Liner freight rates for the Philippine domestic shipping

Abelardo D. Viray

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LINER FREIGHT RATES
FOR THE PHILIPPINE DOMESTIC SHIPPING

by

ABELARDO D. VIÑAY
Philippines

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 personal views and are not necessarily endorsed by the UNIVERSITY.

Signature: [Signature]
Date : 30 September 1986

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SUMMARY

The Freight Rate System in the Philippines was established in 1928 by the then Public Service Commission (PSC). With the PSC's abolition, the rate structure was continued, with slight modifications, by the Board of Transportation (BOT). With the BOT's abolition in 1985, its rate-setting functions pertaining to maritime transportation were transferred to the Maritime Industry Authority (MARINA).

Way back in 1967, there were moves to re-structure the freight rate structure to make it more responsive to the changing economic conditions and to enhance the development of the inter-island trade.

Upon its establishment in 1974, the MARINA took the lead role in pursuing the re-structuring effort. A Joint Committee, composed of representatives from other government agencies, from the shipowners/operators group and from the shippers' sector, was formed.

To rectify the distortions in the rate structure brought about by across-the-board increases since 1928, the Inter-Agency Freight Rate Study Committee recommended three alternatives which proposed the reduction in the number of commodity classes from 15 to either 6, 8 or 10 classes. Due to lack of funding support, coupled with divergent views on merchandise classification, number of classes, etc., the project was discontinued.

The process of evaluating petitions for rate increase had been a straight-forward approach by computing the percentage difference between the actual revenue of the shipping companies and the revenue required to enable them to realize a 12 percent return on investment, floating assets plus two-month working capital, net of interest expense but before income tax.
In 1977, this process was slightly improved by taking into account the income-reducing effect of the carrier's tax on the incremental revenue arising from the rate adjustment.

The return on investment of 12 percent had been considered by the PSC and the BOT as the "reasonable rate of return". The rate had been applied by the two agencies for over 50 years despite the increase in the cost of capital from 12 percent in the early 30's to anywhere from 20 to 35 percent at present. In 1984, it rose to as high as 60 percent.

The rate gap had increased considerably so that the adoption of the current reasonable rate of return would result to drastic changes in tariff levels.

The present process of adjusting rates did not consider the changes in rates, traffic, available tonnage, etc. Thus it was possible that rates were set relatively low because the load factor of the fleet in the previous year was high. If the high load factor was due to overloading during peak months, the adjusted rates would in effect encourage the continuance of the practice of excessive loading. On the other hand, if revenue deficits appeared large due to the low utilization of vessels, the resulting rate adjustment would be tantamount to the ship users paying the cost of over-tonnaging.

The rate base used in determining the allowable return consisted essentially of the book value of the floating assets and two-month working capital. To enable them to obtain a rate increase, appraisers were hired. These appraisers generally reported high valuations of assets which, in turn, resulted to excessive rate increases.

If the use of the present method would be continued, the MARINA should seriously consider the accreditation of appraisal companies. Because of the Philippines' low foreign exchange
reserves, the Central Bank had restricted the importation of ships. With the growing trend towards vessel chartering for inter-island operations, there would be a decline in investments in the fleet capacity. Since the rate base for the charterers would consist only of working capital or capitalized leased assets, the marginal return might discourage the chartering of ships. If the restriction on vessel importation continued, then the Philippine inter-island ship operators would have to depend on chartering, and if the existing rate of return would still be used, then the rate base had to be analyzed closely and modified so as not to discourage leasing of vessels.

However, other methods or formulas could be used and these would not be as problematic as the existing one.

The method and the formula used by the United States Federal Maritime Commission were examined. While they would be an improvement over the existing ones, the data such as long-term debt, net income, and stockholders' equity which would be published in the Bureau of the Census Quarterly Financial Reports and interest expense on long-term debt which could be obtained from Moody's Industrial Manual, or similar figures, would unfortunately not be readily available in the Philippines. Furthermore, the proper selection of the corporate bond yields would be subjective and would require expert judgment.

The formula for determining freight for inter-island shipping, used in Indonesia, was likewise considered. A closer examination of this formula indicated that it took into account the load factor and the ports' efficiency factors; however, calculating some of the components of this formula would require much work and the other components would either be subjective or time-consuming to determine. Another formula that was looked into was the "Rate Fixation Formulas of Short-Distance and Long-Distance Liner Shipping Conferences". Examination of this
formula would reveal that to determine the values of the elasticities and the rate fixation equations would require some knowledge of statistics.

Commodity stowage, the number of cubic measurement per ton of the commodity, had been considered as a cost determinant of liner rates in that it was positively related to cargo loading and unloading costs and was also a determinant of the amount of cargo which must share the common costs of ship operations. Commodity density, the reciprocal of the commodity stowage, determined the extent in which the weight and cubic hauling capacity of a ship might be utilized.

First and foremost, shipowners and operators must be considered as selling space and, therefore, stowage factor must be one of the main factors when establishing a freight rate.

In their empirical studies, a number of authors concluded that commodity stowage was a determinant of liner conference rates. In the determination of the stowage factor based freight rate (SFBFR), two conditions had to be satisfied, namely:

(a) "The ratio of the cubic capacity to the dead-weight capacity of a vessel should be inversely related to the ratio of the freight rate per ton weight to the freight rate per ton measurement. and

(b) The total voyage cost must be covered by the revenue obtainable on a break-even point of cargo-carrying capacity".

Even in the case of allocating cost to heterogeneous cargoes, the SFBFR method appeared to be the most equitable in the apportionment of costs and at the same time came out with a moderate level of freight rates based on costs.

In most developed maritime countries, liner rates were value-based and were set by liner conferences. To prevent overpricing,
a suitable platform for the negotiation of freight rates was provided where both the ship operators and the shippers justified their position. The free entry of non-conference liners and tramps had also served to minimize, if not avoid, overpricing.

Conferences fixed rates at levels designed to attract traffic, at rates that would cause cargo to move and, to be able to accomplish these objectives, conferences divided commodities in several categories taking into account "what the traffic could bear".

Consultants from SHIPDECO of Norway, together with MARINA staff members, constitute the Shipdeco-Marina Team on Standard Ship Design. These consultants were openly in favour of free competition, but "a system based on load factor and efficiency is considerably better than today's system with an excessive number of licenses being issued".

In Norway, shipping operators were exposed to free competition. The freight rates were governed by supply and demand. This system had been considered one of the most important aspects in the development of the Norwegian shipping industry.

On deregulation, in terms of benefits derived, there was no better proof of successful implementation than the airline deregulation in the United States. Regulatory barriers to entry were removed; existing carriers could enter routes of their choice. The management of airlines was given complete freedom in the re-structuring of their route networks. Complete freedom of pricing now existed.

Consumers gained more than $3 billion in benefits and carriers enjoyed the flexibility that they needed to better their financial outlook.

Since 1983, the Philippine Government had already deregulated the first class passenger rates and up to this time no complaint
had been received either from the passengers or from the shipping companies.

"While regulation would not be entirely undesirable, the need for administrative practicability and the difficulty of economic prediction, particularly on demand responses, would make it virtually impossible for the regulator to replicate the price and cost results of a hypothetically competitive industry. The regulatory process, even assuming it would function perfectly, would not be able to reproduce the price signals that a workably competitive market place would provide".

In recent years, two important forms of liner surcharges had been applied, namely: the Bunker Adjustment Factor (BAF) and the Currency Adjustment Factor (CAF). BAFs and CAFs were intended to compensate shipping lines for changes in costs which arose from changes in bunker prices and changes in currency exchange rates, respectively.

Conferences used two established formulas, but the more widely used formula (Formula I) calculated a percentage change in bunker prices weighted by a bunker incidence factor. This weighted percentage change was the BAF applied to the base freight rate.

The calculation of the general rate increase (GRI) involved the estimation of weighted percentage changes in the various cost items contained in the lines' voyage costings. These percentage changes were then added up to obtain an over-all percentage cost increase which was the required GRI.

For the calculation of the general rate increase and the bunker and currency surcharges, the method widely used by the conferences, the weighted percentage cost change, would be the simplest and the most logical replacement of the existing method.

Among the methods or formulas presented, two appeared to be the
best replacement of the existing method. In the order of immediate implementability, these would be the SFBFR method and deregulation.

While deregulation would have more advantages than the SFBFR method, the absence of the major elements necessary for the proper functioning of the mechanism of consultation and negotiation between the shippers group and the conference of shipowners and operators would dictate that its implementation be deferred to a later date. Associations of large manufacturers had emerged, but the presence of organizations to represent numerous commodity groups would still be sadly lacking.

In the interest of the public, the undue increase in freight rates of essential commodities should be avoided and, therefore, it would be necessary that deregulation should proceed gradually.

With the exception of "free competition", the SFBFR method seemed to be the most advantageous of all the other methods and formulas mentioned in this study. If finally adopted, its application would, however, be slightly delayed to provide time for the preparation of a table of commodity stowage factors.
CHAPTER I

INTRODUCTION

The Government of the Republic of the Philippines, just like a few in the world, regulates public services or utilities as a means of protecting the interest of the public. Among the many aspects of public service in the Philippines is sea transportation primarily because of the archipelagic nature of its geography. The Philippine sea transport industry serves not only the needs of the movement of population but also, more importantly, the movement of commodities from areas of production to areas of consumption. It is, therefore, a vital segment of the national economy.

Insofar as the freight rate system is concerned, however, there seems to be no prevailing rate structure and rate adjustment formula effective at the moment, which can claim to best suit the conditions obtaining in the country.

It is, therefore, the object of this study to dissect the existing rate structure and formula, analyze deficiencies in this area, make the logical conclusions based on facts/data available, and offer recommendations which may improve the present rate structure and formula.

Parts of the Study

This study will be loosely divided into three parts, with topical concentration, as follows:

PART I - (Chapters I to IV, inclusive) will dissect the prevailing freight rate formula and rate adjustment formula, trace the development of
the subject matter from 1928, make a critical evaluation of the same, putting emphasis on deficiencies in the process.

PART II - (Chapters V to X, inclusive) will present new methods, cite advantages and limitations, accenting applicability in the Philippines considering national conditions.

PART III - (Chapter XI) will finally make the logical conclusions and recommend alternative courses of action, prioritized in accordance with their immediate implementability.

Significance of the Study

Based on the archipelagic make-up of the Philippines, a study of this nature is long overdue. In the benchmark research conducted, it would seem that there is no authoritative literature on the subject at this point in time. Many studies on many aspects of sea transport were started in 1977 under the auspices of the Maritime Industry Authority (MARINA), but they remain to be completed to this time.

This study may, therefore, be considered pioneering in character in the subject. It is hoped that this study will serve to generate interest in the subject matter and start a chain-reaction follow-up on the part of students, regulators, and practitioners in the maritime industry.

Objectives of the Study

This study aims to present the existing freight rate structure and rate adjustment formula, tracing its development since 1928, making a critical evaluation of advantages and disadvantages, presenting alternative methods which can best suit the conditions prevailing in the country, making the logical conclusions, and presenting workable recommendations prioritized
according to immediate implementability.

Limitations of the Study
This study limits itself in scope to the freight rates of domestic liner vessels in the Philippines, their freight rate structure, their rate adjustment formula, and the method used. Since literature on the subject matter is sadly lacking in the national scene, attempts have been made to fit applicability of existing literature on the subject matter in the international setting, as much as possible, into national conditions.

Starting Point of the Study
The prevailing rate structure and formula were set by the defunct Public Service Commission (PSC) way back in 1928 and were continued, with slight modifications, by the Board of Transportation (BOT). With the BOT's recent abolition and the transfer of its rate-setting functions pertaining to maritime transportation to the MARINA, it is now incumbent on the MARINA to correct or change the present rate structure and formula to become more efficient, effective, utile.

Changes to the existing rate structure and formula, if any, will have to be introduced gradually so as not to result in the undue hike of prices of essential commodities, minimizing at the same time abrupt increases or decreases in freight rates.
CHAPTER II

THE PUBLIC SERVICE ACT

The Public Service Act had its origin with the creation of the first Public Utility Commission in 1913 under Act No. 2307. This act, which was derived from the Public Utility Laws of New Jersey in the United States, was subsequently amended by Act Nos. 2362 and 1694. In 1923, the foregoing acts were expressly repealed and superseded by the Public Service Law known as Act No. 3108, which was amended by Act Nos. 3139, 3153, 3192, 3316, 3367, 3418, and 4033. On 7 November 1936, the foregoing acts were expressly repealed and superseded by the Public Service Act, known as Commonwealth Act No. 146, which was amended by Commonwealth Act No. 454, Republic Act No. 178, Presidential Decree No. 1, and Executive Order No. 546 (1) *

In 1928, the Freight Rate System was established. The present tariff was first embodied in the Inter-Island Transportation Rates, Rules and Regulations Revising Order No. 3 of the Public Service Commission (2).

The primary purpose of the Public Service Commission Law was to secure adequate and sustained service for the public at least possible cost and to protect and conserve investments which had already been made for that purpose. The law was enacted not only to protect the public against unreasonable charges and poor and inefficient service, but also to prevent ruinous competition. This was the main purpose in bringing under the jurisdiction of the Public Service Commission (PSC) means of transportation, electric-generating plants, etc. which catered to a limited portion of the public under private agreements (3).

The PSC was abolished and replaced by specialised regulatory boards, among which was the Board of Transportation (BOT). These boards were under the administrative supervision of the Ministry of Transportation and Communications (MOTC).

* References
The BOT was composed of three divisions, one of which was the Water Transportation Division (WTD). Among others, the important powers and functions of the WTD were as follows:

(a) To issue Certificate of Public Convenience (CPC) for the operation of water transportation utilities and services, such as domestic and overseas water carriers and similar public utilities;

(b) To establish, prescribe and regulate routes, zones, and/or areas of operation of particular operators of water service transports, and determine, fix, and/or prescribe fares, charges, and/or rates pertinent to the operation of such utility facilities and services;

(c) To establish, fix, and/or prescribe rules, regulations, standards, and specifications in all cases related to the issued CPC's; and

(d) The BOT exercised its rate-setting functions in accordance with the specific policies prescribed by the MARINA in the determination of just and reasonable passenger fares, freight rates, and other charges relative to the operation of inter-island vessels (4).
THE RATE STRUCTURE

Moves to re-structure the freight rate structure were discussed as far back in 1967 when the National Economic Council and the Public Service Commission, both defunct agencies, circulated several memoranda and position papers recommending revisions/modifications to the freight tariff, to make it more responsive to the changing economic conditions in general and to the development in the inter-island trade in particular. Since 1928, across-the-board increases had generally been resorted to for adjustment of rate levels due to changes in vessel operating costs. However, the listing and classification of commodities and the rate structure were left unchanged (5).

The 1928 tariff stipulated freight and passage rates between two ports. The cargo tariff made a distinction and listed about 600-700 specific commodity items that were grouped into five basic commodity classes (A, B, C, D, and ad valorem) and those that were not individually identified. The latter category was lumped into the highest rating of the general commodity class A. To compensate owners for the increased risk involved in the transport of high value cargoes, a surcharge of $^{1/2}$ percent was initially allowed in addition to the basic rate between the four commodity classes and their multiples: expressed in units of either 1000 KG or 1 CBM (F/T), whichever was higher, and further differentiated by distance.

Commodities classed as C were applied a distance factor of 75 percent of that for A, B, and D. While the basic commodity categorization took into account the volume/weight ratios relative to the cost of providing shipping capacity, the distance-relating component of the formula aimed to minimize the impact of rate differences from large spatial differences between points of production and consumption.
The tariff was structured considering the cost of providing transport. The fixed cost component reflected the cost of maintaining the route network with its existing service level, vessels, and other infrastructure, whereas the variable component reflected the marginal cost of producing one additional ton-mile. This avoided distortions over time and ensured that the rate levels were appropriate if (a) inflationary adjustments were applied in accordance with the basic principles underlying the tariff and (b) the rate levels reflecting the actual cost of transport helped prevent giving rebates (6).

In 1928, the five basic classes were priced as shown in TABLE 1 below:

**TABLE I**

(In Pesos per Freight Ton)

- **Class A**: (₱ 2.00 + ₱ .01 per mile)
- **Class B**: (₱ 1.50 + ₱ .01 per mile)
- **Class C**: (₱ 1.00 + ₱ .075 per mile)
- **Class D**: (₱ 6.00 + ₱ .01 per mile)
- **Ad Valorem**: 1/2% of commodity value

The classification of commodities on property transported coastwise ports of the Philippine islands, on closer examination, listed articles with no regard for logic, consistency, or even a modicum of more effective regulation. It was simply a listing of articles and their classification, without any explanation, to Class A or B or C or D. Why should, for instance, acids, alcohol (admittedly chemicals) be lumped up with airplane and parts thereof and arms and ammunitions in Class A, suggesting perhaps an alphabetical manner of classification? If it was indeed so, why then should barometers (boxed) and blankets (in bales or cases), or even books and boots and shoes (boxed) be likewise classified under Class A?
This base-less classification of commodities opened up new areas of problem rather than actually assisted in the formulation of an effective system of rate structure-formula. So that even while the classification would still stand as of the moment, its applicability in terms of an improved freight rate system was all at once open to question. For one thing, it gave too much discretion to the shippers since the loaders were, more often than not, not really in a position to at least inquire as to the basis of the commodity classification. In this sense, therefore, it led to controversy rather than acceptability.

Perhaps a more meaningful and useful classification would be the answer. But in the absence of such a more workable classification, the loaders were seemingly at the mercy of the shippers in the absence of regulatory officers at the scene of the loading. In most cases, the rates were determined by the shippers and accepted by the loaders at the loading point, following no regulations but perhaps using guidelines that they remembered as basis for the rates agreed upon.

Successive across-the-board adjustments had generally been applied in the foregoing equations which, in the opinion of the Inter-Agency Freight Study Team, had distorted the structural balance between the commodity and distance components of the equation. This had adversely affected the rates on long distance links which tended to increase at a faster pace than rates on short distance links. In respect to ad valorem cargoes, the study stated that the revenue therefrom were grossly distorted if ad valorem rates were related to the cost of providing transport. As a result of distortions in the tariff and further compounded by under-utilized cargo capacity of the fleet, granting rebates of varying magnitudes, typically anywhere from 15 to 25 percent, had become a practice (7).

The increases approved by the BOT for inter-island shipping are shown in TABLE 2.
### TABLE 2

INCREASES APPROVED BY BOT FOR INTER-ISLAND SHIPPING OVER BASIC (PRE-WAR) RATES

<table>
<thead>
<tr>
<th>CASE NO.</th>
<th>FREIGHT RATES</th>
<th>PASSENGER RATES</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>PERCENTAGE</td>
<td>DATE</td>
</tr>
<tr>
<td>12113</td>
<td>-</td>
<td>70% 7 Sept 1946</td>
</tr>
<tr>
<td>12113</td>
<td>-</td>
<td>10% 12 Jan 1950</td>
</tr>
<tr>
<td>132996</td>
<td>-</td>
<td>10% 22 May 1961</td>
</tr>
<tr>
<td>65-2670</td>
<td>-</td>
<td>18% 27 Dec 1965</td>
</tr>
<tr>
<td>69-6258</td>
<td>-</td>
<td>30% 28 Nov 1969</td>
</tr>
<tr>
<td>70-2023</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>70-4954</td>
<td>-</td>
<td>30% 10 Nov 1971</td>
</tr>
<tr>
<td>73-18210</td>
<td>-</td>
<td>50% 8 Apr 1974</td>
</tr>
<tr>
<td>73-18240</td>
<td>-</td>
<td>15% 27 Jan 1976</td>
</tr>
<tr>
<td>77-34277</td>
<td>-</td>
<td>19% 29 Sept 1977</td>
</tr>
<tr>
<td>79-14554</td>
<td>-</td>
<td>29% 20 Aug 1979</td>
</tr>
<tr>
<td>79-14554</td>
<td>-</td>
<td>10% 25 Feb 1980</td>
</tr>
<tr>
<td>80-8683</td>
<td>-</td>
<td>10% 23 Oct 1980</td>
</tr>
<tr>
<td>81-1455</td>
<td>-</td>
<td>8% 14 Apr 1981</td>
</tr>
<tr>
<td>83-10405</td>
<td>-</td>
<td>8% 25 July 1983</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Suspected and rolled back effective)</td>
<td>(Suspended and rolled back effective)</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83-20017</td>
<td>-</td>
<td>30% 16 Nov 1983</td>
</tr>
<tr>
<td>84-6545</td>
<td>-</td>
<td>25% 21 June 1984</td>
</tr>
<tr>
<td>84-10684</td>
<td>-</td>
<td>20% 23 Nov 1984</td>
</tr>
<tr>
<td></td>
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<td>5% 1 June 1985</td>
</tr>
</tbody>
</table>

(Roll back)
As of 16 November 1983, the cargo rate structure was modified in a manner that rates would vary with distance. Both port-related and seatime-related components were formulated to decrease as the distance increased. Freight rates approved by the MARINA as of 1 June 1985 are shown in TABLE 3.

<table>
<thead>
<tr>
<th>DISTANCE IN NAUTICAL MILES</th>
<th>CLASS A</th>
<th>CLASS B</th>
<th>CLASS C</th>
<th>BASIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 TO 100</td>
<td>(P76.4712 + P .5780 per mile)</td>
<td>(P61.2066 + P .4624 per mile)</td>
<td>(P49.7164 + P .3764 per mile)</td>
<td>(P27.3439 + P .2070 per mile)</td>
</tr>
<tr>
<td>101 TO 300</td>
<td>(P62.9850 + P .5394 per mile)</td>
<td>(P50.3880 + P .4313 per mile)</td>
<td>(P40.9511 + P .3512 per mile)</td>
<td>(P22.5198 + P .1931 per mile)</td>
</tr>
<tr>
<td>Above 300</td>
<td>(P49.4988 + P .5009 per mile)</td>
<td>(P39.6141 + P .4001 per mile)</td>
<td>(P32.1841 + P .3260 per mile)</td>
<td>(P17.7014 + P .1793 per mile)</td>
</tr>
</tbody>
</table>

Upon its establishment in July 1974, the MARINA took the lead role in pursuing the re-structuring effort. A Joint Committee, composed of five representatives from each of the government agencies concerned with shipping; four from the shipowners/operators sector, and four from the shippers group, was formed.

To correct the distortions in the rate structure caused by
across-the-board increases, the Inter-Agency Freight Rate Study recommended three alternative structures which proposed a reduction in commodity classes from the existing 15 to only either 6, 8, or 10 classes. To date, however, the Inter-Agency Freight Rate Project remains to be completed and the mechanics of implementation still remain to be discussed with both shippers and shipowners and operators. Whether the scheme would be practicable or not remained to be seen (8). Moreover, lack of funding support, together with divergent views regarding commodity classification, number of commodity classes, etc. led to the discontinuance of the project.

A closer study of the rate structure revealed that:

(a) cross-subsidization existed between different commodity classes, with ad valorem and class A and class B commodities subsidizing those of class C; in short, the tariff was not based on the cost of providing the service, but on the value of the cargo and its capacity to pay.

(b) before November 1983, higher returns were provided for longer distance trips as compared to short distance hauls; thus, for an operator serving route links of varying lengths, the longer hauls subsidized the shorter routes. The rate formula, as it was then structured, had a built-in bias in favor of operators serving longer route links (9).

Due to observed serious deficiencies of the freight rate system currently used in the inter-island shipping operations - involving vessels operating on a fixed route and on a relatively fixed schedule - coupled with complaints raised by both shippers and shipowners, the MARINA saw the need for revising the 1928 Freight Rate System. Among these deficiencies might be listed the following:

(a) The existing tariff structure failed to include numerous
commodities which entered the trade since 1928 but still included commodities which disappeared from the trade. New commodities were automatically charged as either class A or the ad valorem rate.

(b) The classification of many commodities did not follow their relative values which had changed. Rates were, therefore, out of proportion to the commodities' cost of production.

(c) The tariff became dual: ad valorem rates for commodities of value (value of over $1,000 per ton or cubic meter) which did not give consideration to distance and specific class rates, based on distance and cost of service, for all the other commodities. There was no correlation between these two subsystems.

(d) The interpretation of Section 28 (cargoes of value) of the 1928 tariff resulted in the growing proportion of cargo priced ad valorem. Cargoes of value as defined in the 1928 tariff fell articles such as cinema films, articles of gold and silver, jewelries, precious stones, and similar articles whose values were greater than $1,000 per cubic meter or ton, for which ad valorem rates were stipulated. However, at the present time, because of inflation since 1928, articles like textiles, shoes and clothing, machinery, electrical appliances, paints and virtually all manufactures would be considered as cargoes of value since their values were greater than $1,000 per cubic meter or ton and, therefore, were now freighted ad valorem.

(e) Due to the present interpretation of Section 28, the overall freight increases covered not only the class rates but also the ad valorem rates, which thus rose from the 1928 level of 0.5 percent per $1,000 of value to 4.2 percent in 1977 irrespective of inflationary increases in prices. Thus, commodities whose
monetary value increased to reach ₱1,000 per cubic meter or ton due to inflation in effect bore increased rates twice. This made the gap between the ad valorem rates and the class rates very wide and this became wider with every approved over-all rate increase and because of inflation.

(f) Current rates favored long-distance hauls and discriminated against short hauls. It was found out that for shorter distances about 40 percent of the cargo were priced ad valorem, while for longer distances class A commodities - where distance was considered - predominated since the resulting rate was higher than the ad valorem rate which remained the same regardless of distance.

(g) The rates supported an inefficient shipping network characterized by over-tonnaging, vessel obsolescence, duplication of services with no regard for optimum frequency and too many ports of call per route (10).

Tariff rate adjustments had generally been across-the-board since 1928. The process in evaluating any petition for rate increase had been a straight forward approach for calculating the percentage difference between the actual (or at least reported) revenue of shipping companies and the revenue required to enable them to realize a 12 percent return on investment in floating assets plus two-month working capital, net of interest expense but before income tax. A slight improvement in the process was introduced in 1977 by taking into consideration the income-reducing effect of the carrier's tax on the incremental revenue arising from the rate adjustment (11).
FORMULAS USED FOR EVALUATION OF APPLICATION FOR RATE INCREASES

A. Return on Investment (ROI)

\[
\text{ROI} = \frac{\text{REVENUES} - \text{NET OPERATING EXPENSES}}{\text{RATE BASE}} = 12\%
\]

where:

- \text{REVENUES} = \text{FREIGHT + PASSAGE REVENUES}
- \text{NET OPERATING EXPENSES} = \text{VESSEL OPERATING EXPENSES + TERMINAL OPERATING EXPENSES + GENERAL ADMINISTRATIVE EXPENSES - (DEPRECIATION + AMORTIZATION OF LEASEHOLD IMPROVEMENTS + INTEREST + DONATIONS + REPRESENTATION + TAXES & LICENSES)}

\[
\text{RATE BASE} = \text{BOOK VALUE OF ASSETS + APPRAISAL INCREMENT + OPERATING CAPITAL}
\]

\[
\text{OPERATING CAPITAL} = \frac{1}{6} \times (\text{ALLOWABLE EXPENSES} - \text{NON-CASH EXPENSES})
\]

B. Required Revenue (RR)

\[
\text{RR} = 0.12 \times (\text{RATE BASE} + \text{ALLOWABLE EXPENSES})
\]

C. Rate of Revenue Adjustment (RRA)

\[
\text{RRA} = \left( \frac{\text{RR} - \text{REVENUES}}{\text{REVENUES}} \right) \times 100
\]
The rate adjustment process appeared to be based on the assumption that:

(a) a 12 percent rate of return on floating assets plus two-month working capital would still induce qualified investors to provide and maintain an efficient shipping service;
(b) the average utilization rate of the vessels did not change before and after the rate adjustment; and
(c) the financial statements on which the adjustment calculations were based were accurate and factual (12).

The rate of return on floating assets plus two-month working capital equivalent to 12 percent had been considered by the PSC and the BOT as the "reasonable rate of return". This rate had been applied consistently by the PSC and later by the BOT for over 50 years in spite of the increase of cost of capital from 12 percent in the early 30's to anywhere from 20 to 35 percent at present. In October 1984, it rose to as high as 60 percent. This discrepancy between the prevailing opportunity cost rate and the "reasonable rate" set by the PSC and the BOT had been an issue brought up by shipowners and operators in their dialogues with government agencies. The government's position had always been to caution shipping companies that if such "reasonable rate" was increased for a particular transport sector, all other modes of transport would demand the same treatment.

Before the consolidation of bus companies in 1974, the Bus Operators Association of the Philippines also raised the same issue and the same arguments were presented by the government. Meanwhile, the rate gap had become more serious such that the adoption of the current reasonable rate of return would result to drastic changes in tariff levels. On the other hand, the antiquated "reasonable rate of return" had continued to induce shipowners and operators to resort to the generation of non-factual financial statements (13).
In addition to the magnitude of the "reasonable rate of return", adjustment process itself did not assure shipowners and operators of a fair return on investments. Rate increases were based on costs reported during the immediately preceding year and on other costs with determinable rates of increase, e.g., collective bargaining agreements, fuel price increase, and other costs affected by the fuel price adjustments; the computations for required rate increase, therefore, merely checked if the 12 percent rate of return could be realized and, if not, an adjustment to attain the 12 percent rate of return would be granted. In other words, the process of adjusting rates initially involved a perceived return below the "reasonable rate" and attempts were then made to restore this level of profitability. Previously, evaluations for rate increases took two to six months before any provisional increase was granted, so that the shipowners and operators had to contend with low profit margins, if not losses. Presently, rate increase evaluations by the MARINA would not exceed one month.

The 12 percent rate of return set by the defunct PSC and the BOT was quite unrealistic. The rate adjustment process did not even assure that this low rate of return would be realized by the shipowners and operators. It only brought up the levels of the profitability, oftentimes at a slow pace, to 12 percent periodically when shipping rates were evaluated; thus, the rate of return being granted was in effect below 12 percent. These aspects of implementation discouraged additional investments in ships and/or induced existing operators to "doctor" financial reports as a recourse for survival (14).

Traffic volumes changed from year to year regardless of the elasticity of demand for shipping services with respect to rates; likewise, vessel utilization rates or load factors changed, especially when the aggregate capacity of authorized vessels also changed.
Since the current process of adjusting rates did not consider the changes in rates, traffic, and available tonnage, it became possible that rates were set relatively low because the load factors of the vessels in the previous year were high. If such average load factors involved overloading during peak seasons, these new rates would in effect encourage the continuance of the previous period's overloading practice in order to attain the estimated revenue that provided a fair return. However, if large deficits resulted due to the low utilization of vessels, it could be said that the rate adjustment passed on to the ship users the cost of overtonnaging.

The rate base currently used to assess the magnitude of the allowable return consisted of the appraised value of floating assets and the working capital equivalent to two months of operating expenses. The intention of the policy which considered the appraisal increments as part of the rate base was to enable shipowners and operators to generate funds for the replacement of their vessels. Such appraisal increments provided investors a return on the increment which never involved any cash outlay from them. Since the minimum attractive rate of return on current investments should be granted to foster continuity of the service, an adjustment of the rate base to the current value still remained appropriate and fair to the investor (15).

A firm should be able to earn revenues that would compensate investors of both debt and equity capital. These payments would be in the form of interest and profits (which could be expressed either in the form of dividends or retained earnings). Capital would be just as much a factor of production as would be labor and land resources. If a firm would not be able to reward capital, then assuredly the lack of profit opportunity would send a signal to the capital markets that investors should seek alternative investments. The inability to attract capital would, therefore, erode the investment base and over time the firm would be forced to reduce the level of service it would offer the public. Thus,
it would be important that a regulatory commission would permit a regulated firm to earn a reasonable rate of return (16).

In the application of the rate base two aspects would be worth mentioning. Firstly, the existing rate evaluation procedure appeared to lack any safeguard against unscrupulous appraisers who might report excessive valuations which would result to high rate increases. Asset appraisals were conducted usually for the purpose of negotiating loans with financing companies and for supporting a petition for rate increase. A review of some appraisals in previous petitions with the BOT revealed some questionable valuations. Since valuation reports were normally prepared without prejudice to the appraisers, some companies had no qualms in simply making their clients happy. It appeared that an accreditation of appraisal companies and a review of valuation reports by the MARINA became appropriate. Secondly, the rate base appeared prejudicial to bareboat charterers and ship operators who did not own the ships they operated. These entities generally compensated shipowners for the cost of the ship plus returns on owner's investment which were virtually unregulated (17).

The second aspect had become more relevant since the Central Bank of the Philippines, because of the country's low foreign exchange reserves, restricted importations of vessels. With the growing trend of ships being chartered for inter-island operations, the extent of investments in proportion to fleet capacity was expected to decline. Since the rate base for the charterers and pure ship operators consisted only of working capital, the marginal returns as compared to the business risks discouraged chartering of vessels; but if importations continued to be totally restricted, chartering remained as the most logical mode of acquiring vessels and the magnitude of the rate base encouraged charterers to prepare fraudulent reports.

In most of the developed maritime countries, it might be noted
that the shipowning, the ship management, and the ship operating functions were usually decentralized; shipowners entrusted their vessels to professional ship management and/or operating companies. Each entity involved, from the owners to the managers and finally to the charterers and ship operators, derived earnings depending on market conditions.

If the government, with its low foreign exchange reserves, would have to depend on chartering as the necessary and most practical mode of securing the future tonnage requirements, it would be necessary that the "rate base" used when chartering be reviewed. While there could be possible alternatives, such as the inclusion of "reserve funds" in the determination of the invested capital or the capitalization of leased assets, it was believed that the most logical approach was to change the method for determining rate adjustment. This would be taken up in the latter part of this study where the formulas and method presented by the UNCTAD Secretariat would be discussed.

The Shipdeco of Norway-Marina Team on Standard Ship Design commented that the freight rate and license system should be changed. The freight rate system should be used as an instrument to improve efficiency by means of a rate structure that would lead to minimum overall costs. Basically open competition on the routes and/or maximum freight rates should be preferred, but a system based on load factor and efficiency would be considerably better than today's system with an excessive number of licenses being issued (18).
PART II

CHAPTER V

OTHER FORMULAS STUDIED

Method and Formula Used by U.S. FMC

In the United States, shipping rates would be regulated by the Federal Maritime Commission (FMC). The process of calculating a reasonable rate of return for a regulated company, such as Company X, would require the calculation of a rate of return earned by companies which would be comparable to Company X. The first step in this process would be to identify a data base from which a reasonable estimate of the average rate of return of major U.S. corporations would be made and then adjustments would be made for risk and trends in rates of return and interest rates, if necessary, to find the rate of return Company X should have the opportunity to earn that would attract capital in the future and would maintain the integrity of existing capital investments.

A carrier operating in the domestic offshore trades should be permitted the opportunity to earn a rate of return on its rate base that would reflect the price the firm would have to pay to secure debt and equity capital. From an investor’s perspective, such a rate of return should be comparable to investments of similar risk. The FMC would adopt the comparable earnings test to measure the reasonableness of a carrier’s rate of return. The first point to be addressed in a comparable earnings test would be the universe of firms from which an average rate of return or benchmark could be derived. In various dockets involving shipping companies, the FMC would find the reference group of U.S. manufacturing corporations to be the best sample of firms from which to develop a benchmark rate of return. The data from which the benchmark rate of return for manufacturing corporations could be computed would be published in the Bureau of the Census.
Quarterly Financial Reports (QFR). From these data, the return on total capital could be developed. While the return on total capital would not precisely be the same as the return on the rate base, it would be a good approximation and furthermore would be the approach specified in the Code of Federal Regulations.

The FMC's General Order 11 would specify that the following return-on-rate-base formula be used to determine a carrier's rate of return:

\[
\text{Rate of Return on Rate Base} = \frac{\text{Net Income After Taxes} + \text{Interest Expense}}{\text{Rate Base}}
\]

The return on rate base would measure the return to investors who would have provided the funds to finance the purchase of a carrier's assets, which would be represented by the rate base. Unfortunately, data would not be available for calculating the return on "rate base" for manufacturing firms. The FMC would use the return on total capital formula as a proxy for the rate base formula, because "total capital" would represent the source of funds used to purchase assets such as those found in the rate base. The return on total capital formula would be:

\[
\text{Return on Total Capital} = \frac{\text{Net Income After Taxes} + \text{Interest Charges on Long-Term Debt}}{\text{Stockholders' Equity} + \text{Long-Term Debt}}
\]

In the equation, one could see that the return on total capital could be separated into two parts: net income would be the return to stockholders (equity) and interest expense on long-term debt would be the return to debt holders (debt). Figures for long-term debt, net income and stockholders' equity would be published in the Bureau of the Census publication, the Quarterly Financial Reports. The only figure that would have to be calculated would be the interest expense on long-term debt. This would be determined by examining newly issued corporate bond yields over a certain
time span and taking the moving average for the latest particular number of years (19).

However, the absence in the country of data such as those obtainable from the QFR, as well as the corporate bond yields, would rule out the use of this FMC method.

One formula (20) for determining freight for inter-island shipping, used in Indonesia, was studied, as follows:

**Freight Rate for Inter-Island Shipping**

\[
M = \left[ \frac{DF}{L} + F \left( \frac{C1 + C2}{L} + \frac{P1}{H1} + \frac{P2}{H2} \right) \right]
\]

- **M** = Commodity classification coefficient
- **D** = Distance cost
- **=** Cost/ton/nautical mile x distance, n. mile
- **F** = Proportional factor, i.e., extra cost element, percent of other elements as:
  - Commission/accounting cost claims/cargo
  - handling equipment
  - Freight rebate margin/contract margin
  - Profit margin, etc.
- **L** = Load factor
- **C** = Port expense as:
  - Pilotage/towage
  - Mooring assistance, etc.
- **C1** = Call expense in port of origin
- **C2** = Call expense in port of destination
- **P** = Port expense, dependent on lay days/berthing cost as:
  - Port dues
  - Mooring expenses, etc.
- **P1** = Berthing cost in loading port
- **P2** = Berthing cost in destination port
- **H** = Efficiency factor in port
H₁ = Efficiency factor in loading port
H₂ = Efficiency factor in destination port
M varies from 1 to 2.5 (in Indonesia)

It could be seen from this formula that the freight to be paid by the shippers depended on the distance, the vessel expenses in ports, and the classification of the goods shipped.

The formula had three main components, namely:

(a) the sea component: \( \frac{DF}{L} \),

(b) the port component: \( F \left( \frac{C₁ + C₂}{L} + \frac{P₁}{H₁} + \frac{P₂}{H₂} \right) \), and

(c) the commodity classification component: \( M \).

However, while this formula took into consideration the load factor and the efficiency factors in the loading and the destination ports, the various components of this formula such as the commodity classification component, the extra cost elements, the port expenses, etc., would entail, based on experience, a lot of work, with the figures obtained no better than mere estimates. Moreover, the commodity classification component would be very subjective as its value could cover a wide range.

The proper classification of a particular commodity, more often than not, had always been the subject of lengthy and time-consuming discussions.

Another formula looked into was the "Rate Fixation Formulas of Short-Distance and Long-Distance Liner Shipping Conferences" which appeared in a paper prepared by the Regional Adviser and the Consultant, Freight Study Units, during the Regional Workshop on Freight Study Units, held in Bombay, India, in 1979, sponsored by the Economic and Social Commission for Asia and the Pacific of the United Nations.
Long-Term Rate Fixation Equation

The nature of equation to be estimated was given as follows (21):\

\[ r = k_0 \cdot d^{k_1} \cdot p^{k_2} \cdot s^{k_3} + e \]

where:

- \( r \) = Basic freight rate of a commodity (measured by the ad valorem rate of freight per unit distance)
- \( d \) = Distance carried of commodity (in nautical miles)
- \( p \) = Unit value of the commodity (in US dollars per tonne)
- \( s \) = Stowage factor of the commodity (in cubic meters per tonne)
- \( k_1, k_2, k_3 \) = Elasticities (given as numerical coefficients)
- \( k_0 \) = A numerical constant which stood for the general level of the basic rates as influenced by all other factors (such as the ship size, its average utilization, and costs to the shipowners)
- \( e \) = The standard error of the basic rate of the commodity (or the standard deviation of the differences between the actual rates and the computed rates from the equation, which were attributable, among other things, to the uncertain elements in the stowage factor, while the influence of the systematic element in stowage factor was measured by \( k_3 \)).

The numerical values of \( k_0, k_1, k_2, k_3 \) and \( e \) in the foregoing equation when estimated statistically would indicate both the level and structure of the basic rates of a group of conferences.
operating in a region. As such, the equation might be taken as the rate fixation equation or formula for the group.

Once the level and structure of the basic rates had been known from the rate fixation equation, the more complex structure of freight charges of different commodities for different distances could be derived directly by multiplying the basic rate of each commodity (derived from the equation) by the corresponding distance it was carried. The resulting freight charges would be in ad valorem. If, however, the absolute freight charges were required, they could each be derived by simply multiplying the ad valorem freight charge of each commodity so derived by the corresponding unit value of the commodity.

Examination of the formula would reveal that to determine the numerical values of the elasticities and the long-term fixation equations for the short-distance rate and the long-distance rate some knowledge of statistics would be necessary.

Much simpler computations which could be readily understood by the shipowners, operators, and users should, therefore, be preferred.
LINER FREIGHT RATES

In countries where shipping was not regulated, liner freight rates were fixed by individual conferences on the basis of certain principles and considerations. However, the market forces of demand and supply had potent influence. The shipping lines engaged in liner trade ply on fixed route regularly, on the basis of pre-determined schedules and carried an assortment of small consignments of several cargoes. Their voyages were fixed and committed in advance and had to carry whatever cargo was available at the time of sailing. The lines maintained a network of agencies in all the areas where their ships plied. They had to cover the operating and maintenance costs of ships, pay interest on loans, and after a reasonable operating period earn a satisfactory, or sometimes a low, rate of return on capital invested in the business. They also had to meet the expenses of annual drydocking and quadrennial ship surveys to maintain the class of their ships and expenses of contingencies which could not be foreseen, such as collision, damages to cargoes arising therefrom, strikes, port congestions, etc.

The cost structure of a liner company generally included general overhead, selling overhead, marine overhead, vessel's overhead, voyage costs, and variable costs.

The majority of the costs in operating a liner vessel would be outside the control of the shipping line. The liner owner or operator could do very little when fuel costs, port charges, wages, stevedoring cost, etc. would escalate.

The Cost of Service Principle

In order to give a continuous and regular shipping service a liner operator must determine freight rates to cover all the afore-
mentioned costs and make a reasonable margin of profit. The freight so determined would be the cost of rendering the service and formed the lower limits of the rates so that the total freight earned would not be less than the actual cost of service. This concept must be considered an important principle on the supply side.

The Value of Service Principle

The freight must be at a level which enabled the traffic to move, i.e., at a level which must not be such a burden that the business became non-competitive; otherwise what would obtain would be a "nice" freight rate but without cargo. If the freight became so high as to exceed the value of service, the goods would not be shipped by the operator. Thus the upper limit of the freight rates depended on the value of the service rendered and the upper limit must be so determined that when goods would be sold at destination in spite of freights rates being high, there would still be a reasonable margin of profit for the seller. This must be considered an important factor on the demand side of shipping service.

What the Traffic Could Bear

The liner freight rates must be at a level which would enable the ship to pay its way. If the freight rates were based on the cost of service alone, the margin of profits would be very small. If, on the other hand, the value of service principle alone was applied, the profits might be high but the freight structure would go up, leaving very little incentive for the shippers to sell the cargoes. So the conferences divided the goods in several categories taking into account "what the traffic could bear". Conferences fixed rates at levels designed to attract traffic, at rates that would cause cargo to move, thus promoting trade. There must be many factors affecting the cost of services or the value of services or both which in turn would ultimately affect freight rates.

Generally, conferences could be secretive about the principle on
which they could decide freight rates. Rates might be based strictly on costs, rates might be historical, rates might have no rational basis on costs, and rates might be according to what the traffic could bear. Sometimes, under this principle, rates could be below the cost of transporting a commodity.

Conference Rate Procedure

Before the freight for a particular commodity could be determined, the conference would need sufficient data to enable it to make reasonable estimates of out-of-pocket expenses and revenue which the traffic could bear. The excess of revenue over net out-of-pocket cost might usually be the index of desirability for the rate of that particular commodity. Conference would generally ask the applicant to fill in a form called "application for freight rate" which the conference had prepared for the applicant. Although these forms vary from conference to conference, virtually all of them called for information such as the trade name of the commodity, the description of the article, whether it was liquid or solid form, whether it was in paste, flake, powdered or granulated form, etc. The willingness and ability of shippers to pay a given freight would depend largely on the value of goods and the applicant, therefore, must state the value per unit at the port of loading. Virtually all conferences also sought specific information on the competition which the goods must meet in the trade.

After obtaining the form duly filled in, the conference would establish freight rates by any one of the following three methods:

1. By arbitrary system, where the conference just fixed a certain rate without any supporting reasons;
2. In consultation with the shippers, a rate was fixed depending on how much a liner operator would need and how much the shipper could afford to pay;
3. By a formula system, whereby generally the total
costs and income of recent voyages (including agreed levels of interest on capital and depreciation) were calculated to see whether too much profit or loss, if any, had been made and to adjust the new freight rate accordingly.

Conference rates, therefore, would be basically of two types: class rates and commodity rates. A class rate would relate to a number, called a rating, which represented many commodities. A commodity rate would relate to a rate stated on a specific commodity of a particular description. Taking into account the various factors that affected liner rates, rates for each class of traffic, and for each port of the route must be compiled in the form of schedules, constituting a common tariff for all member lines.

The commodity or class rates could still be divided into subsections for different ranges of loading and discharging ports for items like chemicals and engineering goods, where stowage factors, handling expenses, value and other characteristics widely differed. There might be more than one rate entry in the tariff. There would likely be additional items, for example, "Chemicals n.o.s." (not otherwise specified) or "Engineering Goods n.o.e." (not otherwise enumerated), when a particular variety of commodity did not fit in any of the other commodities mentioned in the tariff.

The major task then before a conference was the preparation, publication, and revision of tariffs. The tariffs, beside giving the schedule of rates, should also contain rules and regulations regarding the proper application of rates. Sometimes a conference might declare rates on certain cargo as "open" thereby permitting the member lines to charge any rate on such cargoes. Generally, all bulk cargoes must be declared open-rated cargoes and once they had been so declared open-rated, the conference could no longer consider it its duty to provide them coverage.
General Rate Increases

Usually an advance notice of any increase in freight rate should be given by the conference either under a contractual arrangement with the shippers or through a consultation procedure agreed to by the conference with the shippers' association. In some trades, the national legislation might oblige the conference to give advance notice of a rate increase to the shippers and the government.

General rate increases could be of two types: (a) General rate increases to cover increases in cost of operation which might have occurred over a period, for example, inflation, stevedoring cost, port charges, wages, etc, increasing over a period; and (b) surcharges to cover sudden rise in the cost of operation due, for example, to an act of war or a congestion in a port. The usual types of surcharges, in this regard, would include Port Congestion Surcharge, Bunker Surcharge, Currency Adjustment Factor covering the rise or depreciation in the value of currency, War Risk Surcharge, Deviation Surcharge covering, for example, closure of a canal. Essentially, the surcharge should be regarded as a temporary phenomenon, imposed to cover a sudden rise in the costs of operation which was not expected to be permanent.

Surcharge being of a temporary phenomenon, conferences must be free to impose the same as and when necessary; however, if general increases in basic freight rates would be affected, the conferences would then be obliged to give reasonably sufficient notice to enable the shippers to make forward contracts. Developing countries had been organizing shippers, strengthening their associations, and promoting understanding and co-operation between shippers and shipowners. Shippers from developing countries should follow a procedure in approaching shipping lines for adjustment in freight rates in cases where such rates were considered high, anomalous, or discriminatory. A so-called "Discussion Formula" was evolved under which it became obligatory on the part of conferences to give adequate notice to shippers freight increases
and hold discussions with them before giving effect to such increases.

Standard Format

To further the objective of bringing about closer rapport between shippers and shipowners in order to enable them to conduct meaningful consultations and negotiations in matters of mutual interest, a "standard format" had been evolved in which the conferences would be required to furnish all relevant data to the shippers' organizations to justify any freight increase proposed by them. The format should list out the detailed headings relating to earnings and expenses including depreciation and return on capital, which information should be furnished by the conferences.

In regard to depreciation, the format should require that it be calculated on historical cost although some conferences had been adopting replacement cost for the purpose while submitting data in support of freight increases.

At the same time the format should recognize that in view of the escalations in the prices of new ships, depreciation calculated on historical cost might not be adequate for meeting the replacement cost. Provision must, therefore, be made in the format for a claim for rehabilitation allowance being made by the conference in cases where there could be a justification for such an allowance.

The format should not require any specific rate of return on capital to be claimed by conferences and it should be left for negotiations between the parties concerned. The format, however, must contain an important guideline to be followed by conferences in this connection, viz.: the rate of return to be claimed on borrowed capital should be lower than that on paid-up capital, primarily because interest charges on borrowed capital had been admitted as an item of expenditure in the format.

Consistent with the U.N. Code of Conduct for Liner Conferences, the format must envisage that there should be freight stability for at least 15 months between two general freight increases and at least five months between two freight rate increases.
Liner Conference Pricing

Shipping literature tended to contain a lot of theories that seek to give the rationale for price setting by liner conferences.

Sturmey (22) stated that liner conferences established deterrent prices rather than set prices in order to maximize profits. Deterrent prices pertained to those that would yield reasonable profits to the liner in a given route but would not attract extra competition. Heaver (23) supported Sturmey's view that liner conferences did not seek to maximize profits in price setting. Although maintaining the stability of prices and regulating the capacity of shipping would be favorable to trade, they could be against profit maximization. Heaver concluded that a rational explanation for the price setting by liner conferences could maximize a conference's revenue subject to a minimum-profit constraint. As an alternative, Heaver argued that liner conferences emerged to be price discriminators in the setting of prices, i.e., they sought to charge what the market could bear in order to maximize their revenue subject to minimum-profit constraint. In other words, charging what the market could bear meant charging higher-valued goods a higher liner rate than lower-valued commodities (24).

The goals of liner conferences had been generally stated to promote trade for the common good of carriers and shippers; hence, Laing (25) argued that conferences in setting prices sought to maximize the volume of traffic earned. As a consequence, the conferences practiced price discrimination, not however in the conventional form but in the manner of cross-subsidization among cargo movements. Cross-subsidization among cargo movements occurred when revenue from one movement was used to partially cover the cost of another movement. Furthermore, Laing (26) also argued that the foregoing rationale for conference pricing implied that the variation in conference rates was not entirely based on the value of the goods shipped but on a compromise between the value of goods and the cost of shipping them.
Empirical studies had been conducted to investigate the determinants of liner conference rates, i.e., variables that would shed light on the differences in liner conference rates. These studies had been used to support or disprove the aforementioned theories on liner conference pricing. The studies had assumed that conference rates for a given group of commodities had become a function of such variables as commodity unit value, commodity stowage, quantity of commodity shipped in a given period, competition along the conference route, and transport distance (27).

Commodity unit value was the value of the commodity per unit of weight, while stowage was the number of cubic measurement per ton of the commodity. Commodity stowage had generally been considered as a cost determinant of liner rates in that it was positively related to cargo loading and unloading costs and was also a determinant of the amount of cargo which must share the common costs of vessel operations. Specifically, commodity density or the reciprocal of the commodity stowage determined the extent to which the weight and cubic hauling capacity of a ship might be utilized (28).

Shipowners and operators must first and foremost be considered as selling space and, therefore, the stowage factor, which would be the space occupied in the vessel by a particular commodity, must be one of the main factors when establishing a freight rate. Naturally, stowage factor had been discussed here in a more general way, as it would be completely impossible in freight-rate making to take into account all those odd pieces which owing to their shape and form perhaps required a higher stowage factor than normal goods. For odd pieces with the unusual shape and form, certain other rules came in when one discussed freight rates in liner traffic.

Based on 1968 data, Heaver (29) concluded that the most important determinant of the variation in liner conference rates between the Pacific Coast of North America and Japan and Australia was commodity stowage. Commodity value and total value of commodities
transported were also found to be significant determinants. Based on 1969 and 1970 data, Deakin (30) concluded that for the Far Eastern Freight Conference and the United Kingdom-Australia Conference, commodity value factors generally accounted for two-thirds of the explanation for the variation in conference rates and cost-based factors accounted for the remaining one-third. Using 1969 outward-bound Canadian liner cargo data, Bryan (31) concluded that commodity stowage and unit value were significant determinants of the variation in liner rates. Also, according to Bryan (32), distance was not a significant determinant of the variation in liner rates; furthermore, there were statistically significant differences among the rates of various liner conferences in terms of their response to variations in distance, stowage, quantity of commodities shipped, and the number of competitors on the liner route. Based on data pertaining to liner trade to and from Thailand, Singapore, and Israel, Shneerson (33) concluded that commodity stowage and unit value were significant determinants of the variation in the liner rates, with commodity stowage being the relatively more important determinant.

The results of Shneerson's empirical studies (34) demonstrated that demand played a role in fixing rates. Unit value of commodities gave a consistent explanation of freight rates for individual commodities. It also gave a fair indication of the state of competition over the routes.

The stowage factor appeared to be an even more important explanatory variable for freight rates. That its effect on rates reflected underlying costs had not been established. Rather, there appeared to be a misconception of costs and a certain degree of arbitrariness in the use of the stowage factor for fixing rates. This situation had been demonstrated by the results of the comparative route study.

It had also been supported by the application of the so-called "freight ton" thinking, the "freight ton" (or the "revenue ton")
being the unit in which cargo was measured, mostly for the purpose of applying freight rates. Accordingly, high density cargo was usually quoted on a "W" basis and low density cargo on an "M" basis. A group of in-between cargoes moved on a "W/M" basis - whichever gave the higher revenue.

Two related aspects of "freight ton" thinking would reveal inefficiencies. Firstly, for the purpose of fixing rates, the consensus appeared to be that commodities with a stowage factor greater than 1 should pay according to the volume they occupied per unit weight. On the other hand, high density cargo, i.e., commodities with a stowage factor less than 1, did not incur "volume costs". They paid according to their weight, irrespective of the volume they occupied within this range. But this method of charging did not reflect the opportunity costs of commodities carried. If measurement was the binding constraint of the trade, all commodities, including those with a stowage factor less than 1, should be charged according to the stowage factor. Clearly, the opportunity cost of a commodity with a stowage factor of one half was higher than the opportunity cost of a commodity with a stowage factor equal to one-quarter.

Another manifestation of this misconception was the use of "freight tons" in measuring the volume of trade. Accounting practice measured the total tonnage carried by adding weight tons (when the stowage factor was less than 1) to measurement tons (when it was greater than 1). This practice tended to overstate the actual tonnage. Again, if volume was the binding constraint, quantities with a stowage factor less than 1 should also be measured by measurement tons and should be given a "weight" less than 1.

Given that the foregoing studies concluded that the commodity stowage and unit value were determinants of liner conference rates, they supported Laing's (35) rationale for conference pricing, namely, that in setting prices liner conferences sought to maximize the volume of traffic carried with the outcome being price discrimination in the form of cross-subsidization of cargo movements.
The existence of cross-subsidization in liner rates was also supported by Jansson (36) in a comparison of the rates and costs of liner cargo from U.S. Pacific coast ports to Japan for the year 1964. Furthermore, based upon imported commodities from the U.S. in 1972 along with trade routes involving the United States North Atlantic Conference and the Gulf Mediterranean Ports Conference, Jansson and Shneerson (37) compared rates and the costs of liner cargo and concluded that liner freight rates were characterized by cross-subsidization.

**Stowage Factor Based Freight Rate**

In the determination of the stowage factor based freight rate (SFBFR), two equations had to be satisfied, namely:

\[
\frac{M}{W} = \frac{\text{Freight } W}{\text{Freight } M}
\]

where:

- \(M\) = Cubic meter bale capacity of the ship,
- \(W\) = The ship's ton deadweight cargo carrying capacity,
- \(\text{Freight } W\) = Cost per ton weight, and
- \(\text{Freight } M\) = Cost per ton measurement

and

\[
\text{Total Freight Revenue} = \text{Total Cost of the Voyage.}
\]

The ratio of the cubic capacity to the deadweight capacity of a vessel should be inversely related to the ratio of the freight rate per ton weight to the freight rate per ton measurement.

In determining freight rates, using this method, the total voyage cost must be covered by the revenue obtainable on a break-even point of cargo carrying capacity.

Even in the case of allocating transport cost to heterogeneous cargoes, the SFBFR appeared to be the most equitable in the apportionment of costs and at the same time came out, using simple
computations, with a moderate level of freight rates based on costs (38).

Its structure was much simpler since there was no need to classify commodities; also, there was no need to have different rates by commodity class, provided the cargoes did not require special handling.

The shipowner or operator was assured of a reasonable return for services, regardless of which cargo transported. There would be no discrimination in transporting high-value goods; hence, any shipper was ensured that products would be transported.

Owners and operators of containerized and specialized types of vessels could likewise apply this method in determining freight rates.

The SFBFR could also serve as a basis for the level of voyage rates (39). In the application of the SFBFR method, the present level of freight rates and the rate increases which had been passed on through the years would have to be re-structured, as the maximum benefits of this method could only be derived by "wiping the slate clean and starting afresh" (40).

Because of the cross-subsidization of freight rates in the past between low-value and high-value cargoes, some of the current level of freight rates might turn out to be too high, while others might come out to be too low in comparison with newly determined stowage factor based freight rates (41).

The SFBFR method must, therefore, be applied gradually so that sudden increases or decreases in rates would be minimized and rates for essential commodities would not increase abruptly.

This method of computing freight rate based on differing stowage factors of commodities might be universally applied in the dry cargo freight market and could be particularly useful in the liner
freight market where numerous commodities of varying types and in different quantities must be shipped regularly. Since the fleet operated by a liner company could comprise ships of different types and sizes not to mention their condition reflecting varying operating costs, a mean set of freight rates might be determined on the basis of the particulars of the representative liner ship having a cubic to deadweight cargo-carrying capacity ratio of, say, 1½ cubic meters per ton weight. Alternatively, an average might be taken of the different particulars of each ship comprising the fleet serving a specific route such that the freight rates quoted by the liner shipping company from one scheduled sailing to another would not vary accordingly.

Liner Conference Surcharges

In recent years, two important forms of liner surcharges had been applied, namely: the Bunker Adjustment Factor (BAF) and the Currency Adjustment Factor (CAF). The BAF was a surcharge used by liner shipping conferences to compensate member lines for increases in bunker costs (42). Many conferences, including the Conference of Inter-Island Shipowners and Operators (CISO) in the Philippines, applied the BAF in the wake of the large increases in the price of oil in 1973 and in later years.

Formulas Used to Calculate BAF

A survey conducted by the Committee on Shipping, United Nations Conference on Trade and Development (UNCTAD), showed that generally conferences used some established formula to calculate BAF, although one conference stated that no special formula had been laid down for the BAF except that the average costs of bunker were taken into consideration. The origins of BAF formulas had not been very clear; they seemed to have been developed by some major conferences and then spread to other trades. They were not based on a formal agreement, for example, between Council of European and Japanese Shipowners' Association (CENSA) and some group of shippers' councils, as in the case of CAF. The responses
indicated that the two main formulas are in use. The first formula (Formula I), which was the more widely used, calculated a percentage change in bunker prices weighted by a bunker incidence factor. Formula I was also used by the MARINA but was known as the ratio method. This weighted percentage change was the BAF applied to the base freight rate. This formula had several variants which were distinguished by the procedure used for averaging price changes of individual member lines to obtain conference-wide price changes. The second formula (Formula II) used by a relatively small number of conferences — mainly those regulated by the United States Federal Maritime Commission — calculated the sum of dollars (or some other freight currency) per ton required to offset a change in a unit bunker price, and a flat sum of dollars per ton was applied regardless of the base freight rate (43).

Formula I was essentially based on the principle used by the conferences to calculate what was termed a warranted increase in the base freight rate or the general rate increase (GRI).

The calculation of the GRI, which included the BAF, involved the estimation of weighted percentage changes in the various cost items contained in the lines' voyage costings. These percentage changes were then added up to obtain an overall percentage cost increase which was the required GRI.

Let

\[ A = \text{Values of cost items at a base period} \]
\[ B = \text{Values of cost items at a current period} \]
\[ C = \text{Percentage change in the costs between the base and current periods} \]
\[ D = \text{Weighting factors - individual cost items expressed as percentages of total voyage cost} \]
\[ E = \text{Weighted percentage cost changes} \]

Then

\[ C(\%) = \frac{B - A}{A} \times 100 \quad \text{and} \quad E(\%) = \frac{C \times D}{100} \]
According to Formula II, BAF was calculated as a flat per ton sum regardless of the base freight rate. It estimated the sum of dollars per ton required to offset a unit change in bunker price.

The individual member lines submitted data on various items which when averaged for the whole conference were used in the following way:-

\[
\begin{align*}
\text{Let } & V = \text{ Number of voyage days during a selected previous period, say, the last 6 months} \\
& F = \text{ Fuel consumption (tons of fuel per voyage day) during a selected previous period of time} \\
& Co = \text{ Base period price per ton of fuel consumed} \\
& C1 = \text{ Current period price per ton of fuel consumed} \\
& To = V \times F \times Co = \text{ Total fuel cost per voyage at base period price} \\
& T1 = V \times F \times C1 = \text{ Total fuel cost per voyage at current period price} \\
& D = T1 - To = \text{ The change in fuel cost per voyage between the base and the current periods} \\
& W = \text{ Payable tons of cargo per voyage during a selected period of time} \\

\text{Therefore, } E = D/W = \text{ Additional cost of fuel per ton of cargo per voyage in dollars = bunker surcharge (in dollars per ton weight or measurement as freighted).}
\end{align*}
\]

**Guidelines**

As mentioned earlier, BAFs and CAFs being used in liner trades were intended to compensate shipping lines for changes in costs which arose from changes in bunker prices and changes in currency exchange rates, respectively.
They distinguished themselves from changes in the general freight rate because of their volatility and the ease with which they could be changed by the conferences.

The BAFs and CAFs were an important factor on the level of the overall cost of transport and hence on prices, especially those of primary commodities. This had a significant effect on the market demand for these commodities and the net earnings of producers.

Various aspects of the methods and formulas used to calculate and to apply BAF and CAF posed important problems. While in the past it had been essentially the conferences which determined the formulas and methods and their application, governmental and inter-governmental policy measures had a role to play in influencing the levels of, and changes, in freight rates. Policy guidelines could be made a useful contribution to the improvement of the present methods.

Standardization of BAF/CAF Methods and Formulas

There had been a lack of uniformity in the BAF and CAF formulas and methods currently in use. This must be considered a source of confusion to shippers who might have to deal with many conferences. Such a situation would lead to inequity in the levels of BAFs and CAFs being applied by different conferences. To minimize these problems, various elements of the methods should be standardized to the extent possible to make them uniform. In particular, standardization regarding the following elements would appear feasible and should be promoted:-

(i) Weighting factors for both BAF and CAF;
(ii) The sizes of samples of bunker prices and exchange rates used for monitoring the changes in the bunker prices and exchange rates;
(iii) Trigger points;
(iv) The length of review period;
(v) The order or sequence of applying the BAF, CAF, and other surcharges.
It would be essential, therefore, that:

(a) "The dates for weighting factors for BAF and CAF should be uniform for all conferences and they should be updated regularly as deemed necessary and appropriate;

(b) The samples of bunker prices and exchange rates used to monitor changes in those variables should be sufficiently large to overcome the problems which would arise from the use of samples considered too small;

(c) The trigger points should be established at such levels as to ensure that significant variations in bunker prices and exchange rates had been captured without, however, causing too frequent changes in freight rates.

(d) The order of applying the BAF and CAF should be rationalized and standardized. In doing so conferences should consult shippers at both ends of the trade" (44).

It has been argued by some conferences that standardization of methods was not feasible because of differences in the commercial characteristics and needs of the various trades. Also, some of the smaller conferences might not have the resources to afford the collection of extensive data and to apply sophisticated methods of calculation. However, in the responses to the UNCTAD Questionnaire, "there was no evidence to indicate any relationship between methods used, on the one hand, and trade routes or the sizes of conferences, on the other hand. The methods used thus appeared to be independent of the commercial characteristics of the trades or the sizes of the conferences" (45).

**Improvement in Shipper/Shipowner Consultations**

In many cases the periodic changes in BAF and CAF were effected without any formal consultations between shippers and shipowners. Moreover, in many trades, shippers had no information on how the surcharges were calculated. Even in cases where the methods
had been explained and discussed, the views and objections of shippers concerning the methodology used had usually not been accepted by the conferences.

In many cases, conferences consulted only with shippers at one end of the trade and the views and interests of shippers at the other end were not taken into account. Thus, for example, the formulas and methods for CAF contained in the ESC/CENSA Joint Recommendation were used in trades outside Western Europe where the shippers were not involved in the formulation of the Joint Recommendation. Another important example would be the joint effort by ESC and CENSA to develop a standard format of the order or sequence of applying the BAF, CAF, and other surcharges; here, too, shippers outside the ESC were not involved and yet the resulting format was expected to be used in their trades.

Even assuming that there was agreement on the BAF/CAF formulas there would still be the question of the verification of the input data to which the formulas were applied. On this question, the conferences insisted that the accounts of the individual member lines were confidential commercial information and could not be made available to outsiders. They maintained that the summaries given to the independent accountants were sufficient basis on which to base the calculations. The shippers found their lack of ability to verify the input data as the key weakness of the existing BAF/CAF systems. The use of independent accountants did not appear to solve the issue since the accountants relied on data supplied by the individual lines and were not in a position to verify their accuracy. Moreover, published data on exchange rates and bunker prices were not sufficient in themselves in verifying the calculations since the data on which the weighting factors were calculated were available only to the shipping lines.

To overcome these problems it was essential that:

(a) Shippers should be allowed to play a greater role in the process of determining the calculation and
application of the surcharges through improved shipper/shipowner consultations. In this regard, there should be greater transparency in the methods, formulas and input used in the calculations. The consultation process should respect existing international agreements particularly Articles 16 and 17 of the Convention on a Code of Conduct for Liner Conferences, which had now come into force.

Article 16 of the Code provided that before any surcharges were imposed, notice should be given and consultation held upon request. There was provision for surcharges to be imposed without prior consultation, but in such cases consultation should be held as soon as possible thereafter. If there was lack of agreement on the question of a surcharge between the parties concerned, the relevant provisions for settlement of disputes provided in the Code should prevail.

Article 17 provided that currency adjustment factors should be subject to notice and consultation. The consultation should be on the application, size and date of implementation (46).

(b) In conducting consultations, the views of shippers at both ends of the trade should be taken into account and

(c) Formulas and methods in use should be subjected to reviews to be jointly carried out by conferences and shippers at both ends of the trade to ensure their compatibility with changing situations and also their acceptability to shippers at both ends of the trade. Reviews should also be carried out to assess the necessity of continuation of given surcharges or to establish some criteria to be used in arriving at a decision on the continuation or discontinuation of the surcharges.
Equitable Sharing of Risks between Shippers and Shipowners

Under existing BAF and CAF systems, the surcharges were passed on wholly to shippers. Shippers had argued that unexpected changes in bunker prices and exchange rates were commercial risks which ought to be shared by both shippers and shipowners. They felt that to pass on the full burden of the added costs to them was inequitable since they could not follow suit by passing on the surcharges to consumers without causing harm to the markets for the commodities concerned. It had also been observed that some degree of risk sharing existed in the case of the general freight rate, in particular, through the introduction of rate freeze periods and also because of cancellations, reductions, or postponements of proposed rate increases. This development rarely applied to BAFs and CAFs. There was, therefore, a clear inconsistency whereby risk sharing was applied to the general rate but not to BAF and CAF.

Furthermore, it could be argued that a system of full automatic recovery or compensation such as that applicable to BAF and CAF tended to reduce the incentives of shipping lines to increase their efficiency in bunker consumption (in the case of BAF) and to reduce their exposure to currency exchanges (in the case of CAF). Thus, although shipping lines would normally make efforts to increase efficiency in fuel consumption and to reduce exposure to currency exchanges, these efforts would probably be increased if the lines were not assured of an automatic recovery of the cost increases.

It might, therefore, be more equitable, while at the same time promoting the lines' incentive to increase efficiency or to reduce exposure to currency exchanges, to apportion the computed CAFs and BAFs on some agreed basis, such as 50/50. This objective could also be achieved by various other means, such as raising the trigger points, extending periods of notice prior
to implementing new levels of surcharges or applying surcharge freezing periods.

A number of conferences had stated that the shipping lines were already absorbing the BAFs and CAFs through various types of discounts to shippers. They also pointed out that if the principle of sharing was introduced in the BAFs and CAFs this would remove the principle of no gain/no loss on which the present BAF and CAF systems had been based. If the shipping lines absorbed some of the costs as indicated, it would improve consultations with shippers if such absorption was quantified and clearly explained to shippers when announcing changes in the levels of the surcharges. Furthermore, while shippers and shipowners could agree to base BAF and CAF calculations on the principle of no gain/no loss, such would not preclude the absorption of shipping lines of part of the computed surcharges (47).

Incorporation of the Surcharges into the Basic Rate

There was much disagreement on the appropriateness of incorporating BAF and CAF into the base freight rate. Many conferences did not incorporate the surcharges, and a number of conferences had confirmed that non-incorporation did not entail any losses to the shipping lines. Therefore, it was evident that incorporation was not a commercial necessity and it was suggested that it would be effected only when there was a mutual agreement between the conferences and the shippers concerned.

Other Elements for Consideration

(i) Adjustments for Excess Gains or Losses from BAF

Due to possible changes in cargo volumes, the calculation of BAF using the two formulas currently in use might generate revenues which would be greater or less than the additional bunker costs on which the
BAF had been calculated, and the gains and losses might not cancel out in the aggregate or in the long run. It would, therefore, be essential for conferences to assess the size of the discrepancy between intended and actual BAF revenues and to compensate the lines or the shippers for assessed excess gains or losses. Such compensation could be achieved by appropriately adjusting the BAF during the subsequent periodic review.

(ii) Introduction of Different Scales for BAF when Applied on a Flat Per Ton Basis

BAF Formula II imposed an excessive burden on low-valued/low-rated cargoes when the BAF levels were increasing. Conferences could consider setting the BAF at different scales or levels, giving due consideration to the relative ability of different cargoes to bear the surcharge.

(iii) Co-operation between Shippers' Organizations

Shippers' organizations would need to be sufficiently strong and well informed to be effective in their consultations with shipowners or conferences on matters of surcharges and freight rates. Regional and sub-regional co-operation between shippers' organizations could offer an important means of strengthening their bargaining power and improving their research capability in developing sound shipping data and information. Such co-operation could be co-ordinated under appropriate programs of the United Nations regional commissions and/or other regional and sub-regional inter-governmental organizations (48).
REVIEW PROCEDURES (BAF)

Conferences should monitor bunker prices at established intervals. The frequency of BAF reviews should range from weekly intervals to quarterly intervals, with monthly intervals being the most commonly used. As a result of these regular reviews, if the BAF calculations arrived at figures which would exceed established trigger points, new levels of BAF should be introduced. The trigger points should be the minimum sizes of changes in the level of the calculated BAF which needed to be arrived at in order to revise the existing level to a new one.

A large number of conferences had conducted two types of reviews - a regular review and a radical review. Trigger points for the radical review were usually higher than those for the regular review. Also the radical review period was shorter than the regular one - the former being a more or less continuous process.

In some conferences, the distinction between radical and regular reviews appeared only limited to the date of implementation of a new level of BAF. In such cases the conference would conduct only one review, say, a monthly one, but would use an earlier or later date of implementation depending on whether, respectively, a radical or regular trigger point had been reached at the time of the BAF calculations.

Not all conferences would use the radical review system, and generally, the question of which frequency of review to use would become quite important since it could influence the levels of BAF actually implemented. Generally, changes in bunker prices appeared to be quite random and, on the whole, conferences did not seem to agree on the factors which should be the basis
for choosing the review period. In the survey, some conferences explained that the choice of the review period correspond to the observed pattern of movements in bunker prices; other conferences explained that the frequency was based on the adequacy of period of notice on BAF given to shippers. However, the majority of conferences could not provide an explanation for their choice, except to state that the frequency of review was agreed upon with shippers' organization.

The need to capture all significant bunker price changes had to be balanced against the cost of continuous monitoring of prices and the need to maintain freight rate stability. The cost of monitoring changes in bunker prices might appear to be quite negligible since the information could readily be available from the oil markets and from conference member lines. As regards rate stability, too frequent changes could be avoided by establishing sufficiently high trigger points.

Another important aspect of the review procedure would relate to the sizes of the samples of bunker prices used in the calculations. It would show that some conferences used bunker prices prevailing on a single day in the review period, while others used prices paid during a voyage leg, while still others used average prices paid over a one-month period or a three-month period. Given a high volatility of bunker prices in recent years, larger price samples could clearly represent prices prevailing over a review period better than would smaller price samples.

Implementation Procedures (BAF)

The Trigger Points

As mentioned earlier, the trigger points should be the minimum sizes of changes in the BAF which needed to be reached in order for an existing level of BAF to be revised. These points must be determined outside the operative BAF formulas. Many of the conferences in the survey explained that the trigger points were the result of negotiations with shippers' organizations.
In selecting the points, the main consideration appeared to be stability of freight rates. The points had been set at levels which would eliminate rate instability that would have occurred if all observable bunker price changes were to result in the application of new BAFs.

At the same time, however, the levels should be set sufficiently low to ensure that the lines recovered adequately the additional bunker costs.

**Effective Dates of BAF Implementation**

Once it had been determined that a new level of BAF was to be applied, there must be a waiting period before the new level actually came into force. The regular and radical BAFs should have different waiting periods. Generally, waiting periods should range from a few days to one month for regular reviews and from a few days to around 20 days for radical reviews. In the survey, many conferences explained that the waiting period between the calculation of the BAF and actual implementation was intended to give sufficient notice to shippers. One conference stated that the waiting time was also needed to give adequate time to the conference lines to amend their computer programs and documentary procedures.

**Application for BAF to the Base Freight Rate and to Other Surcharges**

Since under Formula I, the BAF was applied to the base freight rate, it had been common practice to adjust the level of BAF following any changes in the base freight rate. The BAF must be adjusted in proportion to the change in the base rate so that the revenue derived from the BAF remained unchanged. If, for example, in an initial situation the base freight was 100 and the BAF was 25 percent, the calculated freight rate would be 125. If the base freight rate was now assumed to increase by 15 percent, the adjusted calculated freight rate would be 140.
The exact time at which the BAF adjustment was made should vary. Some conferences indicated that they made the adjustment at the time of calculating the BAF. Thus, the new computed BAF would be adjusted for any changes in the base rate which might have occurred since the last change in the BAF. Other conferences made the adjustment to the existing BAF at the time of change in the base freight rate, while yet others indicated that the adjustments took place both during BAF reviews and during reviews of the base rate.

The timing of the BAF adjustment to correct for changes in the base rate should be important in cases where the adjustment would occur only during the BAF review and especially where the intervals between the reviews would be long. In such cases any changes in the base freight rate taking place in between BAF reviews might lead to an over- or under-charge. However, the extent of this problem would depend on the relative time intervals between the changes in the base freight rate and the BAF reviews.

As far as the calculation of the increase in the base freight rate was concerned, it would be essential that where the BAF was being applied, changes in bunker costs should not be included in the costing exercise for determining the warranted change in the base rate.

With regard to the relationship between the BAF and other surcharges, conferences generally applied the BAF to the base rate net of other surcharges although it had been common practice in some conferences to charge BAF on various additionals such as heavy lift and long lengths.

It would appear evident that each format was likely to produce different results. There must therefore be a need for a thorough examination of this problem so that a uniform and rational format for freight calculation could be formulated (49).
Incorporation of BAF into the Base Freight Rate

Those conferences which advocated the principle of incorporation argued that the rise in bunker prices was an established, irreversible fact and therefore the incorporation of the BAF into the base freight rate was a reflection of a true, permanent shift in the lines' costs.

However, the opponents of incorporation pointed out that in principle the BAF was a temporary device intended to offset unexpected short-term changes in bunker prices. For this reason, it should not be mixed with permanent changes in costs which had been dealt with when reviewing the base freight rate. It appeared that, apart from the issue of principle, the problem related to doubts about the accuracy of the BAF, especially in view of the difficulties in verifying the underlying input data. Thus, they felt that incorporation might introduce permanent errors in the base freight rate and hence the total freight rate.

Comparative BAF Levels in Opposite Directions of the Same Trade

In most liner trades there had been two separate conferences operating in opposite directions of the same trade route. Generally, different levels of BAF applied in the opposite directions. In part this arose from differences in the composition of the member lines operating in the two directions - a factor which would presumably affect the weighting factors used in calculating the BAFs in each of the two conferences. However, there were important exceptions to this situation. For example, in the Far Eastern Freight Conference, the same BAF applied to both east-bound and west-bound trade areas.

Consultation between Shippers and Conferences Regarding BAF

There had been contrasting views between conferences and shippers' organizations regarding the extent to which the consultations played a part in the arrangements for BAF and the
degree of satisfaction with the overall BAF system. Generally, conferences were satisfied with the BAF system - at least in the absence of a better, proven, alternative system. In the survey, some conferences indicated that they discussed or explained the methods used to the shippers. Some conferences also pointed out that such elements as trigger points, the length of period of notice to shippers, and the effective dates of implementation were the result of active negotiations between the conferences and shippers' organizations. Many of the conferences felt that, all in all, the BAF system was achieving its objectives.

The views of shippers' organizations had generally been quite different from those of the conferences, although the situation did vary somewhat between different shippers' organizations. For this purpose the situation could be examined in terms of three broad groups of shippers' organizations: (i) those shippers or shippers' organization where a high degree of consultation with conferences on BAF occurred; (ii) shippers in the United States and Brazilian trades, where matters relating to BAF and freight rates were generally regulated by governmental agencies; and (iii) shippers in trades where consultations on BAF had been least satisfactory (50).

Examples of shippers' organizations under the first category would include the European Shippers' Council (ESC) and the Australian Shippers' Council. The ESC, as an umbrella organization for national shippers' councils in Western Europe, has pointed out that, except for a few cases, the conferences were always ready to explain and clarify their methods and formulas for calculating BAF.

However, the Council had conceded that it lacked the means to verify the accuracy of the input data furnished by the conference member lines. Furthermore, the Council has stated that its request to conferences for higher trigger points and for an absorption by conferences for a portion of the higher bunker costs had not succeeded.
A number of individual national shippers' councils which are members of the ESC, such as those of Sweden, the United Kingdom, and the Netherlands had been even more critical of the BAF system. They stated that consultations on BAF had not been satisfactory and that the conferences were generally unresponsive to arguments presented by shippers concerning various aspects of BAF. The United Kingdom Shippers' Council stated that shippers felt that under certain circumstances BAF was used to increase shipowners' revenue rather than to meet the increased cost of fuel.

The Australian Shippers Council indicated that it was actively involved in the design of the formulas and methods for the calculation and application of BAF, but had no means of verifying the input data used by the conferences.

Shippers in the United States and Brazilian trades had been faced with a situation in which matters relating to BAF were regulated by governmental agencies - the United States Federal Maritime Commission (FMC) and the National Superintendency of the Merchant Marine (SUNAMAM), respectively. In most United States trades BAF calculations had been based on BAF Formula II described earlier, which was the formula suggested and approved by the FMC. Because of the United States antitrust laws there had been no shippers' councils in that country. Moreover, conferences operating in the United States trades were only required to file relevant information on surcharges with the FMC and were not entitled to conduct consultations with any shippers' organizations. As a result, no shippers' organizations could conduct any effective consultations on BAF with conferences operating in the United States trades. In the Brazilian case, the SUNAMAM itself carried out the BAF calculations and established all the arrangements for its application. According to information provided by the Brazilian Society for the Administration for Freight Conferences, the formulas used by the SUNAMAM were not known to the conferences.
Regarding the situation in the remaining conference trades, including many of those in Africa and Asia, many shippers' organizations which responded to the questionnaire had not been given information about the methods used and no effective consultations had been conducted. In their replies to the UNCTAD questionnaire, some shippers' organizations mentioned that the BAF methods in use were agreed between the ESC and CENSA without involving shippers at the other ends of the trades.
CHAPTER VIII

REVIEW PROCEDURES (CAF)

The frequency of reviews would range from weekly, with monthly reviews being the most predominant. Also, there had been a distinction between regular and radical reviews. The frequency of the regular reviews must be known, while the radical reviews should be based on daily monitoring of exchange rates and, if there was a change of four percent (or other radical trigger point) or more over a period of three or four consecutive bank working days, a new CAF should be introduced.

Like bunker prices, currency exchange rates tended to change at random. Furthermore, the cost of monitoring exchange rates was insignificant since the relevant data would be readily available from financial or banking institutions. Consequently, highly frequent CAF reviews (say fortnightly) could be feasible, and to avoid too frequent fluctuations in rates, sufficiently high trigger points must be established.

The size of the sample of exchange rates on which the CAF calculations should be based would vary widely between conferences. It would range from exchange rates monitored on a single day to an average of exchange rates monitored over a two-week period. These differences would not appear to have any regional or trade route patterns. Because of possible significant variations in exchange rates over short periods of time, larger samples of exchange rates would be more representative and would minimize bias in the calculations as compared to exchange rates taken, for example, on one or a few days. This problem had not been solved by radical reviews to the extent that the exchange rate fluctuations between the regular reviews did not reach the radical trigger points.
Implementation Procedures (CAF)

The Trigger Points

As in the case of BAF, proper trigger points for CAF should be set at levels which would eliminate rate instability.

Effective Dates of CAF Implementation

The ESC/CENSA Joint Recommendation suggested that the introduction of CAF should be delayed by eight calendar days from and including the date of effective change in the exchange rates. The effective dates of implementation for regular and radical CAFs must be specified.

In the survey, the majority of conferences mentioned the adequacy of time of notice to shippers as the main factor in setting the effective dates of implementation. In a few conferences, the dates were chosen to allow negotiations with shippers' organizations. A few other conferences argued that an immediate reduction in CAF following a review was necessary to prevent shippers from withholding their cargo until the reduced CAF became effective.

Application of CAF to the Base Rate and to Other Surcharges

According to the conferences surveyed, a change in the base freight rate did not lead to an automatic adjustment in the CAF. However, some conferences indicated that the CAF could be adjusted if the whole or part of it was incorporated into the base freight rate. Other conferences pointed out that each time there was a change in the base freight rate, the CAF weighting factors were updated.

The procedure for applying the CAF to other surcharges must be similar to that of BAF, i.e., it was generally applied to the base rates net of other surcharges although some conferences
charged the CAF on additionals. As mentioned earlier, the ESC and CENSA had been working on a standard format to lay down the order for applying the various surcharges.

While some conferences had incorporated the CAF into the base rate, the majority of them had not done so.

Consultation between Shippers and Shipowners regarding CAF

The problems concerning shipper/shipowner consultations and the verification of input data with regard to CAF calculation were generally similar to those for BAF. In the ESC/CENSA Joint Recommendation it was agreed that any difference of opinion between shippers and shipowners on the need for, or the appropriate level of, a CAF should be the subject of prompt discussion between shippers' councils and the conferences concerned at the request of either party. It was likewise agreed that if it became necessary for a conference to supply evidence to shippers' councils, if requested by them, either directly or through a third party, such as an independent accountant, the data to be supplied in such a case should be a list of relevant base exchange rates and a list of weighting factors needed for CAF calculation.

The survey indicated that generally conferences were satisfied with the existing CAF system, which they felt was achieving its objective. Some had stated that they explained to, or discussed with, shippers the methods and formulas used. However, some conferences conceded that it would not be easy for shippers' organizations to monitor accurately the calculations for CAF.

On the side of shippers, the ESC, which was a party to the Joint Recommendation, had pointed out that it had many discussions with conferences concerning the implementation of the Recommendation and its formula. The ESC noted that generally conferences explained the implementation of the Recommendation, although the Council lacked the means to check the composition
of the basket of currencies of conferences, which played a decisive role in the CAF calculations. The Council also pointed out that the CAF system had come under strong criticism and a number of individual (national) shippers' councils in Europe had withdrawn their support from the Joint Recommendation on account of the considerable differences in the CAF levels caused by the Recommendation's differentiated CAF system.

In the UNCTAD survey, a number of shippers' organizations outside the ESC indicated much dissatisfaction with the fact that they were not consulted in the formulation of the Joint Recommendation and they deplored the conferences' unilateral imposition of CAF in their trades. They also pointed out that conferences were generally not prepared to hold consultations on the periodic changes in CAF and they normally did not supply data on currency weights which the conferences regarded as confidential commercial information.

Some shipping conferences had argued that shippers outside the ESC were not involved in the formulation of the Joint Recommendation and other agreements because at the time these matters were discussed these shippers had not organized themselves into effective shippers' councils. While this argument might be applicable to the situation prevailing up to the late 1960s, it could no longer apply to the mid-1970s and onward because by then shippers in many countries had formed shippers' organizations. Despite these changes, however, shipping lines which were members of CENSA had continued to exclude shippers outside the ESC in fundamental discussions on formulas and methods for freight rates and surcharges. The main example of this was the discussion between CENSA and the ESC on the order for laying down the various surcharges where shippers outside the ESC were not effectively involved (51).
CHAPTER IX

VALUE BASED TARIFF

A tariff based on the value of the commodity and the capacity of the cargo owner to pay might seem to be meritorious. Essential low-value products could be transported at relatively low cost, thereby resulting in lower consumer prices. The low-income group of the Philippines which constituted the majority of the population would derive the benefits; production of essential low-value goods would increase which, in turn, would result in greater traffic volume. The utilization rates of vessels would likewise improve.

Regarding what freight levels the market could bear, the ship operators after due negotiations with the shippers would be in a better position to set the rates.

In most developed maritime countries, liner rates were value-based and were set by liner conferences. To prevent over-pricing, a suitable platform for the negotiation of freight rates was provided where both the ship operators and the shippers justified their position on the basis of facts and figures accessible to both parties. The position of each side could thus readily be justified (52).

The free entry of tramps and non-conference liners had also served to minimize, if not avoid, overpricing.
A consultant from the Norwegian Team involved in the Standard Ship Design Project commented as follows:

"The North Sea Basin is by size comparable to the domestic waters of the Philippines or smaller than those of Indonesia. The basic difference, however, is the fact that the North Sea is surrounded by a number of countries, all with long maritime experience. Shipping operators are exposed to free competition, even in our domestic waters. There is no common tariff on the transport of the cargo. The freight rates are governed by supply and demand. We have no one but ourselves to blame if we lose out. It is a tough but healthy environment which creates inventiveness. It forces you to stay ahead.

We are not suggesting that you should open your domestic waters to free foreign competition, nor do we believe that free competition solves all the problems within the transport sector, but we are convinced that it has been perhaps one of the most important aspects in the development process of the Norwegian shipping industry.

The other system which is widely used to regulate the size of the domestic fleet is the licensing system. Many nations look upon this system as the only workable solution in order to provide adequate transport services to remote areas where the cargo volumes are small and distances are far.

This system further necessitates a government-approved tariff, often with an element of subsidy to ease the burden of transport cost to remote districts.

The good intention behind this policy is indisputable and to which we all agree. What has caught our interest is, however, the influence this policy has on the fleet structure"
"The result very often seems to be a chain reaction starting with overtonnaging, which quickly leads to insufficient profit to renew the ships and gradually an over-aged fleet.

The operators will naturally keep up their struggle to stay in business and the only way to do so is to apply pressure on the government to increase the freight tariff, with the end result that no one benefits but a costly transport system is created" (53).

While the ship operators did not apply pressure on government authorities, the situation described appeared partially to be that prevailing in the domestic shipping fleet, overtonnaged but not exactly overaged.

The acquisition of relatively younger ships and the subsequent phase-out of older vessels resulted to the reduction of the average fleet age to 10 years and to partial fleet modernization with the introduction of semi- and fully-containerized ships and roll on-roll off vessels. The use of containerized cargo services was considered one of the significant achievements in the domestic shipping sector.

From one company operating one container ship with a 120-TEU capacity in 1976, container operations had increased to seven firms operating a combined container fleet of 54 ships with a total capacity of 4,257 TEU's. In 1984, containerized cargo movements accounted for around 50 percent of the total domestic cargo traffic.

On deregulation, in terms of the benefits derived, there was no better proof of successful implementation than the airline deregulation in the United States. According to Bailey (54), regulatory barriers to entry were removed within three years after the passage of the Airline Deregulation Act. Existing carriers could enter routes of their choice, entry of new jet
carriers into the industry could no longer be blocked by the government; the apparatus of route applications and quasi-judicial hearings was dismantled. The management of airlines was given complete freedom in the re-structuring of their route networks. Complete freedom of pricing now existed.

The potential benefits that the reformers expected had indeed taken place, in terms of greater efficiency, due to reduction of structural rigidities, and price reduction, due to greater competition and the entry of the low-cost carriers.

Overall, the gains from deregulation fully justified the policy. Consumers gained more than $3 billion in benefits and carriers enjoyed the flexibility that they needed to better their financial outlook.

Some lessons from deregulation that should be highlighted would be:

1. During the decontrol period, the best policy was to forebear to intervene, to accept uncertainty, and to let the market place work.
2. Mechanisms for monitoring specific areas of concern could be devised when needed.
3. Fears concerning disruption of service to consumers were exaggerated and did not materialize.
4. Many hidden costs of regulation had revealed themselves.
5. The spur of competition had been effective in leading to a substantially more efficient industry.

These principles could be highly useful when applied to further decontrol in transportation and long-distance telecommunications (55).
The deregulation of airline fares presented a rare opportunity to examine the effects of an abrupt change in the market structure. Before 1977, the Civil Aeronautics Board (CAB) regulated fares and entry in domestic airline markets and allowed the carriers to compete only in terms of service quality. Koran (56) examined the effect of the de facto deregulation of airline fares that began in 1977 on consumers' and producers' surplus. The major finding was that airline fare deregulation resulted in an increase in consumer surplus of between $15 and $20 per round trip, while leaving airline profits unchanged.

The case of the airline deregulation in the United States was taken up, because it would seem worthwhile to reflect on the lessons which could be drawn and the policies which guided such deregulation. Also, there existed some similarities between the U.S. airline industry and the Philippine domestic shipping industry in that both industries would be highly competitive, volatile, and complex.

According to Breyer (57), the application of classical price and entry regulation would likely produce unnecessary anti-competitive harms. Companies in a competitive industry subject to cost-of-service ratemaking would compete by providing consumers with more service or quality than they would want. Moreover, regulators would find it particularly difficult to apply cost-of-service ratemaking to industries with many firms and the rationale for price regulation, excessive competition, would ordinarily be weak as alternatives to regulation would be available.

While air travel would be cyclical as it would be strongly affected by changes in disposable personal income, domestic shipping in the Philippines would have its "peak" and "lean" months.

Air carriers would serve numerous cities, while inter-island vessels would call on many ports.
At one time, there was debate in Canada on whether efficiency in transport should be the objective of transport policy, or whether transport should be used as an instrument to achieve national and regional economic and social goals. The government had introduced legislation consistent with the latter view. Heaver and Nelson (58) maintained and concluded that to change the present policy on the regulation of transport would be a grave mistake. Social and economic goals should be pursued through direct intervention in the economy. Where transport was the most cost-effective instrument, intervention should be through the promotional and operational functions, not the regulatory function, of the government.

Regarding regulation of carriers' charges by the U.S. Interstate Commerce Commission, economists found it to be harmful in preventing proper use of capacity in back hauls.

Since forward and back hauls must be considered true joint products, the ICC's policy of pro-rating truck line-haul costs equally to both directions exacerbated the problem of excess capacity. If ICC-regulated trucks enjoyed the freedom from rate regulation which prevailed in Great Britain and Australia, an estimated 2.7 million of the 4.7 million empty back hauls in 1976 would have been loaded, with a welfare gain of at least $182 million.

Machan and Johnson (59) stated that "despite the ends intended, regulation has increasingly been shown to be inherently counter-productive".

Shipping, in general, and international liner shipping, in particular, in most member-countries of the Organization for Economic Co-operation and Development (OECD), enjoyed total or partial de jure exemption from existing restrictive business practices legislation. Even in those countries where shipping was not specifically exempted, the practical effects were that conference behavior was at least tolerated.
Governments of all these countries seemed to have accepted that the liner conference system was desirable in principle and that legislative involvement was only necessary to correct the possible abuses within the conference system. Most countries enjoyed at their disposal a legal framework which, under certain conditions, allowed individuals or designated bodies to investigate conference trades and practices and, where necessary, to bring them into court. Nonetheless, apart from the United States, the rather limited number of investigations reported which had led to court proceedings seemed to suggest that the practical exemption from restrictive business practices legislation did not create any substantial problems (60).

Since 1983, the government had already deregulated the first class passenger rates. The authorities up to this time had not received any complaint either from the passengers or from the shipping companies. While there was a slight drop in passenger revenue, and for that matter even cargo volume decreased, such reductions were attributed to the recession presently prevailing in the Philippines.

At this juncture, "certain important differences between working under competitive and under regulated environments would be inevitable. In the former, prices would adjust rapidly; investors would earn rents when the price of reproducing old equipment would increase; they might suffer windfall losses when technology would lower reproduction costs; prices would be based on present costs, not those of a test year; changes in demand resulting from change in price would be taken into account as they would occur; and firms could experiment with different price structures. In the latter, on the other hand, prices would remain stable for fixed periods of time; the prices set might not yield the amount of revenue that the regulator would expect; and as costs would increase or decrease due to added efficiency, prices would not change; nor would prices change to reflect possible increases or decreases in the cost of supplying similar service; and firms
would find price experimentation difficult".

"While regulation would not be totally undesirable, the need for administrative practicability and the difficulty of economic prediction, particularly on demand responses, would make it virtually impossible for the regulator to replicate the price and cost results of a hypothetically competitive industry. The regulatory process, even when it would function perfectly, would not be able to reproduce the price signals that a workably competitive market place would provide" (61).
CONCLUSIONS AND RECOMMENDATIONS

Among the formulas or methods presented in this study and considering the conditions obtaining in the Philippine domestic shipping scene, two of them appeared to be the best possible replacement for the existing method. In the order of immediate implementability, these would be the stowage factor based freight rate method and free competition or deregulation.

From the foregoing discussions, it should be obvious that deregulation would have more advantages than the SFBFR method. However, the absence of the major elements necessary for the proper functioning of the mechanism of consultation and negotiation between the shippers, on the one hand, and the shipowners and operators, on the other, would dictate that its implement-ation would be difficult at the present and should logically be deferred to a later date.

Unlike in the developed maritime countries where shippers' associations appeared to be well organized, in the Philippine domestic scene the presence of shippers' organizations for numerous commodity groups would still be sadly lacking. There had emerged associations of large manufacturers in the country, such as those in the soap and detergent, the lumber, the coconut and copra, the rice and corn, the sugar, the cement, the flour, the galvanizers, the steel, the automotive, and other groups; but still the smaller product groups which constitute the majority of the shippers had not yet organized.

At the same time, whether small-or big-time shippers, their associations should be conversant with the general rate increases and the surcharges, the methods and formulas used, and, perhaps more importantly, the monitoring and verification as well as the analysis of input data.
In like manner, the inter-island shipowners and operators should organize themselves more effectively, particularly in the area of developing functional freight conferences aside from establishing their own capability for policing their own ranks.

Moreover, in the interest of the public, the undue increase in freight rates of essential commodities brought about by deregulation should proceed on a graduated scale. Aside from gradual deregulation, it might also be necessary to formulate the process by stages.

With the exception of "free competition", the SFBFR method seemed to be the most advantageous of all the other methods and formulas mentioned in this study, most especially the existing method, particularly in terms of advantages including the simplicity of computations required. Its application, if finally adopted, would however be slightly delayed due to vital requirements, such as the preparation of a table of commodity stowage factors based on metric units and on local conditions.

Furthermore, if the SFBFR method would be adopted, the shippers, as a group, and the shipowners and operators, as another group, should first agree on the stowage factors to be used for the various commodities before implementation could finally take place.

For the computation of the general rate increase as well as bunker and currency surcharges, the method used by the majority of the conferences all over the world, the weighted percentage cost change, as presented and discussed in this study would appear to be the simplest and the most logical alternative that could be used to replace the existing method.
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