include price variables where it appears appropriate to do so. Table IV-6 lists some of the variables that have proven useful in forecasting liner trades flows for certain trade. While these variables may not prove useful for all liner trades, they do suggest the types of variables that might be considered on a first test. It is important to note that the classification of these variables into long-term and short-run categories is purely for analytical convenience and does not reflect rigid rules or established econometric practices. Rather, the classification is an attempt to help the analyst consider all the types of economic events that may affect a given trade.

Table -IV-6

Sample Economic Variables

Long-Term (Trend)
Predictors

Short-Run (Fluctuation)
Predictors

- Industrial production
- Real manufacturing activity
- Real agricultural activity
- Real fixed investment in
plant and equipment
- Real total imports
- Real total export
- population
- Real disposable income

- Exchange Rates
- Prices
 - I Export Prices
 - II Import Prices
 - III Commodity-Specific
Prices
- Inventory Stocks

-The more "closely targeted" the economic variable is

to the specific commodity group being forecast, the

more likely it is that a useful relationship will be

estimated. For example, if we estimated that in 1985,

52% of the petroleum products were used in Srilanka for
transportation, 18% used as energy for the industries
9% for households, 12% used as agro-chemicals and fer-
tilisers, and another 9% in other uses.(4)

-Different forms of variables must be tested. Compu-

ter-based econometric modeling is often a trial and
error process. Even economic variables that have a
sound and logical relationship with a particular com-
modity do not always explain a significant amount of
the variation in liner trade flows. When this occurs,
it may be useful to try a new form of an existing logi-
cal variable to see if the fit improves. For example,

rather than using the "level" form of the variable, the present change or first difference form would be included. Table IV-9 presents an example of the same economic variable presented in three different forms. Often a variable that is insignificant in its level form will become significant in another form. This is because liner trade flows often relate not to the absolute level of economic activity but to change in the level of activity from one time period to the next.

-Different time frames may be tested An economic

relationship estimated over a given time period implicitly assumes that the basic economic structure underlying the economic relationship in question (in this instance, the relationship between liner trade flows and some economic activity) does not change over the estimation period. For a database detailing annual liner trade flows with a limited number of observations, this is often a valid assumption. However, the structure of national economies does change over time so that a demand for liner goods derived from basic economic activities may also vary over time. For example, the dramatic oil price increase of the 1970s altered the fundamental structure of the world's economies; it is therefore reasonable to expect that this structural change has had an effect on the demand for liner cargo.

In cases where the analyst has reason to suspect that there has been a change in the underlying economic structure of an economy, he may find it useful to break the test into two tests covering two time periods before and after the change-inducing event (in the case of the 1970s oil price shock, the analyst would estimate

trends on major commodity imports and exports

- The best forecast is based on the most complete information possible. A liner trade forecast generated by regression techniques provides a useful well grounded basis to which judgements of knowledgeable personnel can be applied to produce a creditable and useful forecast.

Other Factors (5)

Economic conditions exert a powerful influence on liner trade flows, but several other factors also affect the liner trade. Although the exact nature and importance of these factors varies over time and from trade to trade, in general the most important of these are:

- Political factors Political stability and government

policies (particularly with respect to trade) and specific maritime policies such as cargo-sharing or bilateral trade agreements may affect the size of the available liner market;
- Business-Environment factors Potential risks to operations,

including the disruption of material supplies and risks of expropriations are closely related to the political factors discussed above;
- Social factor Population growth, distribution of

wealth, age distribution, and skill and education levels may affect a country's stability, productivity, and propensity to trade over time.

The economic-data-based liner trade forecast, regardless

of the technique used to generate it , may have to be adjusted to reflect the impact of these other factors if their impact on trade flows is likely to be significant. For example, the overthrow of a government may be favourable to the SriLanka but the new government may try to de-emphasize Srilankan relationships and this would likely have a negative effect on trade relations and on potential liner trade flows. The potential impact of such an event is difficult to estimate because each such event is unique and therefore outside the historical experience that is qualified or analyzed in available information sources.

To estimate the potential impact of such an event, the analyst must try to answer two questions:

1. What is the likelihood of the occurrence of a particular political or other event that might affect the trade?
2. Given the probability of this event, what is its likely impact on liner trade flows in particular ?

To answer these questions the analyst may analyze and evaluate the risks to businesses in various political situation in specific countries. However, it is important that the analyst focuses on potential events that may affect trade relations; Many disruptive political events may actually have only a short-term impact on liner trade flows, leaving long-term trading prospects unchanged.

If a study of risk evaluations or other information suggests with fairly high probability that a trade-altering

event may occur, the analyst may want to assess the potential impact of the event on liner trade volumes in aggregate, and on the CSC's own carriage in particular. By using his own special knowledge of the trade and by drawing information on the cargo impact of similar events in other trades, the analyst can come to an estimate of the maximum likely change in cargo volumes due solely to the event. He may then discount this maximum impact by the probability of the event's occurrence to arrive at a final adjustment in the forecast. For example, if on the basis of similar events in other trades, the analyst concludes that the likely maximum impact of an event would be a 30% reduction in cargo volumes.

The usefulness of such an approach clearly depends on the situation. In any case a great deal of judgement must be exercised by the analyst before arriving at the best estimate of likely impacts and probabilities. Such adjustments to forecasts may be viewed as sensitivities to projected market growth and may, along with the basic forecast, be tested in the financial modeling process described in chapter VIII to estimate the likely financial impact on the CSC of a potential trade-altering event.

Liner Trade Database
 Sample Historical Liner Trade On a Trade Route Basis
 1975-1985
 (long ton)

	1975	1976	1977	1978	1979	1980	
Country A Total	74346	64994	38161	40664	47171	41783	
Percent Change (%)	-	12.6	41.3	6.6	16.0	11.4	
Food Product	10524	9937	1986	2238	4604	1741	
Raw Materials	22872	26360	13578	13838	15797	7763	
Intermediate Goods	20585	17319	15236	16409	16332	19782	
Capital Goods	19403	10959	6713	7445	9984	11863	
Consumer Goods	962	419	648	734	464	634	
Country B Total	74287	82899	65915	75347	80426	85286	
Percent Change (%)	-	11.6	20.5	14.3	6.7	6.0	
Food Products	4480	7483	2960	5267	2584	3106	
Raw Materials	15483	15712	11447	9576	8225	8236	
Intermediate Goods	40210	50530	31626	41580	37975	57597	
Capital Goods	12799	8287	14031	22292	34639	29700	
Consumer Goods	1315	887	1074	1711	1863	2443	
							Annual Compound Growth Rate (1975-1985)
Country A Total	45289	45952	39095	35460	39512		(6.1)%
Percent Change (%)	8.4	1.5	14.9	9.3	11.4		-
Food Product	899	1276	1073	895	720		23.5
Raw Materials	14696	15796	8388	1090	13072		5.4
Intermediate Goods	20066	19073	18032	16494	16729		2.0
Capital Goods	9223	9384	10745	7257	8400		8.0

Consumer Goods	405	418	857	674	555	5.4
Country B Total	101082	83806	107434	180248	188556	9.8%
Percent Chagne (%)	18.5	17.1	28.2	67.8	4.6	-
Food Products	1397	2589	5384	4800	17184	0.7
Raw Materials	10546	10542	14170	15471	11432	0.01
Intermediate Goods	45032	62384	106784	107676	41221	10.4
Capital Goods	24867	28770	47377	54602	9148	15.6
Consumer Goods	1964	3149	6533	5456	1139	15.3

IV-2

SAMPLE HISTORICAL LINAER TRADE
OUTBOUND MAJOR COMMODITTIES
(LONG TONS)

COMMODITIES	1983	1984
TEA	546410	607358
RUBBER	177606	144071
DESICCATED COCONUT	43525	30331
FIBRE	125293	104800
GARMENT	83481	146024
SUNDRIES	213463	384515
SUB TOTAL	1189778	1417099
TOTAL TRADE	1271587	1477550

SORCE: ANNUAL REPORT CENTRAL FREIGHT BUREAU
OF SRI LANKA 1984

IV-3

CONTAINERATION OF THE TRADE ROUTES

(THOUSEND)

Year	Total Liner	trade container	cargo no.cont.	cont.%	
1979	IN	2010607	68036	9693	3.38%
	OUT	1054879	105514	7987	10%
1980	IN	2188813	148094	21384	6.7%
	OUT	964214	233868	20238	24.2
1981	IN	1512758	243941	30088	16.1
	OUT	835756	375480	27718	44.9%
1982	IN	1563416	456151	53722	29.2%
	OUT	934814	578458	49521	61.8%
1983	IN	2005328	707381	72450	35.2%
	OUT	795957	737555	70360	92.6%
1984	IN	2211047	873245	89547	39.5%
	OUT	771642	999475	91937	129.5%

SOURCE: PORT STATISTICS SRI LANKA SERIES V 1979-1984

Table IV-4

Containerizable Potential
Out Bound Trade in 1984
Total Trade

Commodity	Total Commodity Movement	Containerizable Segment		C.S.C Total Commodity Movement	Contain- erizable Segment		C.S.C as Percent of Total
		(T)	(%)		(T)	(%)	
Tea	446402	225220	50.45	178560	89280	50	39.64
Rubber	133646	60000	44.89	534500	34748	65	57.91
Coconut Product	147350	95154	64.57	70728	48095	68	50.54
Sub Total Trade	727398	380374	52.29	302746	172123	57	45.25
Total Trade	1477548			750000			
Percent Identified	49.23%			40.36%			

Sources: Port Statistics Srilanka 1975-1984

Sample Forecast Liner Trade on a Trade Route Basis
1986-1996
(long tons)

Forecast

	1985 (actual)	1986	1987	1988	1989	1990	
Country A	39512	43598	34093	38379	41918	42625	
Percent Change (%)	11.4	10.3	21.8	12.6	9.2	1.7	
Food Products	720	599	561	581	602	620	
Raw Materials	18072	17632	10366	12830	13268	13162	
Intermediate Goods	16729	16029	13331	16597	17062	16926	
Capital Goods	3400	8599	9149	7689	10261	11051	
Consumer Goods	555	739	686	682	752	856	
Country B	188556	158306	160839	192294	207860	222553	
Percent Change (%)	4.6	16.0	1.6	19.6	8.1	7.1	
Food Products	4800	5151	5160	5160	5335	5512	
Raw Materials	15471	12000	12000	16992	18046	19182	
Intermediate Goods	107676	89500	90000	107054	113314	120279	
Capital Goods	54602	46655	48561	57336	64711	70526	
Consumer Goods	5456	5000	5118	5722	6454	7035	
							Annual Com- pound Growth
	1991	1992	1993	1994	1995	1996 (1986-1996)	
Country A	44049	46028	47971	49877	51476	53154	2.0%
Percent Change (%)	3.3	4.5	4.2	4.0	3.2	3.3	
Food Products	639	662	687	715	741	768	2.5%
Raw Materials	13385	13921	14422	14912	15210	15515	3.9%
Intermediate Goods	17213	17902	18546	19177	19560	19952	3.9%
Capital Goods	11890	12544	13234	13885	14605	15364	6.0%

Consumer Goods	922	1082	999	1360	1190	1555	7.7%
Country B	236366	252816	270651	289876	310683	333026	7.7%
Percent Change (%)	6.2	7.0	7.1	7.1	7.2	7.2	
Food Products	5693	5881	6076	6270	6464	6665	2.6
Raw Materials	20276	21472	22739	24171	25742	27416	8.6
Intermediate Goods	127008	134237	141901	150552	160120	170292	6.6
Capital Goods	75826	82953	90917	99008	127622	116985	9.6
Consumer Goods	7563	8273	4018	9875	10735	11668	8.6

CHAPTER V SUPPLY ANALYSIS

An understanding of the factors underlying the supply of capacity on trade is an important component of strategic planning. It provides a valuable input to the analysis of competitors' behavior and the subsequent projection of future capacity and behavior of competitors.

Competitor Profile -----

As a starting point, competitors should be identified and sufficient details collected on their operations so that a thorough analysis of their strengths, weaknesses, and current strategies may be undertaken. Although most competition on liner trade will generally come from other liner operators directly serving the trade, the definition of competition must be broad enough to include all existing and potential sources of competition, including other modes of transportation. The trans-Siberian rail road for example has to be considered a major competitive factor in the Europ-Far East liner trade.(1) Air cargo carriers compete with shipping companies for high value cargoes.(2) Also, competition may come from liner operators on triangular trade routes, or from specialized carriers such as reefer and neobulk operators. Finally, the planner should analyze the threat from potential competitors organizations (3) that appear positioned to enter a trade or whose apparent strategy suggests an expansion into the trade area.

Once the scope of the competition has been determined, the strategic planner should seek to understand the historical behavior. By developing a database on each competitor, the planner will gain insights into their behavior and the perspective needed to make an overall assessment of the nature of the competition by useful historical data which include the following:

-Fleet profile of the competitor: the total number of vessels by capacity, type, and deployment, both worldwide and in direct competition with the C.S.C (Table V-1)

-Vessels on order;

-Market share: the major commodities carried by total volume and amount carried as a percentage of the entire trade in that commodity (Table V-2);

-Share of capacity (in total and relative to the market share in cargo tons);

-Performance: financial and operating results (Table V-3).

Fleet data by carriers are readily available from a number of international vessel registers and maritime publications. Market share data are more difficult to obtain, but can often be determined from several sources, including conference or pool statistics. The annual reports of central freight bureaus and statistics from the Department of Commerce give the amounts and types of the major cargoes carried by competitors. This, in turn, gives the planner an idea of the value of the cargo carried and can, when viewed over a time span, indicate whether the cargo mix of a competitor has improved or deteriorated. Financial data and ope-

rating results can be obtained from published annual reports, reports in industry publications and annual maritime industry references such as the Fairplay World Shipping Year Book, Lloyd's List and Lloyd's Economist.

This information should provide the strategic planner with insights into several aspects of each competitor's behavior, and help answering the following questions:

- What is the trend in C.S.C.'s financial results ?
- What is the operating strategy of the competitor ?
- Is the competitor in a strong or weak position with respect to the market share and carriage of high value commodities ?
- Is the competitor vulnerable to pressure which will lead to withdrawal from the trade or does he have the strength and resources to expand aggressively ?

There is, additionally, a broad spectrum of qualitative issues for each competitor that must be addressed by the strategic planner. The competitor's fleet profile can help answering the following questions:

- What are the capabilities and economic situation of the competitor's fleet ?
- Are the competitor's ships well suited to the trade route in capacity, speed and cargo modes ?
- Is there an apparent trend in the competitor's fleet toward a particular area of specialization, such as, reefers, roll-on/roll-off heavylifts, or containers ? -Is the competitor's fleet composed mostly of chartered tonnage (indicating a short-term, transitional strategy) or owned new-buildings (suggesting a major, long term commitment and strategy)

Once the competitors have been analyzed separately, several general, comparative questions need to be addressed:

- Do any of the competitors possess significant scale economies ?
- What is the relative market position of each competitor ?
- What are the relative size of the competitors ?
- On what bases do the competitors attempt to compete (e.g. frequency of sailings, low quoted rates, special handling capabilities, nationalities) ?
- Do any of the competitors benefit from cargo preference agreements or regulations, direct or indirect subsidies, or bilateral agreements ? Do any advantages accrue to Srilankan or non Srilankan shippers on this trade route ?
- Do any of the competitors possess significant horizontal or vertical integration ?
- Which of the competitors are well-managed ? What are their reputation ?
- Which competitors are subsidiaries of large corporation or government entities ?

Because of their regular contact with shippers the C.S.C.'s sales force and local agents can provide important insights into the competitor's strategy and behavior.

Characteristics of Competition (4)

Once the planner has a grasp of the apparent current strategies of the CSC's various competitors, the nature of the competitive environment of the trade route begins to emerge. The planner can aid this process by asking questions concerning aspects of the market which relate to the competitive environment:

- Is the trade fast-growing or declining and what will be the impact upon the market share and the growth of competitors ?
- Is the trade profitable for major operators or is it likely to generate losses ?
- Are there significant barriers to exit (for example the deployment of a specialized vessel type on the route with few opportunities for alternative deployment or sales) ? -Do competitors generally operate within a conference system or do independents play a major role ?
- Do bilateral shipping agreements and cargo pools allocate market share on a national flag basis or is there a significant presence of thirdflag cross traders ?

Analysis of Aggregate Supply

Having analyzed the individual competitors on a trade route, the planner can gain additional insight by tracking the supply of total capacity on the trade over time against cargo flows. The relationship between supply and demand may provide important insights into capacity utilization levels and likely overall carrier economics on the trade and the level of freight rates.

In order to determine total capacity on the route, the following data must be compiled:

- Vessels on the route by type (container, breakbulk, Ro/Ro, etc) from the competitor fleet profiles.
- Capacity of each vessel by type.
- Port rotation
- Vessel frequency

Competitor voyage information, if not already available in-house, can be found in trade publications such as Lloyd's

voyage record. As mentioned previously in this chapter, vessel capacity data are available from several sources.

From these data, the total available capacity on a trade route for a given period can be developed "from the bottom up" for each competitor, by plotting capacity on a quarterly basis the planner can generally capture seasonal and any changes in capacity due to specific events yet avoid the excessive and possibly confusing details that might come from a more detailed monthly analysis. Capacity should be separated and categorized wherever possible by type. Container capacity in TEUs, breakbulk and bulk capacity in cubic feet or meters, and Ro/Ro capacity in cubic feet or trailer units (table V-4).

One difficulty that will be encountered is in allocating capacity on trades where competitors use vessels that also call at ports outside the trade being analyzed. A similar problem occurs in trades served by feeder vessels from mainline vessels that serve a number of other trade markets. Information on a competitor's liftings and on its total service could be used to allocate capacity among the respective trades, or knowing the competitor's market share on the particular trade route, the planner could estimate a level of capacity utilization for the competitor, and applying an average stowage factor for the trade to the competitor's liftings, generate a total capacity deployed for the competitor for trades served by feeder vessels, the capacity of the feeder vessel only should be considered the competitor's allocated capacity to the route.

Once the level of capacity on a trade has been determi-

ned, the data can be employed in an analysis of discernable trends in capacity supply. Among the insights into trade and competitor behavior that can be gained are the following:

- The introduction of a new type of vessel by a competitor or group of competitors may indicate a commitment to a certain technology.
- The relative level of capacity over time of each competitor may suggest the degree of aggressiveness in a competitor's strategy when penetrating a market.
- Possible major shifts may emerge in the share of capacity between carrier groups on a trade, such as from Srilanka and third-flag cross traders to foreign national flag groups.
- Overall trends towards containerization may be discerned in trades that are not already fully containerized. This is the case in Table V-4 where several carriers have aggressively expanded container capacity while breakbulk capacity on the trade route has been in a gradual decline.

Interaction supply and demand -----

The next step in the analysis involves plotting the historical market demand or trade flows against capacity supply. Historical trade data (see chapter IV) should be translated into units of capacity (TEUs or FEUs for containerized cargo, cubic feet for breakbulk, etc) on the basis of the estimated or actual containerization levels on a trade route. Using average stowage factors for the trade (longtons per TEU, cubic feet per long ton), the planner can then convert the trade data into utilized capacity units (Table 5-5).

The relationship between capacity supply and demand provides a level of capacity utilization for the trade as a whole (Table 5-6). This historical relationship is important both in analyzing past trade behavior and in projecting future trends. (5) A close fit between supply and demand for example, as expressed in stable capacity utilization levels would suggest a fairly disciplined and flexible market place with carriers adding or deleting tonnage as required to maintain profitable utilization levels. It may also suggest that barriers to entry exist for major new carriers, that might upset the equilibrium. On the other hand, overall capacity utilization levels that vary over a wide range over time suggest a different sort of trade. Major operators on such a trade may have such economies of scale that new entrants must come in with large increments in capacity in order to be competitive, and weak carriers are forced to withdraw completely or merge with other companies in order to achieve the necessary scale of operations. (6)

In the case of Ceylon Shipping Corporation as shown in table V-5 and V-6, a rapid increase in the demand for containers has been met through additions to capacity. Capacity utilization for containerized cargo has remained high throughout this period, falling somewhat only in 1985 in the out bound segment of the trade. Break-bulk cargo, on the other hand experienced a serious downturn in 1982-1985 which resulted in low break bulk capacity, combined with a recovery in 1985 of overall demand which led to improved utilization in 1985. The planner will want to consider the question of whether breakbulk capacity will decrease further, returning utilization to its previous high level, or whether competitive pressures and further container penetration will keep break-

bulk utilization levels low.

Projected Competitive Behavior And Supply

Having analyzed past patterns of supply and the historical behavior of competitors on a trade route, the strategic planner is in a position to project likely future strategies of key competitors and thus the future supply of capacity. Then new construction plans of a competitor may provide a clear indication of its future equipment and possible deployment strategy although the capacity can obviously also be increased without an advance warning by redeployment, chartering or the purchase of existing vessels. Likewise, the analysis of financial data on competitors has strategic implications so the planner may be able to detect if a weak competitor may withdraw from the trade or if potential competitors outside the trade may enter. Financial data and annual reports, as well as various corporate announcements can also give the planner a sense of the competitors' goals, position in terms of profitability and capital intensity. Additionally, financial data can give the planner an idea of the resources a competitor in the trade can arrange in order to advance his own plans or to react to a competitive threat.

Other questions for which the planner may seek answers in order to determine the likely strategies of each principal competitor include the following:

- What portion of the competitor's total shipping activity is composed of the trade or trades on which it competes with the Ceylon Shipping Corporation ?
- What is the likely response time of the competitor to

- any strategies the corporation may undertake ?
- Does the competitor directly compete with the corporation for particular cargo parcels or will his market penetration strategy provoke a strong response ?
 - Is the competitor a potential partner in a future rationalized trade structure ?

Given the projected future competitor's strategies and the projected levels of demand (refer to chapter IV) the planner can then employ historical supply and demand relationships as a basis for projected future levels of capacity. In addition to considering announced new constructions, the planner must take into account certain subjective issues such as:

- How will technological trends (e.g. containerization) affect the relative market strength of competitors ?
- How sensitive is the trade to competition from alternative modes of transportation ?
- To what extent will competitors exploit market opportunities to increase market shares ?
- What are the possibilities of new entrants into the trade or of an exit by a current competitor ?
- How sensitive is the projected level of supply to changes of demand ?
- To what extent (if any) will competition increase or decrease capacity utilization over time ?

Analysis of the historical relationship between the capacity of supply and demand (as reflected in capacity utilization levels) and the projected competitor strategies and competitive environment, in addition to new buildings and other vessels identified as committed to the trade in the future will provide the basis for a

forecast of supply. The trade (demand) forecast is the principle ingredient. However, in any supply projection, the supply of capacity on any liner trade in the long term is driven by demand. But the elasticity of supply that is, the responsiveness of changes in capacity to changes in demand over time will vary depending on conditions particular to the trade. For example, supply is likely to be relatively inelastic on a trade characterized by specialized vessels, which are owned or on long-term charters, and for which there are few opportunities for alternative developments. During a trade downturn, operators will face the limited options of continuing operating their full fleet, hoping to cover at least operating expenses, or lying up a portion of their fleet. Alternatively, a supply-elastic trade may be characterized by flexible type tonnage suitable for deployment on a number of trades, and in which carriers normally obtain a portion of their short-term charters.

The supply-elastic trade in which operators respond relatively promptly to variations in demand levels tend to have a more stable level of capacity utilization than a trade characterized by relatively inelastic supply. Conventional breakbulk services tend to be representative of the supply elastic trade, while increasing specialization of vessels leads to more inelastic levels of supply.

A long term projection of supply, therefore, may be relatively easily linked through a stable capacity utilization measure to a trade forecast on a route characterized by relatively high elasticity of supply. However, a significant change in the technological or competitive environments of a trade (for example, a shift

from general cargo vessels to larger full container vessels or the entry of a major new competitor) may upset the equilibrium in capacity utilization levels. In the more complex environment of a trade characterized by inelastic supply and economies of scale, such that capacity is added or subtracted in relatively large units, supply projections must place more weight on the more subjective assessments of future competitor strategy and competitive environment.

The analysis required to develop a soundly based forecast of supply can lead to a number of important insights into competitive strategy in a trade:

- An indication of the impact of additional capacity on utilization levels.
- The need for new vessel technologies
- A sense of the timing of new vessels or equipment decisions (e.g. the optimum time to add container capacity)
- The impact on profitability caused by the level of capacity utilization.

Table V-7 and V-8 projected the supply of capacity on a trade relative to a forecast in demand. This forecast is an illustration of a highly disciplined trade route, where supply and demand are projected to continue their historically close relationship. Container cargo capacity is projected to closely continue tracking the demand. Breakbulk capacity utilization, after falling dramatically in 1982 and 1985 when the demand plummeted, is projected to recover as the breakbulk demand was stabilized and the capacity rationalized. Therefore, trade is expected to become more highly containerized. On top of an average annual growth rate of 7.4%, overall capacity

utilization is projected to recover from its historical low in 1985 to reach a high point in 1989-1990 before declining in 1991 as a result of a large increase in capacity due to recently ordered newbuildings and a projected slow-down in the trade.

The impact of capacity utilization on rate levels and carrier profitability is discussed in Chapter VII.

V-1

C.S.C Competitor Fleet Information

Competitor	Type	Yearbuilt	Number of Vsl	Cargo Capacity		Deadweight	
				TEUs	CUFT	Total	Average
Cobra	FC	1979	2	1945	-	48772	24386
	FC	1980	3	3644	-	81030	27010
SCI	FC	1980	4	4166	-	67525	16882
	SC	1976	4	940	2416	37600	9400
	BC	1974	3	600	35000	83127	27709
	GC	1973-79	10		70000	160510	16051
Norasia	FC	1980	5	6600	-	120000	24000
	FC	1982-83	2	3080	-	54020	27010

GC: General Cargo

SC: Semicontainer

FC: Full Container

BC: Bulk Cargo

Source: Loyds Register Ships

C.S.C Competitive Market Share Analysis
Total Market & By Major Country
Out Bound (1982-1985)

Carriers	1982		1983		1984		1985	
	tons	share	tons	share	tons	share	tons	share
Total Out Bound								
C.S.C	43606	28%	74903	35%	98297	38%	98248	42%
SCI	22555	15%	31316	15%	40604	15%	42568	18%
Cobra	77467	51%	91331	42%	98972	38%	73312	31%
Norasia	-	-	12454	6%	24181	9%	21284	9%
Lloyd Triestino	9002	6%	4151	2%	-	-	-	-
Total Market	152650	100%	213975	100%	262054	100%	235412	100%

-----U.K.-----

C.S.C	13342	74%	20301	73%	23910	76%	23930	66%
Cobra	2400	14%	6396	23%	7290	24%	12510	34%
Lloyd Triestino	2066	12%	1210	4%	-	-	-	-
Total Market	17608	100%	27907	100%	31200	100%	36400	100%

-----Rotterdam-----

C.S.C	15784	33%	19281	37%	25012	41%	26780	44%
Cobra	21262	44%	21877	42%	24402	40%	23128	38%
Norasia	-	-	3127	6%	5490	9%	4260	7%
SCI	10940	23%	7816	15%	6100	10%	6696	11%
Total Market	47986	100%	52111	100%	61004	100%	60864	100%

Source: C.S.C Competitive Analysis Reports

V-3

COBRA LINE FINANCIAL CONDITION & RESULTS

1983-1985

(Thousand of Dollars)

	1983	1984	1985
REVENUE	\$186284	\$181517	\$ N.A
NET INCOME	18929	21654	18930
PROFIT MARGIN	10%	12%	N.A
ASSETS(CAPITAL EMPLOYED)	94975	134732	176937
RETURN ON NET ASSETS	20%	16%	11%
SHARE HOLDERS EQUITY	94106	130999	168947
RETURN ON EQUITY	20%	17%	11%
LONG TERM DEBT	869	3734	N.A
DEBT/EQUITY RATIO	0.01	0.03	N.A

N.A:NOT AVAILABLE

SOURCE:COMANY ANNUAL REPORT

V -4 C.S.C TOTAL LINER CAPACITY LINE A 1982-1985

CARRIERS	1982	1983	1984	1985
-----BREAKBULK CAPACITY-----				
S.C.I	2340	2101	1745	1669
COBRA	2306	2521	2232	1984
NORASIA	---	1362	2282	228-
LLOYD TRIES				
-TINO	1227	1227	1227	1049
C.S.C	4262	3015	2400	2036
TOTAL	10125	10216	9876	9020
-----CONTAINER CAPACITY-----				
(T.E.U.s)				
S.C.I	10462	11296	12696	13412
COBRA	3327	7048	10750	10111
NORASIA	-----	3000	3000	4283
LLOYD TRIES				
-TINO	500	500	----	---
C.S.C	6200	11476	18190	18200
TOTAL	20989	33320	44630	46006

SOURCE;: C.S.C COMPATITIVE ANALYSIS REPORT 1985

V-5

C.S.C Line A Capacity Utilization
1982-1985

Year	Containerized Cargo (TEUs)			Breakbulk Cargo (000CUFT)		
	Capacity Supply	Capacity Demand	Utilization Level	Capacity Supply	Capacity Demand	Utilization Level
Out Bound						
1982	11218	10664	95	5163	3654	71
1983	17809	16579	93	5210	3404	65
1984	23854	21506	90	5037	2904	58
1985	24859	19069	78	4600	2873	62
In Bound						
1982	9771	9667	99	4962	3804	77
1983	15511	15030	97	5006	3543	71
1984	20776	19496	94	4839	3022	62
1985	21417	19849	93	4420	2990	68

Sources: Annual Report and Accounts 1985

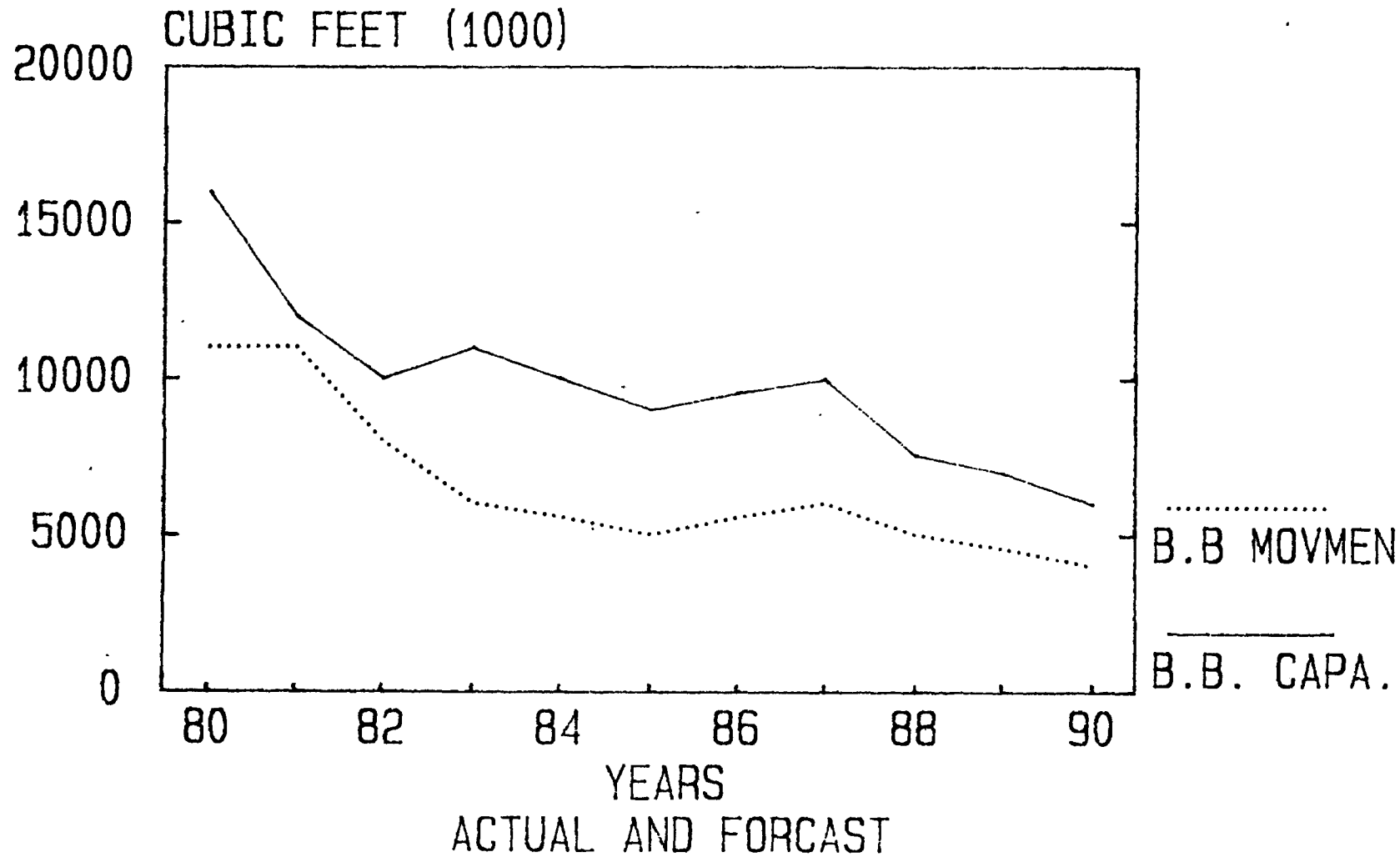
V-6

C.S.C Historical Demand: Containerized & Breakbulk Cargo Segments
Line A (1982-1985)

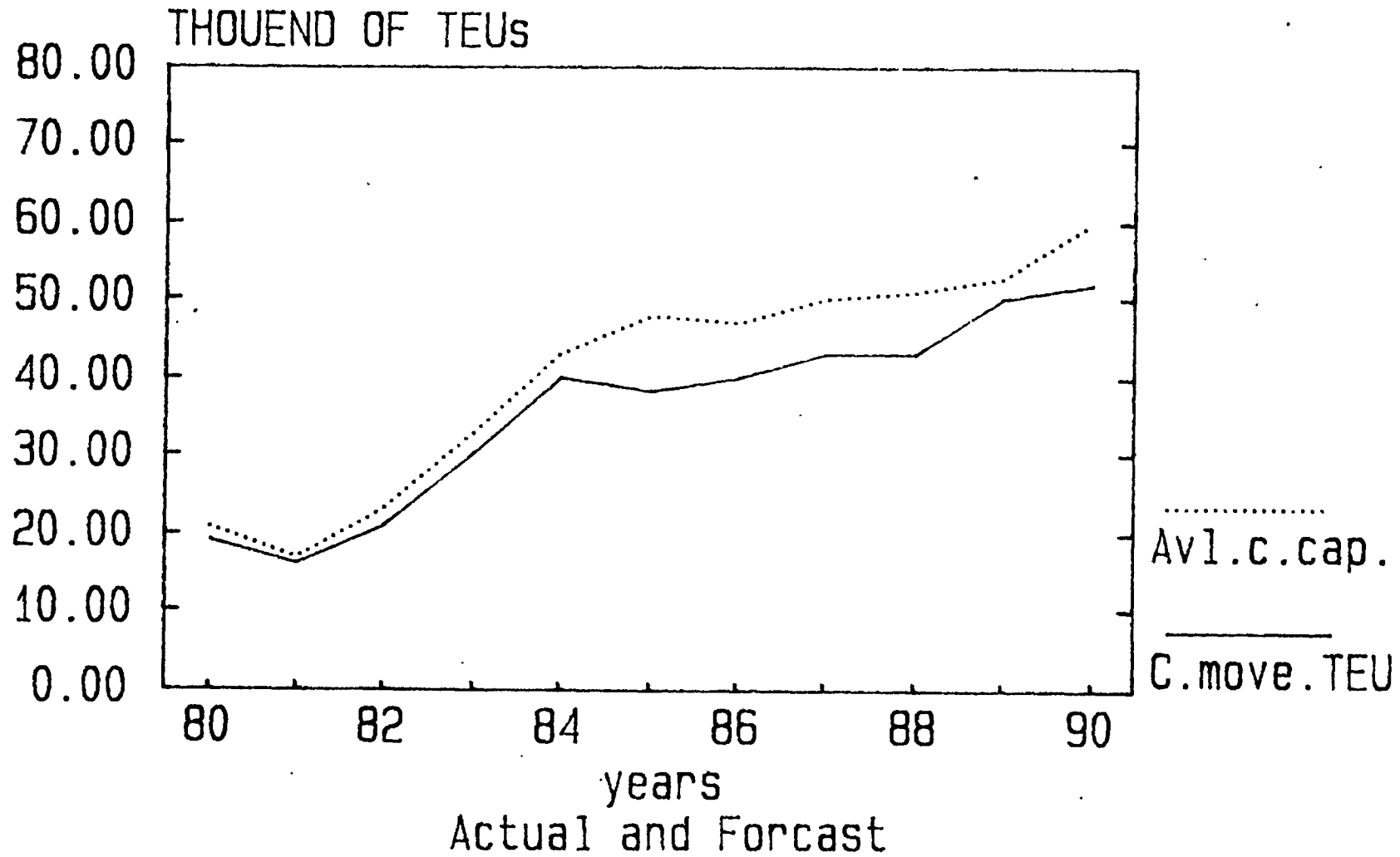
Year	Total Trade	Percent Containerized	Container Tons	Cargo TEUs	Breakbulk Cargo Tons (000CUFT)
Out Bound					
1982	152650	75	115174	10664	37476 3654
1983	213975	84	179063	16579	34912 3404
1984	262054	89	232269	21506	29785 2904
1985	235412	87	205945	19069	29467 2874
In Bound					
1982	158891	76	119876	9667	39015 3804
1983	222710	84	186372	15030	36338 3543
1984	272745	89	241750	19496	30995 3022
1985	276794	89	246127	19849	30667 2990

Source: Annual Report Central Freight Bureau of Sri Lanka Port Statistics
1975-1985

ANNUAL CAPACITY & MOVEMENS LINE A
1980 -1990



ANNUAL CAPACITY & MOVEMENTS LINE A 1980 - 1990



CHAPTER VI

OTHER ENVIRONMENTAL FACTORS

The strategic analysis of CSC's environment should not be constrained to an examination of market and competitive factors. In order to develop a comprehensive projection of the C.S.C.'s operating environment, the analysis should include an examination of the current situation and possible changes likely to affect key suppliers, technology, and the legal and regulatory environment.(1)

Key Suppliers

An understanding of possible future developments regarding the supply and cost of critical materials and services on which the CSC depends can be of utmost importance in developing an effective business strategy. Five supplier areas tend to be critical of the conduct of a liner operated business:

- Cargo handling labour and services
- Seagoing labour
- Fuel
- Inland transportation infrastructure
- Vessel and equipment construction and repair.

Cargo Handling Labour and Services

The potential for future disruptions in the supply of cargo handling services through industrial action by

longshore or associated labour, or through service bottlenecks in terminal operations, must be assessed by the strategic planner. The strong industrial climate must also be assessed for the potential disruption of industrial agreements and, in some areas, political disturbance.

The present and forecasted supply of port and terminal facilities should be analyzed—particularly for foreign ports, in which the availability of facilities and equipment will play a major role in the phase of containerization or the potential growth of a trade. The planner will require a concise summary of relevant data.

In addition to the supply of cargo handling services, the planner will require a projection of cargo-handling cost levels. Labour and capital equipment costs are two major components of these cost levels. From this analysis, the planner may be able to identify relationships that would prove useful in projecting cost levels based on forecast wage and capital equipment cost indices. Foreign labour and equipment can also be used to put together the foreign side of the cargo handling cost projection.

Seagoing Labour

Any potential for disruption in the supply of seagoing labour must be assessed in the same way as the analysis of the labour component of cargo handling cost levels, because a relation may be identified between vessel labour costs and historical CSC wage indices. Labour costs could then be projected on the basis of forecast CSC wage indices adjusted, if necessary, on the basis of

explicitly assumed factors that would cause seagoing labour costs to increase at a different rate than those for national industries in general.

Fuel

With bunker fuel costs comprising over 50% of the daily vessel operating costs of liner operators today, both the future cost and supply of this resources are of special importance to the future performance of any liner operator. Ample information on forecast supply and cost levels of various fuel types is publically available.

Inland Transportation Infrastructure

In an age when the demand for the inter-modal transportation of liner cargoes is increasing around the world, (2) knowledge of the availability of cargo transportation and cargo handling services and facilities away from the port area as well as knowledge of the full costs associated with this infrastructure, is essential to the strategic planner. An extensive and regular reporting system for such data may be provided through C.S.C.'s sales representative, agents, and local offices.

Vessel, Equipment, Construction and Repair

A capital-intensive business like shipping requires that the liner operator have an up-to-date knowledge of the supplies of potential new vessels (either newbuildings or secondhand) and the cost and feasibility of various forms of vessel conversion and repair. The same knowledge of capital equipment (containers cargo-handling vehicle etc.) is also required, as is knowledge of the potential value of the fleet's existing vessel and equipment on the release market. Such information is available from the shipping press, shipyards, ship brokers and naval architects.

Technology

CSC should continually monitor advances in technology for any developments that could have a major impact on its future. In the liner industry, such developments may include:

- New cargo handling systems and modes
- New vessel and marine equipment designs & capabilities
- New vessel propulsion systems or fuel types
- Advances in complementary or potentially competitive non-marine transport modes.

The impact of new technology must be assessed in terms of economics. Timing, can also prove critical in the introduction of new technology. The planner must recognize that new technology will inevitably introduce the corporation to new sets of problems. A prior awareness of these problem areas can considerably assist in effectively dealing with them.

Legal and Regulatory Environment

An analysis of the present structure of the legal and regulatory environment surrounding the SriLankan liner industry and potential changes to it, is critical to effective strategic planning. The high degree of government involvement in the industry within Srilanka and the potential for increasing international regulation related to such mechanisms as the UNCTAD Liner Code mean that the legal and regulatory environment can exert a significant impact on a liner industry's long-term performance. A sensitivity to developing issues in the industry will allow the operator to adopt a proactive stance in order to help in channeling legal and regulatory changes in a helpful direction.

On the domestic front, the strategic planner must assist the likely direction of future Srilankan regulatory and promotional policy toward the national merchant marine.

CHAPTER VII

THE PROJECTED ENVIRONMENT

In previous chapters I have described the means by which data may be collected and analyzed to identify the major trends within the corporation environment that are likely to have a significant impact on its future. This chapter deals with the synthesis and integration of the earlier segmented analysis leading to a cohesive projection of future environmental conditions.

In the projection of a liner operator's future environment, several factors emerge as important:

-The interaction of forecast supply and demand levels and their impact on freight rate. -The relationship between projected revenue and cost levels and their impact on carriers' profitability. -The structure of the industry as influenced by competitive pressures such as legal and regulatory processes, and new technology.

Freight Rate and Carrier Profitability

The basic assumption behind my approach to forecasting freight rate levels are that three key factors have determined the level of rates on a liner trade:

-Cost levels, including capital and operating cost and voyage cost

-Capacity utilization relative to breakeven utilization levels

-The nature of competition in the trade. For example, a trade with a fairly stable degree of competition may be characterized as one in which existing carriers' market positions are protected to some extent by pooling agreements, strong consortia, or closed conferences, etc. (A trade in which an unstable competitive environment.)

Table VII-1 provides an example of a liner trade with an apparently close relationship between levels of capacity utilization and gross freight rates. The trade to which these apply may be characterized as highly competitive with a relatively large amount of new tonnage added over the 1981-1985 period. Furthermore, 1985 was a year of consolidation and rationalization accompanied by some departures from the trade. On the inbound trade, the decline in capacity utilization levels was accompanied by a slightly lagged decline in rate levels. The up turn in utilization levels in 1980-1985 was followed by an improvement in rates in 1985. On the outbound leg of that trade over the same period, utilization rates remained relatively high and actually showed a positive trend for most of the period. Coincidentally, freight rates maintained a buoyant growth over the period.

Table VII-2 provides an example of a trade with a markedly different degree of competition. Outbound rates again exhibited strong growth over the 1981-1985 period with capacity utilization levels remaining from 80 to 90 %. However, this trade suffered from an increasing imbalance between outbound and inbound volumes, which led to a serious decline in inbound utilization levels. Never-

the less, inbound rates maintained strong growth over the period, distinct from the impact of low utilization on rates as shown in table VII-1. The trade characterized in Table VII-2 demonstrated a fairly disciplined control over rates and capacity over the five year period. Downward pressure on the inbound rates has not been exerted, as carriers have apparently not sought to improve their inbound capacity utilization through a destructive "rate war". The first trade is characterized by a large number of carriers operating both within and outside the conference system. The second trade contains fewer carriers, virtually all of whom operate within the conference system and various bilateral cargo-pooling agreements. The analysis suggests that while capacity utilization levels are one element in the determination of rate levels, their impact or relevance must be considered in light of other key factors in the example of Table VII-2, severe trade imbalances, the nature of competition, regulatory and structural factors overrule low capacity utilization as a primary factor in determining rate levels on the inbound trade.

Freight rate projections contain implicit assumptions of future operating and capital cost levels. The critical projection is the relative movement of freight rates to an operator's costs. The starting point for such a projection is the establishment of a credible forecast of operating costs. Table VII-3 provides example of such a projection by major cost category. In this case the escalation factors are based mostly on Srilankan economic indices. Similar data for a foreign flag carrier will require escalation factors for maintenance and repair costs and others that are based on foreign economic projections. The cost indices should reflect a com-

posite of major operators on the trade in order to provide a sense of overall operating economics. These projection must then be transposed into the context of the carrier's operations, taking into account the impact of such elements as fixed and variable costs and capacity utilization levels. The development of a forecast cost index is illustrated in table VII-4. In general, the relationship of rates and cost levels can be most easily dealt with in an indexed form which current or historical actual levels provide a basis for the index. (The cost indices of table VII-4 are based on the income statement included as in Table VII-5).

The cost elements have been split into two principal categories: cargo related costs, which are variable with volume, and costs that tend to be fixed in the short term (vessel and voyage expenses). Equipment costs have been treated as variable with volume under the assumption that an operator with a mix of leased and owned containers and other equipment would be able to make sufficient adjustments in equipment levels over a 12 months period to keep pace with the demand. The costs that are "fixed" in the short term have been adjusted by capacity utilization factors. This factor introduces the impact of capacity utilization levels on the overall economics of the operator. In order to project average freight rate levels on a unit basis (revenue ton) it is necessary to project the movement of costs on the same basis in relationship to rate levels. The cargo cost index need not be adjusted for capacity utilization levels, because it is already defined on a unit basis (revenue ton, TEU, etc.). The capacity utilization factor translates into a unit basis the costs incurred in operating, managing and financing the vessel. As utili-

zation levels increase these costs are spread over more revenue-earning cargo units, which therefore reduces their unitbased cost levels.

Carrying the example of the rate projection forward, Table VII-6 describes the historical relationship between capacity utilization levels, rates and cost levels on a hypothetical trade. This relationship is then projected on the basis of previously projected capacity utilization and cost levels to forecast increases in average freight rate levels. As demonstrated in table VII-7, the trade under consideration entered a period of serious losses between 1982 and 1986 following strong years in 1980 and 1981. The primary factors behind this erosion in performance were an increase of 15 % in the non cargo cost index in 1981 (Presumably due mostly to large increases in bunker fuel expenses that year) and the exacerbating effects of over-tonnaging in the trade, which dropped utilization levels to 50%. The onset of economic recession in the countries of the trading partners in 1983 reduced trade volumes and further weakening capacity utilization. Intense competition on the trade prevented compensatory rate increases from being achieved, which led to deep losses of the 1983-84 period.

With capital expenses (payment of principal and interests) estimated to constitute 13 % of the adjusted total cost index in 1984, it may be inferred that during the 1983-1985 period an operator on the trade could only have covered operating costs and made little or no contribution to capital expenses. However, projected recovery in demand and rationalization of capacity on the trade in 1986 leads to a forecast capacity of utilization level of in 1987 of improved trade and competitive

environments indicating that a recovery in rate levels will create a breakeven situation in 1986. This in turn leads to a forecast capacity of utilization level of 1987. Improved trade and competitive environments indicate that a recovery in rate levels will create a breakeven situation in 1986 followed by profitable conditions in 1987 and 1988. A projected decrease in capacity utilization levels in 1989 is anticipated to decrease profit margins in that year.

Clearly, in producing the forecasts of cost rates and profit levels described above a large number of assumptions have been made some of which, unquestionably, will prove incorrect. The next chapter, which deal with the development of strategy and sensitivity testing in which the impact of variations in these key assumptions may be tested.

The development of rate and cost projections can also be further refined from the process described so far. In addition to the impact of utilization levels on vessel-operating costs these costs may also be affected in the future by improvements in technology and productivity. For example, the replacement of small vessels with large vessels, possibly in conjunction with a rationalization of capacity with other carriers, may produce economies of scale. The total cost index 11 line on Table VII-7 reflects the impact of a gradual increase in average vessel size on a trade, from 1200 TEU in 1986 to 1600 TEU by 1990 (Table VII-7 explains the calculation of the projected economies of scale).

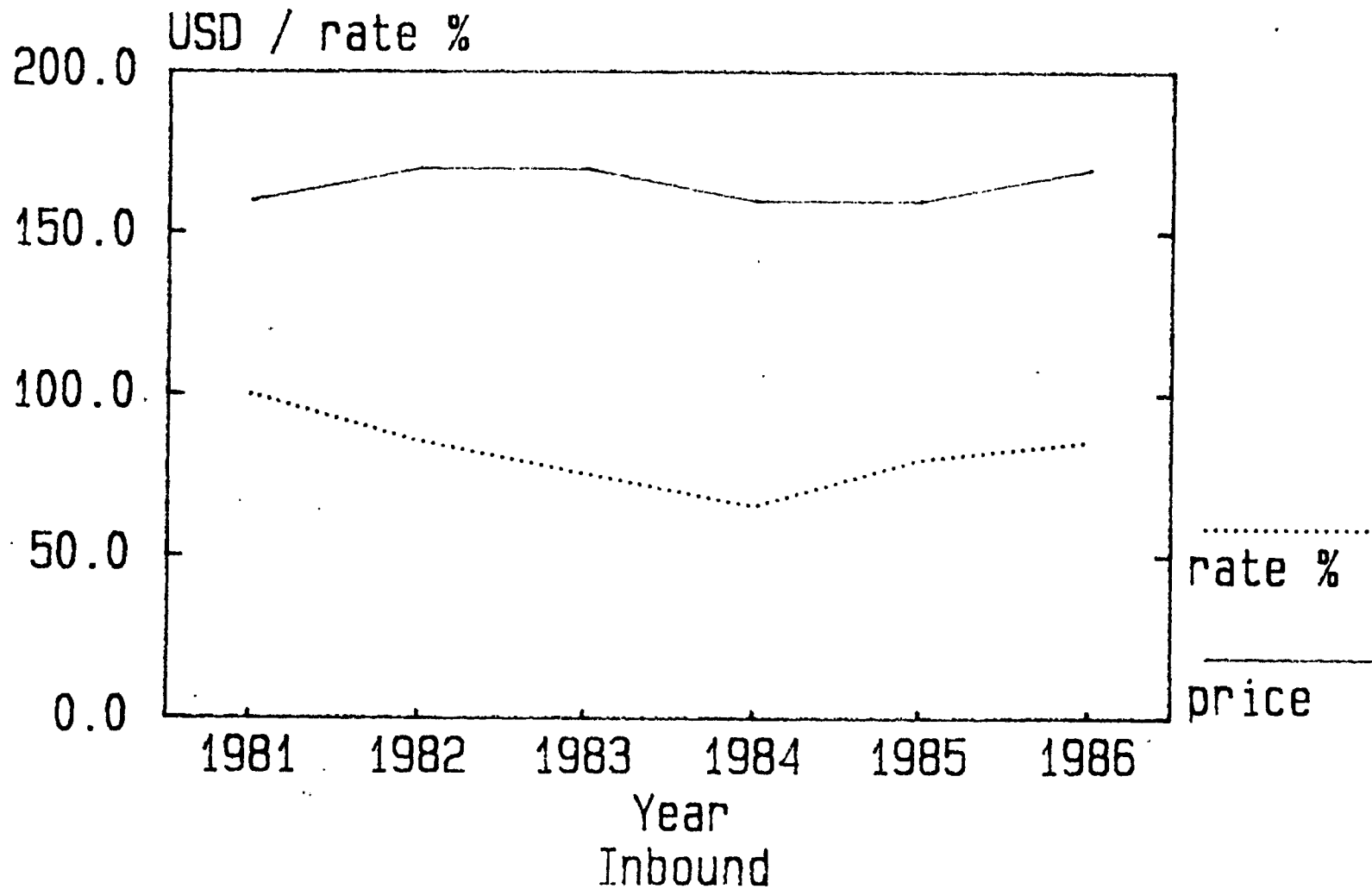
Industry Structure

The structure of the liner industry is currently undergoing a major realignment as a result of competitive dynamics, changing international and Srilankan regulations and evolving technology. The trends that have contributed to this state of evolution include the following:

- The development of large and well-supported merchant fleets in a number of developing nations, particularly in Asia and South America.
- The increase in support within the international shipping community, particularly among developing nations, for measures that allocate shares of liner trades by flag, for example, bilateral agreements and the UNCTAD Liner Code of Conduct.
- The establishment of large consortia of ship operators for the financing and operation of large container systems, combining the operator's previously independent services and resources and introduced round the world service as a new concept for the liner industry.

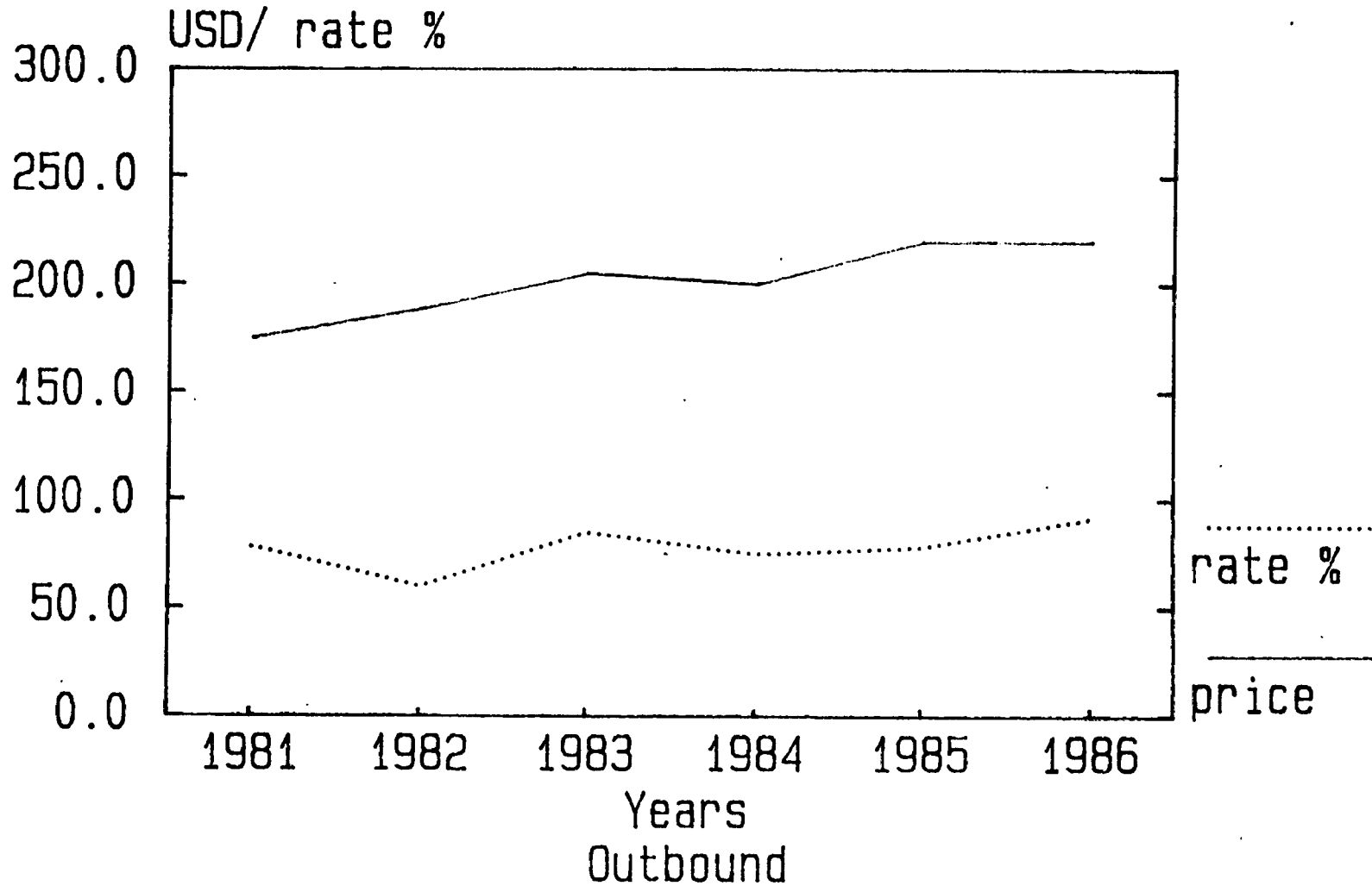
The impact of such trends should be analyzed in order to determine the likely long-term effects on the level, the type of competition in a trade, the ability of new operators to enter a trade, the type of service provided, rate-setting mechanisms and possible controls and rationalization of capacity.

Chart 1b: Comparison of quarterly freight & capacity utilization rate



VII - 1

Chart 1 : Comparison of quarterly freight & capacity utilization rate



VII-2

VII-2

Chart 1: Comparison of quarterly freight & capacity utilization rate

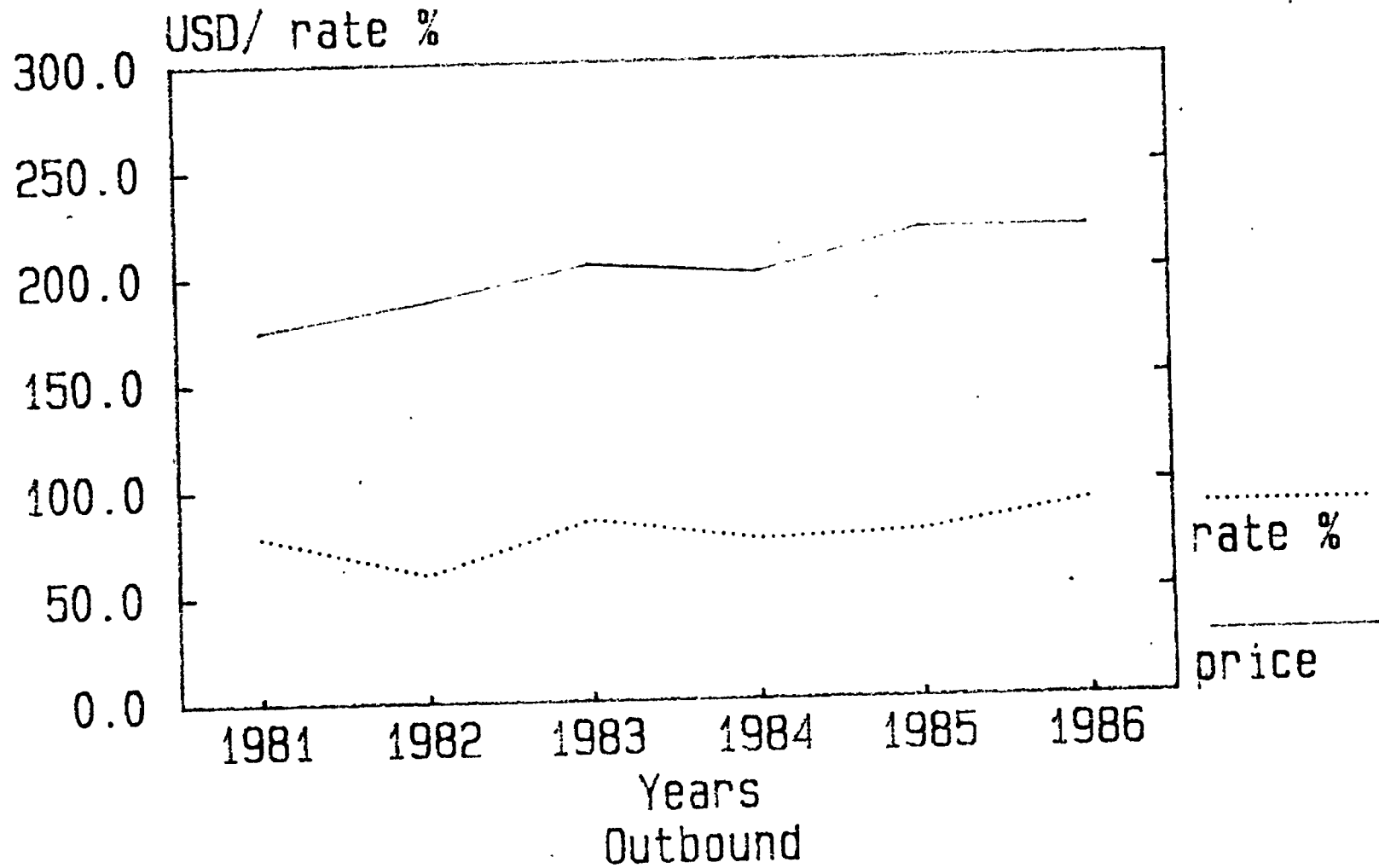
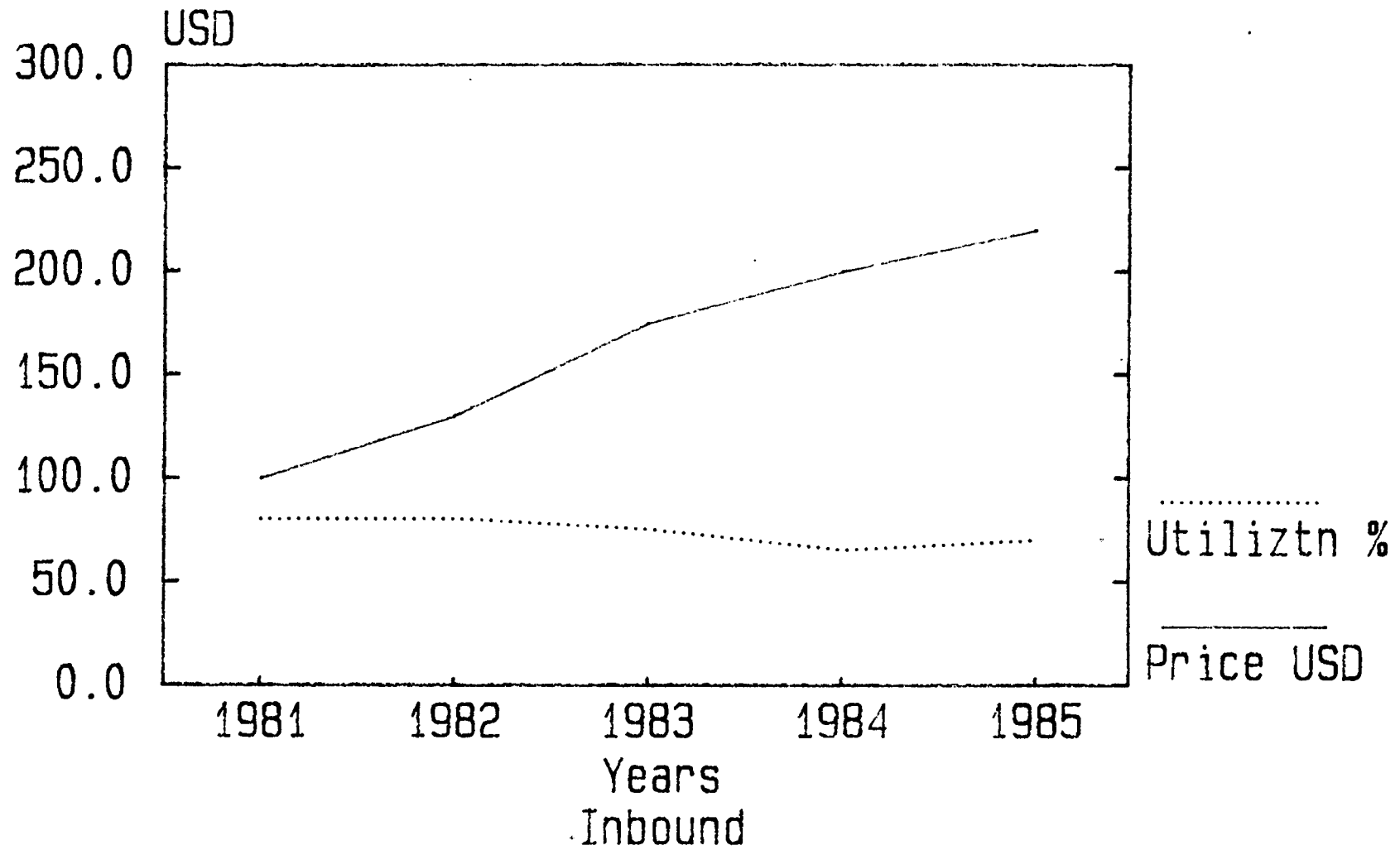


Chart 6: Comparison of freight rate and capacity utilization 1981-1985



Cost Escalation Factors

Projected Annual Rate of Change
(percentage)

	Actual				Forecast					
	1983	1984	1985	1986	1987	1988	1989	1990	1991	
Fuel (%) 1*	7.1	14.2	13.4	12.4	11.9	11.4	10.4	9.8	9.4	
Labour	2.1	2.2	2.2	2.0	2.1	2.1	2.1	2.1	2.0	
M&R 2*	9.6	10.2	9.1	8.7	8.1	7.4	7.1	6.7	6.5	
Insurance	8.5	8.4	8.5	8.3	8.2	8.1	8.0	8.0	8.0	
Other Operating 2*	8.0	7.8	7.7	7.6	7.7	7.6	7.5	6.8	6.5	
Cargo Handling	5.0	5.0	6.5	5.5	5.5	5.4	5.7	4.8	4.8	
Container Equipment	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Terminal	5.0	5.0	6.5	5.5	5.5	5.4	5.7	4.8	4.8	
Transportation	5.0	5.0	6.5	5.5	5.5	5.4	5.7	4.8	4.8	
Port Costs	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Admin. & Overhead	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Capital Cost	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	

* Downwards Changes

Sources: 1* D.R.I. Refiners Acquisition Price for Crude Oil-Composite.

2* D.R.I. Industrial Commodities

Development of Forecast Cost Index

	Forecast				
	1985 base*	1986	1987	1988	1989
Cargo Related Costs (Variable with Volume)					
A. Cargo-handling, Transportation etc.	25.5	27.8	31.7	34.7	37.1
B. Equipment	15.7	16.6	17.6	18.7	19.8
<hr/>					
C. Cargo Cost Index (A+B)	41.2	44.4	49.3	53.4	56.9
Fixed Costs in Short-Term Vessel Expenses					
D. Fuel	18.2	15.5	15.5	16.0	16.2
E. Labour	3.5	3.5	3.5	3.6	3.6
F. M&R	3.7	4.1	4.5	4.9	5.3
G. Insurance	2.3	2.5	2.7	2.9	3.2
H. Port	4.1	4.4	4.8	5.0	5.2
<hr/>					
I. Vessel Cost Index (D+E+F+G+H)	31.8	30.0	31.0	32.4	33.5
J. Over Head Cost Index	8.5	9.5	10.5	11.4	12.5
K. Capital Cost Index	12.5	14.6	15.5	16.6	17.8
L. Non Cargo Cost Index (I+J+K)	52.8	54.1	57.0	60.4	63.5
M. Capacity Utilization Factor	(85)	(90)	(95)	(95)	(85)
N. Adjusted Non Cargo Cost Index (L+M)	62.1	60.1	60	63.5	74.7
<hr/>					
O. Total Cost Index (C+N)	103.3	104.5	109.3	116.9	131.6

VII-5

POSITE INCOME STATEMENT FOR C.S.C CARRIES ON
THE TRADE

(Thousands of Rupees)

1985

REVENUE	
Rs.128413	
Less Brokerage and ommission	Rs. 4939
	=====
NETREVENUE	Rs.123474
Cargo Expenses	Rs. 53350
Labour	Rs. 2000
M and R Stores	Rs. 4536
Insurence	Rs. 2792
PORT EXPENSES	Rs. 5100-
FUEL	Rs. 22458
TOTAL VOYAGE and	
VESSEL EXPENSE	Rs.90236
GROSS OPARATING PROFIT	Rs.33238
ADMIN.and OVERHEADS	RS.12938
CAPITAL COST*	Rs.20300-
NET INCOME	0

*Include INTEREST & PRINCIPAL PAYMENT-

Sources: C.S.C Annual Report & Accounts 1985

Historical & Projected Cost & Rate Indices

	Actual					Forecast				
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Capacity Utilization	95	90	80	75	78	80	87	95	95	85
Cargo Cost Index	27.8	29.7	31.7	35.5	39.8	43.2	46.0	49.1	53.2	56.9
Non, Cargo Cost Index	33.2	34.3	42.0	48.4	51.8	42.1	41.0	40.1	39.2	38.8
Cost Index Unadjusted	61.0	64.0	73.7	83.9	91.6	85.3	87.0	89.2	92.4	95.7
Total Cost Index (Adjusted for Capacity Utilization)	62.7	67.8	84.2	100	106.2	92.4	93.1	91.3	94.5	103
Rate Index*	70.2	78.6	82.5	85.0	91.8	101	116.2	130	143.1	155
Profit Margin(%)	12.0	15.9	2.0	15.0	13.6	11.6	0.4	7.9	8.6	1.1

*Rate Index represents rate levels net of deductions for brokerage & commission.

Forecast Impact of Economies of Scale

	1986(base)	1987	1988	1989	1990
(a) Original Vessel Size (TEU)	1200	1200	1200	1200	1200
(b) Projected TEU Average Vessel Size (TEU)	1200	1300	1400	1500	1600
(c) Variation (a+b)	1.00	0.92	0.86	0.80	0.75
Adjusted Vessel Expenses 1*					
Fuel	18.2	17.9	18.8	18.0	17.9
Labour	2.0	2.0	2.0	2.0	2.0
Subtotal	20.2	19.9	20.8	20.0	19.9
Other Non Cargo Cost 2*	30.2	31.9	32.2	33.8	38.9
Non Cargo Cost Index	50.4	51.8	53.0	53.8	57.9
Capacity Utilization Factor	(.80)	(.87)	(.95)	(.95)	(.85)
Adjusted Non Cargo Cost Index	63	59.7	55.7	55.6	68.1
Cargo Cost Index	40.2	43.2	46.0	49.1	53.2
Total Cost Index II	103.2	102.7	101.7	105.7	121.3

1* It is assumed for this exercise that economies of scale will occur primarily in the area of fuel and labour costs, and that these costs will not increase for the larger, newer vessel. As the vessel cost index is based on cost per unit of capacity fuel and labour cost decline on a capacity-unit basis by ----- the factor from line C.

2* Include all other vessel expenses, overheads, and capital costs (capital cost per unit of capacity may decline with the transition to larger vessels but this factor has not been included in the example.)

CHAPTER VIII THE DEVELOPMENT OF STRATEGY

Having undertaken a thorough analysis of the Ceylon Shipping Corporation's present and likely future environments, the planner can turn to the development of strategies designed to meet the identified future challenges. The first step is to focus strategy development on the most critical issues.

Strategic Issues -----

With a projection of the future environment in hand, the strategic planner is in a position to overlay an analysis of the CSC's strengths and weaknesses on that projection. This analysis should focus on the CSC's ability to prosper in the future environment. Inevitably, a number of key factors, which we shall call strategic issues, will be identified. Strategic issues tend to be areas of future change that are likely to create areas of opportunity and threat for the CSC. The following scenarios are examples of such issues:

-The trade of developing countries is rapidly progressing toward a high level of containerization. Foreign competitors are introducing suitable short-term transition tonnage from world charter or secondhand markets.

-Foreign competitors have introduced a fleet of large container vessels powered by highly economical slow-speed diesel power plants. Sri Lankan carriers are equipped with smaller vessels. The competitors' introduction of the new vessels threatens to give them significant advantages in economies of scale and running costs.

-A strong new competitor enters a trade route, operating outside the conference. The conference structure is threatened as member seeks to protect their market share through independent rate action and similar competitive measures.

-CSC shifts its operations from a primarily breakbulk to a highly containerized mode, necessitating a corporate reorganization and new management information system.

Corporate Mission (1)

Provided with an assesment of the future environment and the identification of strategic issues, senior management will be positioned to define a "mission" for the CSC. Essentially, this entails answering three straight forward questions:

- Who are the CSC's customers ?
- What are the customers' needs in present and future?
- How may these needs be met ?

A corporate mission statement should answer these questions fairly broadly. For example: The mission may be broadened or narrowed depending on the level of horizontal or vertical intergeration desired within the corpo-

rations and the market areas served.(2) An important factor to remember is that the mission statement is used to guide strategic planning, not to constrain it.

Planning Period

For the capital intensive liner industry, in which the major assets (vessels) can have operational lives exceeding 20 years, the strategic planning period should cover a minimum of 10 years. Of course, the accuracy of forecasts is certain to decrease over time because of the cumulative impact of the uncertainties and unforeseen events that are beyond the scope of even the most brilliant forecaster. Even so, it is valuable to assess the impact of future events such as trade cycles or container penetration because a longer term perspective provides a sense of timing and sequence of strategic moves. Effective strategies tend to be opportunistic since they are sufficiently flexible that they may be adjusted to deal with unforeseen opportunities and threats.

Strategic Objective (3)

The objectives of the CSC must be related to its perceptions of the future environment and its own capabilities and resources. The early phases of the planning process should have resulted in a strong awareness within the corporation of these two areas.

Effective strategic objectives should fulfil a variety of functions, such as :

-Providing a basis for the allocation of resources

- Providing measurable benchmarks for tracking and controlling performance in order to indentify or anticipate a need for mid-course corrections
- Obtaining the commitment of the personnel responsible for implementing the objectives, thereby reflecting or helping to build a consensus
- Encouraging self-directions among staff
- Maintaining the flexibility required to react to new opportunities or threats
- Building organizational morale.

Objective should be sufficiently specific to serve as valid measures of performance but broad enough to preclude game-playing in an uncertain environment characterized by volatile levels of inflation, the numerical long-term objective of revenue and profit growth, cash flow earnings per share price should be complemented by financial measures like market share, market leadership, new market penetration, organizational and personnel development and technological leadership.

At their initial definitions strategic objectives should be regarded as preliminary. After a specific strategy has been developed the objectives should be reviewed in order to determine their continued relevance and validity.

Strategic Alternatives (4)

The development of strategy should focus on the key strategic issues identified from the environmental and internal analysis. The strategy should be designed with the attainment of strategy objectives in mind and should in sum cover the full planning period. Ideally a number

of individuals who possess expertise in the areas defined by the strategic issues should participate in developing the strategies at varying corporation levels. This process should bring a number of different perspectives to the problem. Competing strategies should be encouraged in order to cover the widest possible range of alternative approaches to deal with the issues. The involvement of a wide group of relatively senior personnel in both the development and in the testing and evaluation of alternative strategies should also help in developing a consensus in support of the final selection of a strategy.

Strategic alternatives should be designed to cover the full planning period. Although not detailed to the level of annual budgets and financial reports, each strategic alternative should possess enough economic detail that resource requirements, cash flows, and market position can be clearly defined over the planning period. The proposed strategy should define the CSC's position in relation to:

- Market share
- Market role (leader follower member of collision)
- Competitors and their likely action or reactions
- Requirements for new equipment, capacity and service
- Marketing strategy (market segments key customers)
- Organizational structure
- Possible synergies with other sections of the corporation
- The regulatory environment.

Align with Existing Programs/Constraints Structure

Legislative Initiative

Timing is a central element in the development of effective strategy. A "strategic window" may be identified with an area of opportunity that is a unique alignment of environmental conditions with the CSC's special capabilities. However, the pace of change, both outside and inside the CSC, may leave the strategic window open for only a brief period. Inaction or mistiming could damage the CSC's ability to exploit that opportunity.

Testing and Evaluation of Strategic Alternatives

Computer simulation provides an effective means of objectively evaluating alternative operating strategies. Essentially, the computer simulation takes a strategy with its inherent assumptions on fleet deployment, market share, cargo mix rates and costs, and projects the results of the strategy over the full planning period. Table VIII-1 provides an example of the output from such a simulation in the form of income and cash flow statements, capacity utilization tables and market share tables. A complete description and documentation of a computer model designed to carry out such a simulation is included in Appendix B.

The benefits of a computer model for the evaluation of a long-range strategy are twofold: it can test the effectiveness of alternative strategies in dealing with a projected set of environmental conditions, and it provides a framework to help structure strategies at an operational level. The broad focus of strategic planning necessity entails the making of some general assumptions

and the computer model aids the planner by forcing these assumptions to be explicitly addressed. Computer simulation also enables the planner to easily vary assumptions regarding critical inputs, such as market shares or growth projections and freight rate and cost forecasts and test various alternative strategies for sensitivity to the variations.

Strategy Selection

The pro forma financial statements provided by the computer model enable the planner to rank alternative strategies on the basis of the internal rate of return of generated cash flows (discounted cashflows), the demand on scarce resources, the timing and impact of positive and negative cash flows, and effect on the corporation's financial statements. Other factors to consider when selecting a strategy include:

- Its consistency with the CSC's goals, objectives, and priorities.
- Its compatibility with projected environmental conditions.
- Its flexibility to adapt to changes in the external and company environments.
- Its level of risks.
- Its utilization of the CSC's manpower, knowledge, and technological resources as well as financial resources.
- Its ability to generate a consensus on its future direction and objectives and its support in the form of morale.
- Its internal consistency and the logic of its incremental action sequences.

CHAPTER IX IMPLEMENTATION (THE FORMAL STRATEGIC PLAN)

Successful implementation is the final test of the effectiveness of any strategic planning process.(1) A process that does not transfer the investment of the extensive organization resources required by strategic planning into a comprehensive implementable form will not long be tolerated by senior management.

The first most important first step in transforming a selected strategy from an abstraction into effective action is to communicate it to those responsible for the implementation. These individuals must be made aware of the overall corporate mission and strategic objectives, as well as the assumption and rationale underlying the strategy without a thorough understanding of the strategic basic details and the reasons behind it, the implementers may carry out the plan in a disjointed and ineffective manner. A full understanding of the planning process provides a sense of the priorities and interrelationship implicit in the plan.

One method to ensure that this critical stage of communication is not mismanaged is to involve many of those individuals who will play important roles in the implementation of the strategy in the earlier development and selection of that strategy. Such a joint involvement clearly develops an understanding of both the process

and the plan itself and also helps build confidence and commitment in those on whom the successful implementation of the strategy will depend.

Business Plans (2)

An effective strategy implementation must bridge the gap between the abstract, long-range focus of strategic planning and the concrete, near-terms policies and detailed directions needed for the implementation. Additional detailed analysis must be carried out to accomplish this. The near-term plans or "business plans" can range from formal five-year plans and annual budgets to monthly sales targets and voyage results. Specific areas which should be addressed by these business plans are:

- Marketing,
- Operations/service,
- Competition,
- Finance,
- Technology,
- Organizational/personnel development,
- Corporate development.

A comprehensive scope and sufficient detail to allow the implementation of the strategic plan are essential ingredients to the business plans at this stage of the process.

The marketing plans should identify and prioritize the needs of specific customers to be served and, where applicable, particular customs and/or market segments on which sales efforts will be focused.

The operations/service plan should detail how the organization will carry out its strategy in terms of vessel/land based operations in order to meet the level and face development of services called for in the strategy.

The competitive plan should state assumptions with respect to competitors' actions and reactions and develop the specific actions which the organization should take to forestall, bypass, overwhelm, or co-opt any competitive actions that could prove damaging to the strategic plan. Such actions might include forming coalitions or taking pre-emptive actions.

The financial plan should include short-term details from which budgets and financial controls can be developed. It should detail cash flows in specific revenue and cost areas and identify cash requirements and surpluses. It should also address investment policy for surplus cash reserves.

The technological plan should describe how the organization will utilize and further develop its knowledge and expertise in the transport of liner cargoes. Procedures to acquire and develop new transportation technologies should be detailed.

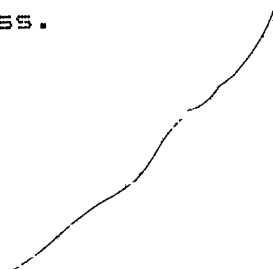
The organizational/personnel development plan should help structure the organization to meet the demands of the strategic plan. The organizational structure should reflect the priorities and objectives of the organization's strategy. Also, plans should be prepared dealing with how the organization's human resources will be developed in order to most effectively carry out the

strategy.

The corporate development plan should synchronize the needs and the contributions of the liner shipping unit with those of the rest of any multi-business unit corporation. The liner unit must develop in a direction and at a pace that is in accordance with overall corporate goals and resources.

Monitoring Performance

The strategic planning process, by establishing strategic objectives and projecting results at a service level over an extensive planning period, provides a number of "yardsticks" with which to measure and monitor the CSC's effectiveness in carrying out the chosen strategy. Explicit assumptions concerning future environmental conditions are another product of the strategic planning process. Any divergence of the CSC performance from plan or of real environmental conditions from prior projections will be detected by these yardsticks or explicit assumptions. A continued monitoring process thus provides an early warning system that can identify unforeseen areas of opportunity or threat to the CSC. This may be addressed as "Strategic issues" without an ongoing strategic planning process.



CONCLUSION

The essence of strategic planning is planning, not the plan. A formalized system as I have described is needed to guide and stimulate the process of strategic planning. In the end, the plan is the product of a series of assumptions about the future, some of which are bound to prove inaccurate. It is the process of planning that is dynamic and that will help direct the enterprise through the uncertainties of the future.

A strategic planning system can provide tremendous assistance to the managers of the Ceylon Shipping Corporation in effective decision making. The main assets of such a system include: the greater depth and perspective it adds to the Ceylon Shipping Corporation's understanding of the environment, the increased communication it creates between staff within the Ceylon Shipping Corporation in the expression of objectives, the sensing of needs, and the development of strategics; and finally, the coordination of all the Ceylon Shipping Corporation's resources into consensus-based strategy which effectively places the Ceylon Shipping Corporation in a position to prosper in the future.

In the above chapters I described a systematic approach to strategic planning for the liner industry in Sri Lanka. Tables are included where necessary to describe specific sections on the collection and analysis of data. A decision has been adopted of using hypothetical data to assist in the explanation of various facts of strategic planning for the Ceylon Shipping Corporation. In all instances the data are fictitious and bear no relation

to any actual carrier's operations.

Appendix A

Customers (Shippers) are the main tool when considering the development of a fleet. Therefore the C.S.C. always pays its attention to maintain efficient services to meet the shippers' need. In this regard the C.S.C. liner division maintains customer interviews from time to time using market research questionnaires.

In this case I will introduce a sample market research questionnaire to be used by the C.S.C.'s for customer interviews. This may be telephone questionnaire for traffic managers (or similar position) of major firms.

Sample Market Research Questionnaire

Introduction: Identify yourself and the Ceylon Shipping Corporation. The purpose of this interview is to assist the C.S.C. in making future vessel and equipment decisions. This interview applies to the C.S.C.'s U.K. continental and Far East trade routes only. If the interviewee has comments regarding other trade routes of the C.S.C. kindly include them in item No 17.

1. First, how would you rate the C.S.C.'s service in general ?

- (a) very good.
- (b) above average
- (c) average
- (d) below average
- (e) poor.

2. In what direction(s) do you ship (out bound, in bound)

3. What commodity (commodities) do you ship ?
4. How long has your firm been involved in this trade ?
5. During that period, would you say C.S.C's over all quality of service has:
 - (a) improved
 - (b) remained stable
 - (c) declinedIf you answered "declined" please comment.
6. What is the most important factor you consider when selecting carriers for Southeast Asian/UK continental/Far East shipments ?
 - (a) first available vessel
 - (b) loading date
 - (c) arrival date
 - (e) carrier reliability and service
 - (f) carrier's flag
 - (g) carrier equipment
 - (h) others
7. Does the frequency of sailing by the C.S.C. adequately meet your needs ?
8. Do you have any preference for vessel types among the carriers on berth (breakbulk vessel, container vessel, ro/ro vessel etc.) Why ?
9. How does your cargo move?
 - (a) breakbulk
 - (b) dry containers (20-foot or 40-foot?)
 - (c) refrigerated container

- (d) vessel deep tanks
- (e) others

(10) Do you have any plans to increase your usage of container equipment in the future ?
If so, by how much and when ?

(11) Is C.S.C able to meet your present container requirements ?
If no please comment.

(12) What type of container equipment do you need ?
(a) dry (20 foot or 40 foot ?)
(b) refrigerated
(c) tank
(d) others

(13) Would your shipping decisions change if C.S.C were to:
(a) increase their container service ?
(b) offer specialized containers (e.g refer, open top, tank containers) ?

(14) Now I would like to get your impression on how reliable various aspects of the C.S.C.'s present container service are:
(a) Have you experienced any problems setting the equipment you need ? If so, what seem to be the major ones ?
(b) If they promise equipment do you always get it on time ?
(c) Have their schedules been dependable ?

(15) I would like to ask you a couple of questions about

your volume of traffic between the South East Asia/-
Far East/continental.

(a) Can you give me some idea of your monthly volume
between the South East Asia/Far East/continental
(number of units/tons)?

(b) Do you anticipate that the volume will, under
normal economic conditions, remain the same or
decrease over the next five years ?

(i) Increase

(ii) remain the same

(iii) decrease

Can you estimate the change in volume your firm
expects over the next five years (per year of
total) ?

(16) Is C.S.C the only carrier you use ?

If "no" what is your reason for distributing cargo
among various carriers ?

(a) maintain carrier competitiveness

(b) diversify risks

(c) capacity, service, or price considerations

(d) other reasons

Which competing carrier(s) do you also utilize ?

How does C.S.C compare to other carriers you use in
terms of over all container service ?

(17) Are there any changes that C.S.C could make in their
operations that might cause you to increase your use
of their services ?

If so, what would be the single most important one ?

Do you foresee any other developments that might
cause you to change your size of the C.S.C.'s service ?

(18) Are there any additional comment that you would like

to make ?

Thank you very much. I appreciate your taking the time to answer these questions.

Name of Firm

Location

Name of Interviewee

Date of Interview

Appendix B

Liner Operator Financial Planning Model Description & Documentation

Introduction

The financial planning model developed by Temple Barker & Sloane, Inc. Massachusetts to test alternative strategies for a liner company's strategic planning process is an extremely flexible tool which produces pro forma profit and loss statements, cash flow projections, capacity utilization levels, and market share positions that would occur under a variety of simulated environmental conditions. In most cases, pro forma performance sensitive to change in the operating environment, such as a slower rate of escalation of freight rates, can be tested by altering only a few input lines to the model. Special features and capabilities of the model are described below.

Description

The model produces a P and L statement which displays revenues (outbound, inbound, intermediate and other) vessel expenses, voyage expenses, operating profits, subsidy, and net profit. The format in which these items are displayed is included as Table 1, in addition, the model produces a cash flow statement (Table 2) capacity

utilization levels by cargo type (general or breakbulk cargo, dry container, reefer container, bulk cargo and reefer breakbulk) and direction (outbound and inbound), and total outbound and inbound market shares.

Inputs to the model are of two general types: market inputs (total market pay tons, market shares, freight rates and other market related items) and fleet inputs (capacity by cargo type, voyage days, vessel expenses terminal and equipment costs, and other vessel and voyage related items). Table 3 shows the items included in each input category, each of these items is a potential level which can be used to simulate a specific environmental or operating situation. For example a potential change in the commodity mix of the C.S.C carriage may be tested by increasing the rate of escalation of freight rates to reflect a richer cargo mix. An extensive shift in commodity mix might require adjustment of the C.S.Cs market shares (by cargo type) and stowage factor as well as freight rates.

An extremely useful feature of the model is its division into input and calculated sections. The input reports (for both the market and the fleet) show base year inputs and escalation factors used to grow total market cargo tons and to increase freight rates and expenses. This structure allows growth rate assumptions to be shown explicitly in the model output. The calculated report shows the actual levels of these variables after the growth rates have been applied. The financial testing procedure is streamlined and simplified because the model applies the growth rates specified, saving the user from having to calculate the inputs himself.

Following in part A is a description of the model structure (model logic) which will allow the user to understand the operations that are performed on the input items to arrive at the output informations shown as the financial report (ie. P and L cash flow, capacity utilization and market share.

Part B describes procedures to be followed to perform some useful sensitivity tests: changes in freight rates market shares, and fleet deployment.

A Model Structure

The model description here refers to the version of the liner financial model used to test results for a number of services.

I Market Input Section

Revenues

Revenue calculation requires that ten inputs be specified by the user.

- I Total market annual cargo pay tons for the base year and annual growth rates
- II Container penetration rates (to separate the general cargo market into breakbulk and container segments)
- III The C.S.C.'s market shares in each cargo category
- IV The C.S.C.'s maximum annual potential container carriage in pay tons
- V Stowage factors by cargo type
- VI Per unit freight rates by cargo type and annual

escalation factors

- VII Per unit freight rate surcharges
- VIII Other annual revenues (mail etc)
- IX Annual capital expenditures for both vessel and equipment
- X Annual corporate expenses (general administration, interest expenses, other expenses, tax rate, discount rate)

II Market Input Section: Expense Calculation

Expenses

Expense calculation requires that twelve inputs be specified by the user.

- 1 Per vessel capacity by five cargo types. Note that although capacity is included in the fleet input section, it is not needed to calculate any expense items but only to calculate capacity utilization.
- 2 Fleet characteristics, ie, number of ships deployed, number of voyages per ship, and number of voyage days per voyage (including sea and port days)
- 3 Daily vessel expenses, ie, labour, maintenance and repair, insurance, other operation and fuel cost
- 4 Cargohandling costs (dollars-per-pay-ton except in the case of container cargo which is charged on a dollar--per-TEU basis)
- 5 Annual terminal cost
- 6 Transshipment costs (dollar per annual pay tons) in and out, except for container transshipment which is charged on a dollar per annual TEU (in and out basis)
- 7 Equipment costs, charged on the same basis as the transshipment costs discussed above

- 8 Port costs, assessed on a dollars-per-voyage basis
- 9 Brokerage and commission (figured as a percent of revenue)
- 10 Annual charter hire expenses.
- 11 Annual vessel depreciation expenses.

Table C-5 shows the sections of the fleet input report where these twelve items are inserted. Each input item is boxed and numbered to correspond to the twelve items enumerated above.

Expense items are calculated as follows:

- (i) Operating days are calculated from the inputs of the fleet-characteristics (see footnote 1 on the previous page)
- (ii) Daily vessel expenses (labour, M&R, insurance, other operating costs, and fuel cost) are escalation rates then multiplied by operating days to yield annual vessel expenses. Each of the five annual vessel expenses categories is displayed in the vessel expense section of the P&L statement.
- (iii) Annual cargo handling costs are calculated by multiplying the Corporation's carriage, derived from the market input section, with the corresponding cargo handling cost input. The following should be noted about these calculations:

* All-non container cargo handling costs are on a dollar-per-pay-ton basis

* Container cargo handling costs—for both dry and reefer containers—interact on a dollar per-TEU basis. Dry and reefer container TEUs are calculated internally in the market section of the

financial model. Although these TEUs are not displayed on the print-out they exist internally on a computer worksheet where they are saved to interact with cargo-handling costs.

- * The cost for transport of empty containers is not included explicitly in the model. Therefore, container cargo handling rates included in the model must be "fully-loaded" i.e. must reflect the cost of handling empties.

Total annual cargo-handling costs in aggregate, are listed under the voyage expense section of the P & L.

(iv) Terminal costs are a straight annual input of dollars per year for terminal operations. These costs are escalated at the specified growth rates. The result is displayed under the voyage expense section of the P & L.

(v) Transshipment costs must be entered on a per-unit basis. Breakbulk and other costs are multiplied in the model by the sum of outbound and inbound annual pay-tons to yield total annual transshipment and/or other costs. The results are included in the other category under the voyage expense section of the P & L. Container transshipment costs are multiplied by total annual outbound and inbound TEUs to yield annual container transshipment expenses, also included in the other category of the voyage expense section of the P & L.

3) This line may be used to enter incidental or special costs for which no provision is made in the model. Care must be taken to enter these costs in the appropriate units, i.e. so that when

multiplied by total annual pay-tons (in & out)
the desired result is obtained.

- (6) Equipment costs also interact on a per-unit basis, and are multiplied by annual breakbulk pay tons or TEUs. Included in this cost would be purchase and/or lease expenses for containers and chassis M & R expense, and the cost of storage and repositioning of empty boxes. Note that the container equipment line interacts with both dry and reefer containers so that the inputs entered here must reflect full equipment costs associated with both container types if reefer container cargoes are included in the model run. Equipment costs are displayed on the P & L statement. The P & L print-out would include the sum of containers and other equipment costs, if other costs were also specified.
- (7) Port costs are entered on a dollars-per-voyage basis and thus interact with the inputs of fleet characteristics i.e. the port cost input times total annual voyages (number of ships times voyages per ship) yield the total annual port costs shown on the P & L statement.
- (8) Expenditures for brokerage and commission are calculated as a percent of the revenue, where the percentage is specified by the user. The revenue is taken from the revenue calculation performed in the market section of the report. As the model generates annual revenues, the brokerage and commission expenses shown in the voyage section of the P & L statement are also stated on an annual basis.
- (9) Charter hire costs are entered on a per-operating day basis. Thus, the total annual charter hire expense shown in the P & L is the charter hire input

times total annual operating days calculated from the fleet characteristics section.

- (10) Depreciation is a straight annual input, i.e. total vessel and/or other depreciation expense per year. Depreciation expenses are displayed in the voyage expense section of the P & L.
- (11) The subsidy input is entered on a per-operating-day basis. Thus, the subsidy times total annual operating days yields annual subsidy expenses shown under the operating profit section of the P& L statement.

(B) Sensitivity Testing

III Changes in Fleet Deployment

Performance sensitivity to fleet deployment requires changes of both market and fleet inputs.

Fleet Input Changes

- A) Capacity: A change of vessel type deployed requires that the capacities specified in lines 8-18 of the fleet input section be altered accordingly. Because, in general, capacity does not change over time, vessel capacity may be entered in 1982 with a 0 percent growth rate. Therefore, this produces a constant capacity over the period.
- B) Fleet characteristics: A change in the number of vessels deployed must be entered in line 22 of the fleet inputs. If the test encompasses a new vessel type, the number of voyage days (line 24) may have to be changed, also
- C) Vessel expense deployment changes which include a change of vessel type will likely require alterations to labour M&R, insurance, other operating expenses,

and fuel costs, if the test involves changing only the number and not the type of vessel deployed, no alterations to vessel expenses are necessary.

- D) Other Fleet Changes: Testing performance of a new vessel type on a given service may also require changes of equipment costs, subsidy and other fleet input items. The user must review performance, assumptions and adjust them as necessary, in particular, since equipment costs are linked to volume of carriage. A deployment change which involves capacity additions and expanded carriage may require changes of per-unit equipment costs if these have been calculated on the basis of a given equipment mix (e.g. mix of 20-foot and 40-foot boxes)

Market Input Changes

- (A) Market Share: A deployment or capacity change will likely involve changes in the corporation carriage as well. Market shares must be adjusted so that the new carriage does not exceed the newly-specified capacity.
- (B) Maximum Container Carriage: A change of the container capacity in the fleet input section requires a change of the maximum container carriage inputs (line 43 and 44 of the market inputs). This input is arrived at by multiplying per vessel container capacity in TEUs (line 9 of the fleet inputs for outbound capacity and line 15 for inbound capacity) by the number of ships times (line 23, voyages per ship) then multiplying again by the appropriate stowage factors in the market input section (line 49 for outbound and 56 for inbound). This operation yields an annual container capacity in pay tons which is the maximum annual carriage of a given deployment.

Footnotes

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- (1) Gunar K Sletmo & Ernest. W. Williams Jr. Liner Conferences in the Container Age. 1981 New York p. 234.
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Chapter VI

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P&L STATEMENT
LINER FINANCIAL PLANNING MODELPROFIT & LOSS STATEMENT PRO FORMAS
(THOUSANDS OF DOLLARS)

Table I

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
REVENUE										
OUTBOUND	39228	47114	54476	62852	69089	79828	92411	106494	121808	138379
INBOUND	16723	19411	21468	23931	25868	27714	29443	31574	33140	35260
INTERMEDIATE	6399	7236	7740	8279	8837	9474	10133	10842	11599	12408
OTHER	918	987	1061	1140	1226	1318	1417	1523	1637	1760
TOTAL REVENUE	59270	74747	84745	96203	103039	118334	133405	150432	168184	188007
VESSEL EXPENSE										
LABOR	14580	15819	17148	18604	20187	21883	23699	25643	27720	29945
M & R	3240	3564	3928	4285	4658	5033	5408	5792	6180	6581
INSURANCE	1498	1582	1715	1861	2019	2188	2370	2564	2772	2996
OTHER	0	0	0	0	0	0	0	0	0	0
FUEL	16200	16740	19117	21679	24367	27267	30373	33934	36820	40281
TOTAL VESL EXPENSE	35478	37705	41908	46430	51231	56373	61852	67532	73491	79824
VOYAGE EXPENSE										
CARGO HANDLING	14846	18619	20974	24157	26432	29607	33103	37196	41013	45338
TERMINAL	386	417	447	489	526	563	607	654	698	743
EQUIPMENT	6427	8461	9389	10414	11229	12333	13931	15497	17146	18945
PORT COSTS	3993	4334	5093	5613	6090	6608	7169	7779	8440	9137
BROKERAGE AND COMM	3141	3962	4492	5099	5367	6272	7070	7973	8914	9964
CHARTER HIRE	0	0	0	0	0	0	0	0	0	0
VESSEL DEPREC	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
EQUIP DEPREC	0	0	0	0	0	0	0	0	0	0
OTHER	709	937	1099	1280	1413	1626	1871	2159	2450	2781
TOTAL VOYAGE EXPENSE	34904	42146	46893	52452	56657	62612	69152	76657	84060	92331
OPERATING PROFIT										
PROFIT WFR SUBSIDY	-11112	-3103	-4033	-2679	-2848	-651	2402	6243	10632	15852
SUBSIDY	6981	7574	8210	0908	9663	10477	11347	12277	13272	14347
TOTAL CONTRIB	-4131	2469	4156	6230	6817	9826	13748	18521	23904	30199
NET PROFIT										
GEN & ADMIN CHG	3	3	4	4	4	5	5	5	6	6
NET INTEREST EXPENSE	2	2	2	2	2	2	2	2	2	2
OTHER	0	0	0	0	0	0	0	0	0	0
PROFIT BEFORE TAX	-4136	2464	4150	6224	6811	9820	13742	18513	23896	30191
TAX	0	3	5	8	10	14	24	36	51	71
NET PROFIT	-4136	2462	4145	6216	6801	9804	13717	18477	23845	30120

Exhibit C-2

CASH FLOW, CAPACITY UTILIZATION
AND MARKET SHARE
LINER FINANCIAL PLANNING MODEL

Table II

CASH FLOW STATEMENT
(THOUSANDS OF DOLLARS)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
CASH IN-FLOW										
CASH FROM OPERATIONS	1244	7862	9545	11616	12201	15204	19117	23877	29245	35520
CASH OUT-FLOW										
CAPITAL EXP - VESSELS	0	0	0	0	0	0	0	0	0	0
CAPITAL EXP - EQUIP	0	0	0	0	0	0	0	0	0	0
TOTAL CAPITAL EXP	0	0	0	0	0	0	0	0	0	0
NET CASH FLOW	1244	7862	9545	11616	12201	15204	19117	23877	29245	35520

CAPACITY UTILIZATION

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
OUTBOUND - % CAP										
GENERAL CARGO	0	0	0	0	0	0	0	0	0	0
CONTAINER - DRY	45	57	61	65	66	71	77	82	88	93
CONTAINER - REEFER	0	0	0	0	0	0	0	0	0	0
BULK CARGO	0	0	0	0	0	0	0	0	0	0
REEFER - BREAKBULK	0	0	0	0	0	0	0	0	0	0
INBOUND - % CAP										
GENERAL CARGO	0	0	0	0	0	0	0	0	0	0
CONTAINER - DRY	13	18	19	19	20	21	22	24	25	27
CONTAINER - REEFER	101	103	106	111	111	110	108	106	101	97
BULK CARGO	0	0	0	0	0	0	0	0	0	0
REEFER - BREAKBULK	0	0	0	0	0	0	0	0	0	0

MARKET SHARES

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
CARRIER SHARE OUTBOUND										
TOTAL MARKET TONS	1600000	1567500	1483495	1750835	1857636	2006247	2162734	2318451	2466831	2624709
TOTAL CARRIER TONS	191250	237947	255757	273375	279537	300455	323545	346840	369038	390557
CARRIER MARKET SHARE	13	15	15	16	15	15	15	15	15	15
CARRIER SHARE INBOUND										
TOTAL MARKET TONS	1490000	1497103	1565506	1587711	1612337	1627946	1636375	1681987	1707568	1759046
TOTAL CARRIER TONS	169125	182813	189589	197563	200201	200934	199967	200689	196999	195721
CARRIER MARKET SHARE	12	12	12	12	12	12	12	12	12	11

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GLOSSARY

LINER FINANCIAL PLANNING MODEL
MARKET INPUTS

<u>Model Label</u>	<u>Reference</u>	<u>Input Units</u>
-----Cargo Tonnage-----		
OTON GENL	Outbound breakbulk pay-tons	Annual pay-tons
OTON CNRF	Outbound container reefer pay-tons	Annual pay-tons
OTON BULK	Outbound bulk pay-tons	Annual pay-tons
TON INTBR	Interport breakbulk pay-tons	Annual pay-tons
ITON GENL	Inbound breakbulk pay-tons	Annual pay-tons
ITON CNRF	Inbound container reefer pay-tons	Annual pay-tons
ITON BULK	Inbound bulk pay-tons	Annual pay-tons
TON INTCN	Interport container pay-tons	Annual pay-tons
-----Container Penetration Rate-----		
OPEN CONT	Outbound container penetration rate	Percent of total market containerized
IPEN CONT	Inbound container penetration rate	Percent of total market containerized
-----Market Share-----		
OSHR BRBK	Outbound share - breakbulk cargo	Company carriage as percent of total cargo market
OSHR CONT	Outbound share - dry container cargo	Company carriage as percent of total cargo market
OSHR CNRF	Outbound share - container reefer cargo	Company carriage as percent of total cargo market
OSHR BULK	Outbound share - bulk cargo	Company carriage as percent of total cargo market
OSHR BKRF	Outbound share - breakbulk reefer cargo	Company carriage as percent of total cargo market
SHR INTBR	Share - interport breakbulk cargo	Company carriage as percent of total cargo market
ISHR BRBK	Inbound share - breakbulk cargo	Company carriage as percent of total cargo market
ISHR CONT	Inbound share - container cargo	Company carriage as percent of total cargo market
ISHR CNRF	Inbound share - container reefer cargo	Company carriage as percent of total cargo market
ISHR BULK	Inbound share - bulk cargo	Company carriage as percent of total cargo market
ISHR BKRF	Inbound share - breakbulk reefer cargo	Company carriage as percent of total cargo market
SHR INTCN	Share - interport container cargo	Company carriage as percent of total cargo market
-----Maximum Container Carriage-----		
MAX OCON	Maximum outbound container carriage	Outbound annual company container capacity in p
MAX ICON	Maximum inbound container carriage	Inbound annual company container capacity in p
-----Stowage Factors-----		
OSTW BRBK	Outbound stowage factor - breakbulk cargo	Pay-tons per thousand cubic feet
OSTW CONT	Outbound stowage factor - dry container cargo	Pay-tons per TEU
OSTW CNRF	Outbound stowage factor - reefer container cargo	Pay-tons per TEU
OSTW BULK	Outbound stowage factor - bulk cargo	Pay-tons per thousand cubic feet
OSTW BKRF	Outbound stowage factor - breakbulk reefer cargo	Pay-tons per thousand cubic feet
STW INTBR	Stowage factor - interport breakbulk	Pay-tons per thousand cubic feet
ISTW BRBK	Inbound stowage factor - breakbulk cargo	Pay-tons per thousand cubic feet
ISTW CONT	Inbound stowage factor - dry container cargo	Pay-tons per TEU
ISTW CNRF	Inbound stowage factor - reefer container cargo	Pay-tons per TEU
ISTW BULK	Inbound stowage factor - bulk cargo	Pay-tons per thousand cubic feet
ISTW BKRF	Inbound stowage factor - breakbulk reefer cargo	Pay-tons per thousand cubic feet
STW INTCN	Stowage factor - interport container	Pay-tons per thousand cubic feet

<u>Model Label</u>	<u>Reference</u>	<u>Input Units</u>
-----Freight Rates-----		
GRAT BRBK	Outbound rate - breakbulk cargo	Dollars per pay-ton
GRAT CONT	Outbound rate - dry container cargo	Dollars per pay-ton
GRAT CNRF	Outbound rate - reefer container cargo	Dollars per pay-ton
GRAT BULK	Outbound rate - bulk cargo	Dollars per pay-ton
GRAT BKRF	Outbound rate - reefer breakbulk cargo	Dollars per pay-ton
RAT INTBR	Rate - interport breakbulk cargo	Dollars per pay-ton
IRAT BRBK	Inbound rate - breakbulk cargo	Dollars per pay-ton
IRAT CONT	Inbound rate - dry container cargo	Dollars per pay-ton
IRAT CNRF	Inbound rate - reefer container cargo	Dollars per pay-ton
IRAT BULK	Inbound rate - bulk cargo	Dollars per pay-ton
IRAT BKRF	Inbound rate - reefer breakbulk cargo	Dollars per pay-ton
RAT INTCN	Rate - interport container	Dollars per pay-ton
-----Surcharge-----		
O.SURCH	Outbound freight rate surcharge	Percent of outbound annual revenue
I.SURCH	Inbound freight rate surcharge	Percent of inbound annual revenue
-----Other Revenue Category-----		
OTHER REV	Other Revenues	Annual dollars
-----Capital Expenditures-----		
CAPEXP VS	Capital expenditures for vessels	Annual dollars
CAPEXP EQ	Capital expenditures for equipment	Annual dollars
-----Corporate Expense-----		
GENR ADMN	General and administrative expense	Annual dollars
INTRST EX	Interest expense	Annual dollars
OTHER EX	Other expense	Annual dollars
TAX RATE	Tax rate	Percent
DIS RATE	Discount rate	Percent

GLOSSARY

LINER FINANCIAL PLANNING MODEL
FLEET INPUTS

<u>Model Label</u>	<u>Reference</u>	<u>Input Unit</u>
-----Per Vessel Capacity-----		
OCAP BRB	Outbound capacity - breakbulk	Cubic feet
OCAP CND	Outbound capacity - dry container	TEUs
OCAP CNR	Outbound capacity - reefer container	TEUs
OCAP BUL	Outbound capacity - bulk	Cubic feet
OCAP BKR	Outbound capacity - breakbulk reefer	Cubic feet
ICAP BRB	Inbound capacity - breakbulk	Cubic feet
ICAP CND	Inbound capacity - dry container	TEUs
ICAP CNR	Inbound capacity - reefer container	TEUs
ICAP BUL	Inbound capacity - bulk	Cubic feet
ICAP BKR	Inbound capacity - breakbulk reefer	Cubic feet
-----Fleet Characteristics-----		
NUM SHIP	Number of ships	Number
VOYG/SHI	Voyages per ship	Number
VOYG DAY	Voyage days (port & sea days)	Number
-----Vessel Expense-----		
LABOR	Labor expense	Dollars per operating day
MAIN REPR	Maintenance and repair	Dollars per operating day
INSURANCE	Insurance	Dollars per operating day
OTHER OP	Other operating expense	Dollars per operating day
FUEL COST	Fuel Expense	
-----Cargo Handling Cost-----		
OCHR BRB	Outbound cargo-handling cost - breakbulk	Dollars per pay-ton
OCHR CND	Outbound cargo-handling cost - dry container	Dollars per TEU
OCHR CNR	Outbound cargo-handling cost - reefer container	Dollars per TEU
OCHR BUL	Outbound cargo-handling cost - bulk	Dollars per pay-ton
OCHR BKR	Outbound cargo-handling cost - breakbulk reefer	Dollars per pay-ton
CHR INTB	Cargo-handling cost - interport breakbulk	Dollars per pay-ton
ICHR BRB	Inbound cargo-handling cost - breakbulk	Dollars per pay-ton
ICHR CND	Inbound cargo-handling cost - dry container	Dollars per TEU
ICHR CNR	Inbound cargo-handling cost - reefer container	Dollars per TEU
ICHR BUL	Inbound cargo-handling cost - bulk	Dollars per pay-ton
ICHR BKR	Inbound cargo-handling cost - breakbulk reefer	Dollars per pay-ton
CHR INTCN	Cargo-handling cost - interport container	Dollars per pay-ton

} Fleet input
not include

} Feet
input
not
in

<u>Model Label</u>	<u>Reference</u>	<u>Inout Unit</u>
-----Terminal Costs-----		
TERM BRBK	Terminal cost - breakbulk cargo	Dollars per year
TERM CONT	Terminal cost - container cargo	Dollars per year
-----Transshipment and Other Costs-----		
TRAN BRBK	Transshipment cost - breakbulk cargo	Dollars per pay-ton (inbound & outbound)
TRAN CONT	Transshipment cost - container cargo	Dollars per TEU (inbound & outbound)
TRAN OTHR	Transshipment cost - other	Dollars per pay-ton (inbound & outbound)
-----Equipment Costs-----		
EQUIP CONT	Container equipment costs	Dollars per annual TEU (inbound & outbound)
EQUIP OTHR	Other equipment costs	Dollars per annual pay-ton (inbound & outbound)
-----Port Costs-----		
PORT COST	Port cost	Dollars per voyage
-----Brokerage and Commission-----		
BROK COMM	Brokerage and commission expense	Percent of annual revenue
-----Charter Hire Cost-----		
CHRT HIRE	Charter hire expense	Dollars per operating day
-----Depreciation-----		
VESL DEPR	Vessel depreciation expense	Dollars per year
OTHR DEPR	Other depreciation expense	Dollars per year
-----Subsidy-----		
SUBSIDY	Operating differential subsidy	Dollars per operating day

YEAR	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	
7	0.049	0.074	0.040	0.061	0.000	0.078	0.072	0.064	0.064	0.064	
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
12	200000.000	200000.000	200000.000	200000.000	200000.000	200000.000	200000.000	200000.000	200000.000	200000.000	
13	160000.000	160000.000	160000.000	160000.000	160000.000	160000.000	160000.000	160000.000	160000.000	160000.000	
14	82109.000	93131.000	94137.000	930031.000	444101.000	440339.000	468776.000	476526.000	4001009728.000	0.023	
15	80000.000	80000.000	80000.000	80000.000	80000.000	80000.000	80000.000	80000.000	80000.000	80000.000	
16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
17	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
18	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	
19	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	70000.000	
20	CONTAINER PENETRATION RATE INPUTS (% OF ALL GENERAL CARGO CONTAINERIZED)										
21	72.000	72.000	74.000	76.000	78.000	78.000	80.000	80.000	80.000	80.000	
22	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	
23	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	
24	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	18.000	
25	MARKET SHARE (%)										
26	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
27	23.300	23.300	21.100	19.800	19.200	18.700	18.700	18.700	18.700	18.600	
28	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
31	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
32	80.000	80.000	80.000	80.000	80.000	80.000	80.000	80.000	80.000	80.000	
33	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
34	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
35	23.400	22.400	18.000	13.800	12.700	11.900	11.100	11.600	12.200	12.200	
36	23.300	23.300	23.400	22.300	22.800	21.300	20.600	19.200	17.900	17.900	
37	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
39	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	
40	MAXIMUM CONTAINER CARRIAGE (PAY-TONS)										
41	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	
42	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	
43	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	420912.000	
44	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	219936.000	
45	STORAGE FACTOR (PAY-TONS/1000 CU. FT. OR PAY-TONS/TEU - CONT1)										
47	17.000	17.000	17.000	17.000	17.000	17.000	17.000	17.000	17.000	17.000	
48	18.500	18.500	18.500	18.500	18.500	18.500	18.500	18.500	18.500	18.500	
49	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	
50	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
51	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
52	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
53	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
54	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	14.000	
55	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	
56	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	14.500	
57	19.300	19.300	19.300	19.300	19.300	19.300	19.300	19.300	19.300	19.300	
58	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
59	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
60	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
61	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
62	FREIGHT RATE (\$ / PAY-TON)										
63	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
64	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

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63	ORAT CONT	184.200	198.000	213.000	229.912	0.075	0.075	0.075	0.075	0.075	0.075
64	ORAT CNRF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
67	ORAT BULK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
68	ORAT BKRF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
69	NAT INTR	31.340	33.690	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
70											
71	IRAT BRBK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
72	IRAT CONT	114.200	121.490	129.750	140.644	0.065	0.065	0.065	0.065	0.065	0.065
73	IRAT CNRF	95.680	101.900	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065
74	IRAT BULK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
75	IRAT BKRF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
76	RAT INICN	111.200	110.487	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065

Exhibit C-4
Page 2

77	#7 BURCHARGE (% OF BASE FREIGHT RATES)										
78											
79	U. BURCH	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
80	I BURCH	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

81	#8 OTHER REVENUE CATEGORY (%)										
82											
83	OTHER REV	9800.000	98695.000	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075

84	#9 CAPITAL EXPENDITURE \$ (000)										
85											
86	CAPEXP VB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
87	CAPEXP ED	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

88	#10 CORPORATE EXPENSE \$ (000)										
89											
90	GENR ADMN	3000.000	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085
91	INTRST EX	1800.000	1800.000	1800.000	1800.000	1800.000	1800.000	1800.000	1800.000	1800.000	1800.000
92	OTHER EX	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
93	TAX RATE	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
94	DIS RATE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

95 CALCULATED MARKET INPUTS

96 CALCULATED MARKET INPUTS

97	YEAR	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
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98 CALCULATED TONNAGE (PAY-TONS)

99											
100	OVAL GENL	1900000	1567500	1483495	1750835	1857636	2006247	2162734	2318491	2464831	2624709
101	OVAL CONT	790000	940500	1212116	1295618	1411803	1564872	1730187	1854761	1973465	2099767
102	OVAL BRBK	750000	627000	471377	495217	449833	441374	432547	463690	493366	524942
103	OVAL CNRF	0	0	0	0	0	0	0	0	0	0
104	OVAL BULK	0	0	0	0	0	0	0	0	0	0
105	OVAL BKRF	0	0	0	0	0	0	0	0	0	0
106	VTON ITBR	160000	200000	200000	200000	200000	200000	200000	200000	200000	200000
107											
108	IVAL GENL	850000	882105	935131	941577	950051	949101	940559	968776	976526	1009728
109	IVAL CONT	127300	176421	233783	282473	332518	379640	423252	484388	488263	504864
110	IVAL BRBK	722300	705684	701348	459104	617533	569461	517307	484388	488263	504864
111	IVAL CNRF	400000	613000	630375	646134	662288	678845	695816	713211	731042	749318
112	IVAL BULK	0	0	0	0	0	0	0	0	0	0
113	IVAL BKRF	0	0	0	0	0	0	0	0	0	0
114	VTON ITCN	70000	70000	70000	70000	70000	70000	70000	70000	70000	70000

115 CALCULATED CONTAINER PENETRATION RATE (%)

116	OPEN CONT	90.000	60.000	72.000	74.000	76.000	78.000	80.000	80.000	80.000	80.000
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C-14

Exhibit C-5

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FLEET INPUTS

YEAR	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
#1 CAPACITY (CAP BRK - CU.FT., CONT - TEU'S)										
DCAP BRB	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DCAP CND	948.000	948.000	948.000	948.000	948.000	948.000	948.000	948.000	948.000	948.000
DCAP CNR	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DCAP SUL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DCAP BRK	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
ICAP BRB	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
ICAP CND	648.000	648.000	648.000	648.000	648.000	648.000	648.000	648.000	648.000	648.000
ICAP CNR	300.000	300.000	300.000	300.000	300.000	300.000	300.000	300.000	300.000	300.000
ICAP SUL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
ICAP BRK	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

#2 FLEET CHARACTERISTICS ***										
NUM SHIP	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
VOYG/SHI	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000
VOYG DAY	43.000	43.000	43.000	43.000	43.000	43.000	43.000	43.000	43.000	43.000

#3 VESSEL EXPENSE (¢ / DAY)										
LABOR	13900.000	0.085	0.084	0.085	0.085	0.084	0.083	0.082	0.081	0.081
MAIN REPR	3000.000	0.100	0.102	0.091	0.087	0.081	0.074	0.071	0.067	0.065
INSURANCE	1350.000	0.085	0.084	0.083	0.083	0.084	0.083	0.082	0.081	0.081
OTHER OP	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FUEL COST	19000.000	18800.000	0.142	0.134	0.124	0.119	0.114	0.104	0.098	0.094

#4 CARGO HANDLING COSTS (¢/PAY-TON EX ¢/TEU - CNTR)										
DCHR BRB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DCHR CON	677.000	727.600	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068
DCHR CNR	677.000	727.600	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068
DCHR SUL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DCHR BRK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHR INTB	8.300	8.940	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068
ICHR BRB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ICHR CON	677.000	727.600	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068
ICHR CNR	677.000	727.600	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068
ICHR SUL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ICHR BRK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHR INTC	26.000	27.938	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068

#5 TERMINAL COSTS (¢/YEAR)										
TERM BRK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TERM CONT	386400.000	417300.000	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068

#6 TRANSHIPMENT AND OTHER COSTS (BRK - ¢/ANNUAL PAY-TON, CONT - ¢/ANNUAL TEU : IN+OUT)										
TRAN BRK	0.000	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TRAN CONT	37.340	61.392	0.070	0.095	0.075	0.075	0.074	0.077	0.068	0.068
TRAN OTHR	0.000	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

#7 EQUIPMENT COSTS (BRK - ¢/ANNUAL PAY-TON, CONT - ¢/ANNUAL TEU : IN AND OUT)										
EQUIP CONT	520.000	942.810	941.100	583.170	616.470	660.470	666.350	680.000	710.700	747.070

65	#8 PORT COST (\$/VDRYACT.)										
66	PORT COST	166447.000	100593.000	212284.000	233873.000	0.085	0.085	0.085	0.085	0.085	0.085
67	#9 BROKERAGE AND COMMISSION (% OF REVENUE)										
68	BROK COM	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300
69	#10 CHARTER HIRE COST (\$/YEAR)										
70	CHRT HIRE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
71	#11 DEPRECIATION (\$/YEAR)										
72	VEHL DEPR	1800000.000	1800000.000	1800000.000	1800000.000	1800000.000	1800000.000	1800000.000	1800000.000	1800000.000	1800000.000
73	OTHR DEPR	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
74	#12 SUBSIDY (\$/DAY)										
75	SUBSIDY	6464.000	7013.000	0.084	0.085	0.085	0.084	0.083	0.082	0.081	0.081
76	CALCULATED FLEET INPUTS										
77	YEAR	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
78	CALCULATED CAPACITY (CAP BRK - CU. FT. OR CONT - TEU'S)										
79	VOCAP BR	1	1	1	1	1	1	1	1	1	1
80	VOCAP CN	948	948	948	948	948	948	948	948	948	948
81	VOCAP CH	1	1	1	1	1	1	1	1	1	1
82	VOCAP BU	1	1	1	1	1	1	1	1	1	1
83	VOCAP BK	1	1	1	1	1	1	1	1	1	1
84	VICAP BR	1	1	1	1	1	1	1	1	1	1
85	VICAP CN	648	648	648	648	648	648	648	648	648	648
86	VICAP CH	300	300	300	300	300	300	300	300	300	300
87	VICAP BU	1	1	1	1	1	1	1	1	1	1
88	VICAP BK	1	1	1	1	1	1	1	1	1	1
89	CALCULATED FLEET CHARACTERISTICS ***										
90	WDRM SHPS	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
91	VAL VV/SH	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000
92	VAL VY/DA	43.000	43.000	43.000	43.000	43.000	43.000	43.000	43.000	43.000	43.000
93	OPER DAY	1080.000	1080.000	1080.000	1080.000	1080.000	1080.000	1080.000	1080.000	1080.000	1080.000
94	CALCULATED VESSEL EXPENSE (\$ / DAY)										
95	VLABOR	13500.000	14647.500	15877.890	17227.511	18641.849	20261.964	21941.707	23743.071	25666.202	27745.151
96	VMATN REP	7000.000	3300.000	3636.600	3767.531	4112.706	4662.035	5007.026	5312.524	5721.013	6093.711
97	VINSURANCE	1350.000	1464.750	1587.789	1722.751	1864.185	2026.196	2194.371	2374.309	2566.670	2774.525
98	VOTHR VY	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
99	VFUEL CST	15000.000	15900.000	17701.000	20072.934	22561.978	25246.853	28124.994	31049.444	34092.873	37297.625
100	CALCULATED CARGO HANDLING (\$/PAY-TON EX \$/TEU - CONT)										
101	VOCHR BB	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102	VOCHR CD	677.000	727.600	778.532	832.493	891.429	958.162	1028.064	1103.535	1177.023	1259.780
103	VOCHR CN	677.000	727.600	778.532	832.493	891.429	958.162	1028.064	1103.535	1177.023	1259.780
104	VOCHR BU	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105	VOCHR BK	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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