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Deregulation of Shipping

What Is to Be Learned
from Chile

Esra Bennathan
with
Luis Escobar and George Panagakos

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Esra Bennathan is professor emeritus of political economy at the University of Bristol and former economic adviser to the World Bank's Transportation Department. Luis Escobar is a professor in the Industrial Engineering Department at the University of Chile. George Panagakos, formerly a research assistant in the Bank's Infrastructure Department, is now a consultant based in Athens. All are consultants to the Bank.

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INTRODUCTORY NOTE

Object and Organization of the Study

In 1956, Chile adopted a system of regulation of her sea-borne trades which had as its centerpiece cargo reservation in both the coastal and international trades. The system was not as restrictive as some other cargo reservation measures adopted by developing countries and it possessed certain special features, but in its general form and its application it was far from unique. In 1979, much of this protective system was dismantled. This study analyzes the way in which regulation appears to have worked in the 1970s, the subsequent measure of deregulation and the circumstances in which it was undertaken and the apparent consequences for Chile's economy, her trade and her shipping industry.

The note is in two parts. Part I reviews and analyses the regulations that operated at the end of the 1970s, the system resulting from the deregulation act of 1979 and further changes in the law in the 1980s, the short-term consequences as well as the situation of shipping industry and users as it appears some 9 years after the fact.

Part II consists of an analysis of the determinants of freight charges in Chile's export trade with the United States in 1978 and in 1986. The results of that statistical study are taken up in the final Chapter VIII of Part I.

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Luis Escobar participated in the research for Part I and assisted with many comments and advice.

George Panagakos assembled, sifted and organized the data for Part II and skillfully carried out all the computations.

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Abstract

1. Until the end of 1979, Chile's shipping was regulated on principles and by rules that had their origin in a law of 1956, "for the Promotion of a National Merchant Marine". In its principles and many of its rules, the system resembled the cargo reservation schemes by which other developing countries protected, and still protect, their national shipping industry. The objective has invariably been to build up a nationally owned merchant fleet. The different schemes are also similar in the means and scope of protection, in limiting protection to national flag shipping rather than national shipping enterprises, and in attempting to control or minimize the impact of protection on the country's users of shipping.

2. Chile's regulations as applied in the 1970s, reserved all coastal shipping to national flag vessels. Foreign trade shipping, except for bulk imports, was reserved as to 50 percent of cargo tonnage, though the rules were framed with the purpose of capturing revenue rather than tons. Bulk imports, since 1976, were wholly reserved. National companies were entitled to this protection in their operations with national flag vessels, that is, with vessels owned by Chilean nationals and manned by nationals according to mandatory manning scales. The entitled companies enjoyed tax benefits and in return were subject to further restrictions on the sale of vessels and the disposal of their profits. To minimize the cost of this protection to Chile's industry and trade the law stipulated that the freight charged for the carriage of reserved cargo was not to exceed the rates prevailing internationally: meaning, in practice, the liner conference tariff for liner transport, or the rates in the international competitive market for chartered vessels.

3. By the late 1970s, Chile's national merchant fleet had indeed increased significantly. The national flag share in freight revenue stood around 30 percent for exports, and 45 percent for imports. The economic condition of the shipping companies, on the other hand, was not strong. Of the companies active in the foreign trades with regions beyond South America (accounting for some 70 - 80 percent of Chile's foreign trade) only one earned better than marginal returns on resources employed.

4. The costs of the system to the economy -- to exporters and importers -- rose, and revealed themselves ever more emphatically after 1973, as Chile turned way from import substitution to an open-economy policy. With steadily worsening terms of trade, the success of economic policy depended critically on export growth which required diversification of both export products and export markets. The incentives established by the sequence of economic reforms after 1973 impelled established export industries to expand into new markets and gave a strong impetus to relatively new export industries. The new and the expanded exports required new transport links and new combinations of transport

technologies if they were to enter new markets in competition with established suppliers. The system of shipping that had evolved under protection, much of it integrated into international liner cartels, was inadequate to cope with these new demands. The regulations and the implementation methods impeded access to internationally available shipping resources of the appropriate technical and commercial character, and tended to suppress competition among foreign operators who might have supplied shipping services to Chile. The cost of contending with the regulations fell particularly heavily on the new or rapidly expanding export industries: cost of inventories, of production scheduling, of lower achieved prices and of efforts spent in circumventing the obstacles erected by the regime. These conflicts, further exacerbated when the peso was fixed on the US Dollar, led finally, in 1979, to the reform of the shipping regime, by a government that had not till then shown itself doctrinally driven to extend the principles of its trade policy reform to the national shipping industry.

5. The deregulation measures of 1979 were modified in 1985, and some of the modification represents a partial retreat to protection. The resulting system for coastal shipping permits foreign competition for the larger shipments, subject to a tax and a preference margin: essentially, a substitution of taxation for quantitative restriction. For external shipping, deregulation established two different regimes. One applied to trades with the countries (in South America) that practice cargo reservation. It maintains an equal measure of reservation in favor of Chilean national vessels. This regime affects some 25 percent of Chile's foreign trade. The other, operative in relation to all countries that permit free access to Chilean shipping, allows complete freedom to shippers in making the best of the international markets, perfectly or imperfectly competitive, for shipping services. Corresponding with this substantial de-protection of shipping, national shipping enterprise was relieved of the various operational and financial restrictions that cargo reservation had imposed on its beneficiaries, and lost the several fiscal exemptions that matched those restrictions.

6. We seek to assess the results of this fundamental reform by 5 tests:

- (i) the development of the national flag merchant fleet, and
- (ii) the development of the national flag share in the foreign trades

since deregulation, representing the effects of deregulation in terms of the initial declared objectives of the policy of cargo reservation;

- (iii) the experience of the users of shipping, and
- (iv) of the national shipping industry

after deregulation, representing effects that seem primarily relevant to economic development; and

- (v) the share of Chile's shipping industry in the country's shipping market,

after deregulation, which may be thought relevant to the objectives of an industrial development policy.

7. The size of Chile's national merchant fleet has been declining since 1980. The national flag share in the cargo tonnage and the freight revenues on exports and imports has dropped sharply. In these terms, therefore, any gains from deregulation have been at the cost of major formal objectives of the earlier policy.

8. The effects on industry and trade can only be quantified in some respects. Free access to international shipping resources was crucially important in the period of the international trade recession of the early 1980s and in the period of the breakdown of Chile's financial system and the recovery from it. Over the longer period, there has been a massive transfer of export shipping from liners to chartered vessels, a change of mode and technique that would not have been possible under the cargo reservation regime. Exporters and industrialists place this freedom first among their gains from deregulation. Beyond this, deregulation revealed the price-raising effect of regulation in that Chile's index of freight charges on a sample of export commodities rose much less between 1978 and 1986 than the corresponding index for South American countries that persevered with cargo reservation. Lastly, econometric analysis points to significantly more competitive pricing of liner transport for Chile's exports after deregulation than before, and also by comparison with Chile's cargo-reserving competitors in South America.

9. Next, Chile's shipping industry had to adapt to the loss of protection in circumstances that soon became unpropitious. The recession in international trade of the early 1980s coincided with a severe economic crisis in Chile which had both causes and consequences that affected the shipping industry enterprises severely. The depression of the international shipping industry deepened further in the early years after deregulation. In this adversity, Chile's shipping industry evidenced remarkable vitality. The leading firms adapted first, by taking advantage of the freedoms that they had obtained when they lost shelter: there was large scale outflagging to escape the high costs of operating under Chile's flag. Subsequently, the companies reformed their management, developed new services, increased their operations with chartered tonnage of the most suitable type and restructured their owned fleets in terms of age and technical features. The industry appears to have suffered one single casualty, and the leading companies emerged in the mid-1980s with financial returns no worse than before deregulation.

10. The post-deregulation shares of the national shipping companies are quite close, and even slightly greater, than the pre-deregulation flag

shares in freight revenues on exports and imports. If the argument of the study is accepted, that the pre-deregulation flag-share will have been close to the pre-deregulation company share, deregulation has not proved prejudicial (but rather the contrary) to an industrial promotion policy that measures its achievements in terms of market shares gained by (more or less) competitive enterprise.

11. The balance of these findings suggests that Chile's policy, was remarkably successful in the conventional economic sense: abstracting from the cost of adaptation incurred by the shipping industry, that industry itself is in no worse and possible in a better state after deregulation than before while trade and industry, the users of the ocean transport, recorded substantial benefits. The outcome, in economists' jargon, is as close to a Pareto improvement as one may hope to get in economic policy reform.

12. The study ends by suggesting several conclusions with general relevance to the shipping policy of developing countries, to be drawn from Chile's experience.

PART I
REGULATION AND DEREGULATION OF CHILE'S
OCEAN SHIPPING

I. Chile's Ocean Shipping

In 1965, nine years after Chile had enacted the regulation of her ocean transport, the country depended on exporting to an extent not unlike that of other South American countries excepting only those that differed much in population size (Table 1). By 1986, however, the contribution of exports to Chile's domestic product had risen to a level far above that of the neighboring countries. This development is directly relevant to the change in Chile's shipping policy, if for no other reason than that practically all of her foreign trade is carried by ships:

	percentage sea-borne	
	tonnage	value f.o.b.
Exports, 1977	95	92
Imports, 1977	95	78

Overland transport accounts for much of the remaining tonnage while air transport takes up most of the remaining value and its share is rising.

**Table 1: Exports of Merchandise and Non-factor Services
as Percentages of GDP, 1965 and 1986**

Country	Year	
	1965	1986
	%	%
Chile	14	31
Perú	16	13
Ecuador	16	23
Colombia	11	20
Argentina	8	11
Brazil	8	9

Source: World Bank, World Development Report, 1988.

Chile's access to world shipping resources is characterized by two facts that act in combination. The one is her geographic position, at a great distance from her main markets. The other is her position on the West Coast of South America, a region marked not merely by great distance from the

main foreign markets but also by cargo flows inbound and outbound that are small by comparison with the world's main shipping regions.

Distance and density of a region's ocean traffic have to be taken together as determinants of the cost of shipping because one can compensate for the other. Greater density makes up for greater distance since it increases the chances of return loads and, in the liner trades, offers more encouragement to the competitive entry of carriers. Table 2 shows average lengths of haul and export tonnages for regions with lengths of haul in ocean transport similar or greater than in the trades of the West Coast of South America. These are the regions with the longest average distance of transport among the 30 shipping regions distinguished by the U.N. Maritime Transport Statistics; all of them greatly exceed the world average lengths of haul in 1985:

<u>World to World</u>	Average distances, 1985 <u>(nautical miles)</u>
Dry Bulk	4,645
General Cargo	3,853
General and Other Dry Cargo	3,933

The three cargo categories distinguished in the table correspond to different forms of industrial organization of the ocean carriers: dry bulk which tends to be carried by tramps (or bulk carriers¹); dry general cargo which tends to move by liners, generally organized in liner conferences, and 'other dry cargo' (combined in the table with dry general cargo) which moves partly and, indeed, increasingly on non-liner vessels ('neo bulk').² [Petroleum transport is a specialized mode in terms of vessels and organization, and is ignored in this note].

¹There is no simple, generally accepted definition of bulk carriers. For present purposes, they are taken to be single-deck vessels of 10,000 deadweight tons or over.

²'Other dry cargo' includes woodpulp and paper waste, crude minerals (including non-ferrous base metals), manufactures of metal and machinery and equipment.

**Table 2: Tonnage of Sea-borne Cargo and Average Length of
of Haul: West Coast of South America and Other
Shipping Regions, 1985.**

Type of Cargo From	To	Quantity	Average Length
		000 m.t.	of haul naut. miles
DRY BULK			
W. Coast, S. America	World	16,922	7,806
World	W. Coast, S. America	5,546	4,112
E. Coast, S. America	World	138,751	7,206
S. Africa	World	56,539	7,089
GENERAL CARGO, DRY			
W. Coast, S. America	World	1,428	4,612
World	W. Coast, S. America	1,995	4,382
E. Coast, S. America	World	10,423	5,858
World	E. Coast, S. America	2,838	5,177
S.E. Asia	World	28,013	5,508
Oceania	World	5,734	6,102
East Africa	World	1,338	4,879
South Asia	World	3,850	5,363
GENERAL AND OTHER DRY CARGO			
W. Coast, S. America	World	3,186	5,852
World	W. Coast, S. America	2,335	4,472
E. Coast, S. America	World	11,968	5,956
World	E. Coast, S. America	3,114	5,206
S.E. Asia	World	28,912	5,433
Oceania	World	8,348	5,998
East Africa	World	1,752	5,075
South Asia	World	3,929	5,375

Source: United Nations, 1984-1985 International Sea-Borne Trade Statistics Yearbook (Maritime Transport). Statistical Papers Series D, Vol. XXIX-XXXV, No. 2 (New York: United Nations, 1988).

The East Coast of South America, with distances to market similar or longer than the West Coast, has much the greater cargo tonnage (even though the general and other dry cargo movements are less well balanced). The same kind of difference appears from a comparison between the West Coast of South America and Southeast Asia or Oceania. East Africa and Southern Asia, on the other hand, are similar to the West Coast in respect of both distance and cargo tonnage. The West Coast of South America is thus in a well-defined category but not unique in terms of basic determinants of ocean

transport cost. The region's shipping condition also affects Chile's trades, but in her case it is mitigated by a relatively large cargo tonnage (Table 3). The dominance of Chile in the West Coast trades is only moderately lessened when the Pacific Coast of Colombia is included in the comparison.

Table 3: West Coast of South America: Goods Loaded and Unloaded, 1980, 1981, 1983 and 1985.

		000 metric tons			
Country	Year	Goods Loaded		Goods Unloaded	
		Petroleum	Dry Cargo	Petroleum	Dry Cargo
Chile	1980	125	12,465	3,198	5,594
	1981	30	9,293	2,800	4,920
	1983	80	10,618	1,948	3,310
	1985	2	12,630	2,120	2,360
Ecuador	1980	6,870	1,501	65	2,217
	1981	7,081	813	633	2,092
	1983	8,867	1,057	441	2,100
	1985	12,418	1,125	574	1,884
Perú	1980	2,850	6,427	44	3,787
	1981	2,396	8,296	53	3,618
	1983	2,250	8,500	30	3,200
	1985	3,121	8,668	21	3,435

Source: UN Monthly Bulletin of Statistics.

Such relatively great distance from the main markets, combined with light shipping traffic translates into a relatively strong monopolistic potential for scheduled liner services, which are generally organized in liner cartels, and into a relatively high cost of freely traded tramp services. Not all trades will be equally vulnerable. Relatively small aggregate cargo flows may contain a few large commodity flows. In Chile, that is the case of the massive annual export of iron pellets to the Far East -- some 4 million tons per year -- which should in principle (barring state intervention) get carried in bulk at relatively favorable rates because of its sheer size and regularity. But for lesser or newer commodity trades, the consequence of geographic remoteness combined with relatively light cargo flows is a relatively high generalized transport cost, a high total transport-related cost of exporting or importing over distance that traders have to bear.

II. 1956 to 1973

Chile's cargo reservation law of 1956 was in line with the trend towards protecting national shipping enterprise that was common to all the main countries of South America. What sets her aside is her departure from this common policy, in the late 1970s, in circumstances that have their origin in economic events and more general policy changes during the decade of the 1970s. In this note we therefore analyze the legislation of 1956 and its implementation but in the discussion of consequences we concentrate on the 1970s, more specifically on the years after September 1973.

The period from September 1970 to September 1973 is that of the Marxist government of President Salvador Allende. Import substitution policies that governments during the preceding two decades had pursued with varying degrees of emphasis came to be intensified under the Allende government, partly by deliberate measures but chiefly as a result of controls through which the government in its last phase sought to contain the drastic deterioration in the external accounts. Moreover, Chile's main private shipping companies were nationalized during the period, in company with some 500 other commercial and industrial enterprises. Cargo reservation in favor of Chile's national flag shipping, much of it now state property, was a logical element of such general policies, and it was enforced as such. The government that took power in 1973 opened a new chapter of economic policy.

III. The Regulation of Shipping

1. Main Elements and Objects

An account of Chile's shipping régime has to cover both coastal and ocean shipping. Both are sources of income for Chile's shipping enterprise. The regulatory regime that prevailed until 1979 as well as the measures that followed, were constructed in full recognition of this connection.

The two main elements of the regulations in force from 1956 until 1979 were cargo reservation for national (flag) shipping, and rules regulating the operations of Chilean flag shipping and the conduct of the shipping enterprises. The rules restricted the commercial, financial and contractual freedom of shipping enterprise with two objectives: to ensure that cargo reservation would lead directly to the growth of national (flag) shipping, and to limit adverse effects of cargo reservation on Chile's foreign trade.

2. Cargo Reservation

The basis of the regulations was Law 12.041 of 1956. Coastal shipping was reserved entirely for Chilean flag vessels. Shipping in foreign trade was reserved as to 50 percent. The share was to be reserved separately in each of the different cargo classes: solid bulk, liquid bulk, refrigerated cargo and general cargo, and also separately in exports and for imports.

3. Measures to Promote the National Merchant Marine

i) For a vessel to rank as a Chilean national vessel, it had to be registered in Chile and fly her flag (the latter being conditional on the former); to be owned as to 75 percent of its value by Chilean nationals, and the officers and crew to be Chilean nationals.

ii) Vessels operating under Chile's flag -- and therefore entitled to reserved cargo -- had to comply with mandatory crewing scales. Downer (1979) compared Chilean flag tankers with similar United States tankers and found that the crewing scales required Chilean vessels to operate with 12 officers, instead of 8, and a crew of 27 instead of 5. For Chilean sailors, moreover, the power of the maritime union made for relatively high wages, negotiated between union, shipowner and government. The employers' access to reserved cargo depended upon flying the Chilean flag, and the flag, in its turn, was conditional on employing Chilean crews. Maritime unions, unrestrained by government participation in wage bargaining negotiations, would have been able to appropriate any rents that cargo reservation might bestow on the industry.

iii) Chilean shipping enterprise was granted a variety of tax exemptions or reliefs. Twenty percent of profits were exempt from tax and the remainder was to be taxed at half the standard rate. In return, however, the savings from the lower applicable rate of income tax, and the 20 percent of profit that escaped taxation altogether were to be allocated to a capital construction fund, available only for vessel acquisition or improvements. Capital gains on ship sales were similarly exempted from tax if allocated to the capital construction fund.

iv) The sale of ships, or their transfer to foreign flags were forbidden except with special Presidential permission.

v) Outflagging was further discouraged, and the growth of the Chilean flag fleet encouraged by limits on the amount of foreign tonnage that Chilean companies could charter and employ in the carriage of reserved cargo. The companies were allowed to operate such chartered vessels like Chilean flag vessels, entitled to reserved cargo, provided that the tonnage of these "reputed" Chilean vessels did not exceed 50 percent of the company's owned tonnage, and provided also that the chartered vessels were not owned or part-owned by Chilean nationals. A vessel beneficially owned or part-owned by Chilean owners but flying a flag of convenience could therefore not benefit from cargo reservation.

vi) Chile's ship register was to admit additional vessels only if they were less than ten years old.

4. Measures to Limit Internal Competition

i) The regulation classed vessels as either common carriers or as private or own-account carriers. Except with special Presidential permission, private carriers could not carry for third parties.

ii) A further set of rules on cabotage shipping could be applied with the same objective of limiting internal competition; alternatively, it could be used to protect the public interest. It provided that cabotage service -- routes and schedules -- and the cabotage tariffs were subject to government approval and could not be changed, or services abandoned, except upon such approval.

5. Measures to Safeguard Trade

i) The 1956 Law provided that freight charged in the country's external trade, by the protected carriers, should not exceed the charges established 'by the competition of established lines for each cargo category'. The provision by its wording, makes it clear that the law envisaged cargo reservation primarily for liner trades.

ii) If Chilean companies concluded, with Presidential permission, special contracts for the carriage of cargo (contracts of affreightment), such cargo would count against the 50 percent limit on cargo reservation:

the companies, as a group, should not be able to claim more than those 50 percent.

iii) Lastly, under the Transition Rules of the Law, special permission was given for the export of saltpeter, other bulks, sugar and phosphatic and potassic fertilizer, in vessels chartered direct by the exporting corporation (the Corporación de Ventas de Salitre y Yodo).

6. Development of the Regulations in the 1970s

i) The change of government in 1973 was soon followed by the first measures to liberalize economic policy. In the first phase of the new orientation, shipping was only marginally affected. Law 466 of 1974 raised the limit on permitted foreign equity participation in Chilean shipping enterprise from 25 to 49 percent and thus eased the restriction on the use of foreign capital (and the acquisition of new tonnage) just before the onset of the international shipping recession which drastically reduced the supply of bank credit for ship acquisition. In return, however, the obligatory allocation of shipping company profits to the capital construction fund was raised, from 20 to 30 percent.

ii) In 1976, cargo reservation underwent what seems a major extension. Law 1459 reserved all imports of homogenous cargo in bulk to Chilean flag vessels. All Chilean companies were to have equal access to such cargoes, and preference was to be given to vessels in regular liner service when they had empty space on their return voyage, as will happen regularly because of different cargo composition outbound and inbound.

iii) The 1976 law furthermore substituted more explicit pricing rules for those contained in the basic 1956 law. For general and refrigerated cargo, the rule was formulated with a straight reference to liner conferences: Chilean companies transporting reserved cargo were not to levy rates above those determined by the respective liner conferences. For bulk cargoes, not covered by liner conference tariffs, the charges were not to exceed those 'prevailing in the international market'. For such cargoes, the Ministry of Transport was to determine the justice of rates demanded by reference to 'international bids or other precedents'.

7. Discussion: The Benefits of Cargo Reservation to National Operators

Chile's system of cargo reservation is similar to other such systems adopted by developing countries in that its protective effect extended, not to national shipping enterprise as such, but essentially only to national-flag shipping. Vessels owned and operated by Chileans under other flags, or operations with chartered foreign vessels beyond the permitted limit of 50 percent of Chilean flag tonnage, were excluded from the benefits of market reservation. As a method for promoting national enterprise in shipping, if that is the sole objective, flag discrimination looks unnecessarily inefficient. An argument advanced for such a system is that the wider alternative conflicts with the fiscal interests of the country that grants protection. A normal condition for flying a country's flag is

that the vessel is entered in that country's register. A fee is charged for registering. Moreover, in some countries, but not in all, register presupposes some form of corporate presence in the country which, in turn, may attract some taxation. But if cargo reservation is regarded as a temporary infant industry protection, this argument seems slight. Alternatively, if adopted as a permanent instrument of protection, Chilean business incorporated in Chile with branches incorporated abroad, could be taxed on world-wide income. There are however, further and potentially weightier interests that make for this form of protection: labor, inasmuch as it has the monopoly in employment on national flag vessels or wants to have it; the defense interest, inasmuch as national flag vessels can be commandeered in emergencies, and lastly, the international shipping cartels. If the original objective of cargo reservation was to help Chile's shipping enterprise to gain admission into liner conferences -- and there is reason to believe that this was so -- then resistance might be minimized by limiting such state support to national flag vessels. A usual conference rule is that members must operate their own vessels and membership in the international cartels tends to be grouped, and sailing rights and pooled revenues allocated, by nationality. The simplest proof that a vessel was really owned in the country whose nationals sought entry into a conference, as "representing that country's trade", was then to fly the country's flag.

The potential value of Chile's system of cargo reservation to national flag shipping is easiest to indicate in the case of cabotage. The trade was wholly reserved (though some room was left for exceptions). Competition would therefore only occur between Chilean operators. The law provided for government control over rates, itineraries and services, powers capable of being used to restrain competition. Ultimately, rates under such a system will be set by negotiation between government and operators. Services that are unprofitable would either be sustained through negotiated cross-subsidization between routes served by the same company, or subsidized from public funds as was presumably the case of unprofitable services required of EMPREMAR, the state shipping company. The benefit of reservation to operators in coastal shipping thus consists of the absence of external competition and, for the rest, of what could be had in negotiation with government.

In external trade, on the other hand, the law reserved a percentage of Chile's cargo to national ships and stated the pricing rules that were to apply to this reserved cargo. For carriage of what the law refers to as bulk, the prices were to be those prevailing for similar transactions in the substantially free international market for tramp and bulk services; for liner carriage, they were to be no higher than those posted by the liner conferences. The question is then, what benefits Chilean operators could expect from the quantity reservation combined with these pricing rules.

What the law reserved was a percentage of cargo tonnage. The stipulation that the share was to be reserved within each of the different categories of cargo, and separately in imports and exports (which yield the lower freight rates in Chile's liner trades) was an attempt to reserve not merely tonnages but also a share of the aggregate freight bill. But neither

a promise of tonnage nor even of a share in the total freight bill on imports and exports would be enough to ensure that national enterprises will take up all or even part of the reserved share. That would depend on profitability, on prospective revenues and costs. Revenues, in Chile's scheme, depended on prices that were not (or not primarily) determined by Chile's demand and supply of shipping. Given those prices, the rate at which Chile's commercial shipping enterprise takes up its reserved share of the market would depend on Chilean costs relative to the costs of foreign operators, the organization of the market (competitive or otherwise), and demand. Chilean costs would have to be reckoned after such savings as cargo reservation made possible, and after the financial privileges that the law bestowed. For state-owned enterprise, on the other hand, these commercial constraints would only be effective to the extent that recourse to the public treasury was restricted.

The market for tramp and bulk services is competitive. Entry is free at practically any scale, starting from one single modest vessel. In such a market, cargo reservation, considered as a measure for overcoming tactical moves by incumbent operators to resist new entrants, is redundant. The value of the measure to protected Chilean operators is then, first, a saving in sales cost. (If Chilean operators had to look for cargoes from third parties -- not reserved -- to make a voyage commercially viable, not all sales cost would be saved.) Operating costs would be reduced to that extent, up to the limit of the reserved cargo, and only competition between Chilean operators would dissipate that saving, to the benefit of Chilean users. A second source of savings depended on the manner in which the adjudicating Chilean authority would use its discretion in declaring that a particular offer of space was equivalent to outside offers, in terms of the readiness of the vessel and its technical characteristics. This discretion could be used to allow Chilean owners the saving of an imperfect fit: a benefit to the owners and a cost to users. The authorities' discretion might be used further to relax the rigor of the law's instruction to sanction freight or charter rates according to the levels prevailing in international markets for similar transactions.

The liner industry, on the other hand, is imperfectly competitive. A service cannot normally be established with just one unit because regularity and some frequency of port calls by a line are essential to attract shippers. With a 90-day round trip from Chile to Europe, for example, two vessels were not considered sufficient for establishing a viable service. Apart from scale of entry, there are further set-up costs (unprofitable journeys) to establish a service in a new market. While these are not all sunk costs (vessels and goodwill are marketable) they raise the required financial scale of entry well above what is needed in the tramp market. Cargo reservation, up to the limit of the quota, thus yields savings of set-up costs, in addition to savings of sales costs, the former a fixed cost and the latter, variable. We cannot put a number to the cost savings due to cargo reservation. A very rough idea of the significance of sales costs which form only one of the sources of savings, may be gained from the recent experience of Chile's largest private shipping company, CSAV, and the state-owned EMPREMAR:

<u>As percentage of:</u>	<u>Administrative and Selling Costs</u>			
	<u>CSAV</u>		<u>EMPREMAR</u>	
	<u>1986</u>	<u>1987</u>	<u>1985</u>	<u>1986</u>
Operating expenses	4.9	4.4	4.5	6.3
Operating income	54	51	188	111

If costs associated with selling service are 2/3 of the sum of administrative and selling costs, they would in recent years, under a relatively competitive regime of shipping, have amounted to, say, 3 percent of operating cost and 35-70 percent of operating income. Competition among Chilean owners would again transfer some of such savings to Chilean users.

The main cause of the non-competitive constitution of the liner sector, however, is its dominant form of organization, in liner cartels. Conferences are usually set up separately for each route (in one or both directions), but with a heavy overlap of membership and some supercartels. They set freight rates and seek to suppress competition between members by pooling revenues or cargo (with shares given to individual members).³ Outside competition, whether by independent liners or tramps, is confronted jointly, by defensive rate cutting and by penalizing disloyal customers in various ways. Chile's cargo reservation thus eased the entry of her lines into the markets, to the extent that it was not fought by the conferences.⁴ Since Chile's lines were constrained by law to set their rates no higher than the conference tariff, the conferences could in principle have cut their rates so much as to drive Chilean owners out of business. We assume that such a tactic would have been seen as an open provocation to the government that had reserved the cargo, and hence rejected. Barring such tactical action by conferences, the effect of cargo reservation on conference tariffs depended on the relative costs of Chilean operators and conference members; on the extent to which conference pricing approximated monopolistic pricing, and on whether the Chilean operators stayed outside the conferences or entered. Rather than work through all the possible configurations we state broad conclusions on the effect of cargo reservation on conference prices, for what seem the main plausible cases:

(a) If Chilean operators remained outside the conference after cargo reservation, conference rates would either remain unchanged (for given volumes of demand), or would decline.

(a)(1) Conference rates would remain unchanged or decline if (i) costs of the Chilean operators, after reckoning in savings due to cargo

³Bennathan and Walters (1970).

⁴On the difference between "closed" and "open" conferences, see Chapter V.

reservation, were no higher than those of the conference, and (ii) the conference priced its services at average cost rather than with a cartel mark-up.

(a)(2) Conference rates would not remain constant but would decline after cargo reservation, if the conferences exercised market power in their pricing. This would follow even if Chilean costs were substantially higher than conference costs, as a mere consequence of profit maximizing pricing and without any tactical intent on the part of the conference.⁵ (See Annex 1 for a diagrammatic demonstration.)

(b) An increase in the tariff level after cargo reservation (or constancy as the limiting case) could only occur if Chilean operators entered the conference. If Chilean costs were above the mean marginal costs of the incumbent members, this would argue for posting a higher average freight level. For a while that might even be the effect if Chilean costs were the same as average conference costs and a constant volume of trade had to be shared out among a larger number of members.

The conclusion from this reasoning is that the chances of a decline in freight rates, ceteris paribus, are maximized by case (a)(2): Chilean operators remaining outside the cartels that exploit market power; and minimized by case (b): Chilean operators entering the cartels.

The gain from higher rates (or from constancy as contrasted with decline) would accrue to the operators at a cost to the traders. Since the rates are charged over the entire body of conference trade, not just the reserved share, the cost, in simple terms, would have exceeded the gain. Moreover, if Chilean operators stayed outside the conference, competition among themselves could dissipate the gains from high conference rates charged on the reserved cargo -- a transfer to the traders. If one Chilean operator joined the conference while another competed with it for part of the reserved cargo on the same route but outside the conference, the outsider would be competing with the entire conference. Such competition by Chilean operators outside conferences occurred and continues to occur, but the very restrained form of competition that one could observe appears to be due to Chilean conference membership and the conference-mindedness of Chilean operators.

In conference or outside, Chilean operators had every interest in high conference rates⁶. This is an interest that they shared with every outside competitor with the conferences. Unlike the normal outsiders, however, they had nothing to gain from cutting rates so long as their reserved share was not fully taken up. Since outsider competition might lead conferences to lower their own rates, Chilean operators had every incentive

⁵The result arises from the fact that the level of freight rates, relative to Chilean costs, determines the rate at which Chilean capacity would expand, to the limit of the reserved share.

⁶That is, rates that emerge from the classic conference practices of profit-maximizing price discrimination within the constraints of demand and competition.

to discourage Chilean traders' recourse to outsider services. Chilean liner operators had also a common interest with the conferences in extending conference control over as many commodities as possible.⁷ Shielded by cargo reservation and depending for their revenue on the level of conference tariffs, Chilean lines were bound to gain from such extensions of the domain of 'conference cargoes' and had every incentive for using their best efforts in support.

8. The Implementation of Cargo Reservation in the 1970s

Two measures of control were used to enforce cargo reservation. The first extended to all shipments and consisted of the assignments of shipments to national or foreign-flag vessels. It was carried out by the Central Bank in conjunction with the issue of export and import permits, and took the form of stamping the assignment on the permits. Assignment (or "Stamping") was done mechanically, in a sequence of alternations between national and foreign vessels. Shippers or importers could ignore assignment to foreign vessels, but not to Chilean flag vessels. The second method of control applied to traders exporting or importing cargo above a certain value (some US\$4,000 in current terms) in any month. The distribution of such shipments between foreign and national flag vessels was reviewed quarterly by the Ministry of Transport. If more than 50 percent of shipments had gone on foreign vessels, the excess had to be worked off in succeeding quarters.

Chile's own shipping capacity, enlarged by up to 50 percent through chartering, was not generally enough to take up the reserved share. Chilean vessels were not always available on time nor could the entitled companies always charter the right vessel for the right time, to serve as "reputed" Chilean ship. Chilean ships did not serve all the destinations that particular shippers wanted to reach. In such cases shippers who had been assigned to national vessels had to seek waivers from each of the Chilean companies, one at a time.

Of the two mechanisms of enforcement, it was the assigning of shipments to flag, Chilean or foreign, that had consequences going well beyond the overt intentions of the law. In the shipping of liner cargo it gave what amounted to government support to the liner conferences. When a conference had Chilean members, their agreed share in conference cargo and pooled conference revenue was assured, whichever conference members carried a particular shipment. The Chilean conference carrier could therefore be relied upon to grant waivers, automatically, in favor of another conference carrier. Even if the law did not, in so many words, extend the right to reserved cargo to the entire conference (if it had Chilean members), one must assume that this was understood by all, practice adapting itself to fact. Not so in the case where a trader wanted to employ the service of a foreign-flag vessel operating outside the conference. The Chilean company, with a

⁷Conferences seek to contain outside -- and tramp -- incursion by staking a wide claim over cargoes, including goods that are technically and commercially suitable for tramp carriage. This is attempted by declaring goods to be liner or conference cargo, and by making loyalty discounts or rebates to shippers conditional upon giving those cargoes to conference members.

share of the conference business, had every interest to deny the waiver. An impediment was thus set up to the entry of outsiders, competing with conference shipping.

In the case of bulk shipments the decision whether a cargo was a bulk cargo or a liner cargo, was for the shipping company to make in the first instance. Chile had no substantial, independent bulk shipping enterprise. Several specialist chartering organizations existed in the 1970s but the import of bulk in its totality and much of the bulk exports had been reserved essentially to the main shipping companies. The suppliers of bulk services from owned or chartered tonnage were the same shipping companies that operated liner services. Second, the standards by which the freight charges for bulk shipment had to be justified were less certain or objective than in the case of liner shipments. The solution of disputes thus depended much on the policy of the Ministry of Transport who acted as arbitrators under the law.

Cargo reservation under Chile's bilateral agreements -- notably with Brazil and Argentina -- was enforced by the same mechanism, aided by inter-company agreements for the sharing of the cargo in the standard 50:50 proportions. Under the intergovernment freight agreement with Brazil, rates had to be approved by the governments who also exercised control over the entry of vessels into this trade. On Chile's side of the trade, 2 companies were licensed for operations under the agreement.

IV. The Circumstances of Deregulation

1. Export-oriented Policies

The government that took power in September 1973 embarked on a process of adjustment, decontrol and liberalization that lasted throughout the 1970s and continued into the 1980s.⁸ A massive devaluation of the peso in 1973 was followed by steep increases in the prices of public sector enterprises and subsequently (1975) by substantial decontrol of those prices. Adjustment, decontrol and liberalization focussed largely on the external sector. Trade liberalization started in 1973 and tariff reform moved in stages, marked by a simplification of the tariff structure and a lowering of rates from initially very high levels. The final and drastic step to a uniform tariff rate of 10 percent, and the abolition of export subsidies, was taken in 1979.

The reform of the foreign exchange system started with the unification of the multiple rates. After a unique rate had been established in 1975, the crawling peg system was replaced in 1976 by a system of pre-announced (daily) mini-devaluations (the 'tablita'), more or less in step with the reductions in the rates of import tariffs. From February 1978 till June 1979, exchange rate policy was wielded as an instrument of stabilization policy, with preannounced devaluations proceeding at a declining rate. In June 1979, the nominal rate of the peso to the US dollar was fixed and maintained constant for the following 2 years.

The external capital account remained virtually closed until 1977 but the control of capital movements was then significantly relaxed by allowing the banks to borrow abroad to gradually rising proportions of their assets.

The sequence of the various measures of stabilization, commercial policy reform, exchange rate policies and liberalization of capital movements, particularly towards the end of the period and then in the early 1980s, has given rise to much debate, especially in view of the abrupt decline of the economy in 1981-82. But the results of the export-oriented elements of the policy were striking in terms of the country's exports and imports and the structure of production.

The recovery of the Chilean economy in 1976-77, from sharp recession, was export-led and the growth of non-copper exports was a major contributor. In the 1960s and early '70s, copper had accounted for between two-thirds and three-quarters of total export proceeds. By 1978, its share had dropped to one-half, while exports in current US dollars had risen 140 percent over 1973.⁹ The purchasing power of those exports, however, did not

⁸The account of events follows Corbo (1985) and World Bank (1979).

⁹World Bank, 1979, vol. 1, pp. 107; vol. 3, Table III.2.

rise over the decade.¹⁰ Chile's process of adjustment was not helped by the terms of trade. But what prevented a fall in the purchasing power of total exports was the growth of non-copper exports, itself evidence of the responsiveness of Chile's production and commerce to the incentives that economic policy had established. Decontrol of prices combined with the lowering of protection against imports, the correlated adjustments of the exchange rate and internal stabilization resulted in a marked change in the structure of production and in the trade-dependency of Chile's industries (Table 4). There appeared a substantial number of new exporters into the market, many of them relatively new to the export trade and small in terms of their volumes. The counterpart to the change in the composition of exports was a change in imports, reflected in the virtual displacement of several lines of domestic production. It went far in industrial chemicals, electric machinery and transport equipment, and was also substantial in textiles and clothing, in plastics and non-industrial chemicals.¹¹ The impact of policy is also seen in the relatively many cases where a decline in the ratio of domestic production to total supply (=gross production + imports) went hand in hand with an increase in the share of exports in gross production.

¹⁰World Bank, 1979, vol. 1, Tables III.7 and 8.

¹¹World Bank (1981), pp. 28, 29.

Table 4: Manufacturing Industries: Change of Value Added, and Trade as Percentage of Gross Output

	% of value added by all manufacturing	Index of real VA, 1974=100	Percent of Gross Output			
			Exports		Imports	
			1974	1978	1974	1978
<u>Higher growth industries</u>						
Non-industrial chemicals	7.0	124	0.1	1.1	9.9	25.9
Transport materials	5.4	129	0.6	2.5	31.7	104.6
Paper products	4.6	125	36.3	42.1	4.9	10.8
Electrical machinery	3.8	122	0.2	2.2	34.7	208.5
Wood products	3.3	108	4.3	27.8	0.8	1.6
Miscellaneous manufactures	0.9	176	11.7	16.1	32.2	246.5
Nonferrous metals	0.8	250	33.5	41.2	52.7	33.5
<u>Lower growth industries</u>						
Textiles and clothing	9.3	67	0.0	0.7	4.2	30.3
Rubber, plastic, other non-metals	5.7	75	0.2	2.3	9.9	21.7
Metal products	3.0	88	2.2	6.6	39.0	59.5
Industrial chemicals	2.4	73	17.0	41.7	93.3	160.8
Machinery, non-electric	1.5	47	0.7	13.4	166.8	609.0
<u>All industry</u>	100	106	2.6	7.1	21.6	39.7

Source: World Bank, Chile: Economic Memorandum, September 28, 1981. Report No. 3408-CH, Appendix tables 7.1-7.5, derived from ODEPLAN.

The diversification of export destinations was no less remarkable than that of export products. It is reflected in the growth of the export share of the group of 'other' countries, a collection of markets initially too insignificant to warrant separation in the statistics, rising almost fivefold between the beginning and the end of the decade (Table 5).

Table 5: Destination of Exports, 1970-71, 1978-79 and 1986-87: Percent of Total Export Value

Destination	1970-71 (%)	1978-79 (%)	1986-87 (%)
1. EUROPE			
1a. Germany, Belgium, Spain France, Netherlands, Italy, United Kingdom, Sweden	58	39	23
1b. Rest of Europe	1	2	15
2. LATIN AMERICA			
2a. Argentina, Brazil, Colombia, México, Perú, Venezuela	12	23	14
2b. Rest of Latin America	1	3	3
3. UNITED STATES	11	12	22
4. CHINA P.R.	0	2	2
5. JAPAN	15	11	11
6. OTHER	1	7	10
7. Rest of Europe (1b) Rest of Latin America (2b) China P.R. (4) and Other (6)	3	14	30

Source: World Bank, Chile: Economic Memorandum. September 8, 1981. Report No. 3406-CH, and Central Bank.

2. The Shipping Industry

Trade diversification, of products and markets, and the growth in the number of export firms entailed changes in the demand for shipping services, in terms of vessel types, frequencies and connections with a wider range of destinations.

The capacity of Chile's national (flag) merchant fleet in 1964 amounted to 265,000 gross register tons (grt), a crude measure of cargo carrying capacity and an ambiguous aggregate since it includes all manner and

sizes of vessels. By 1973, this total had risen by 46 percent, to 388,000 grt. By 1979, over six years rather than nine, it had again risen by about the same percentage, to 514,000 grt. The number of units in the fleet had stayed about the same over the entire 15 years so that the increase in tonnage reflects increases in average vessel size and especially the acquisition of a few large carriers. In terms of deadweight tons --- a better measure of carrying capacity than grt -- Chile's merchant marine capacity was of the same order as that of Perú, or of Malaysia, Morocco, Nigeria, Pakistan, Thailand or South Africa. Within Latin America, Chile's total tonnage was greater than Colombia's and much smaller than those of Brazil or Argentina (Table 6). In these countries, all practicing forms of cargo reservation, the 1970s were a period of heavy investment in vessels and great growth of tonnage.

Table 6: Deadweight Tonnage of National Merchant Fleets, 1973, 1979 and 1986 1/

Country	000 DWT		
	1973	1979	1986
Chile	555	832	908
Brazil	3,053	6,657	10,278
Argentina	1,882	3,372	3,171
México	630	1,260	2,207
Perú	488	830	997
Colombia	291	376	486

Source: Lloyds Register, Statistical Tables.

1/ Vessels of 100 gross register tons and over.

The composition of Chile's merchant fleet throughout the 1970s shows a predominance of general cargo vessels, heavy by comparison with most other Latin American fleets which, in their turn, tend to have a heavier element of such vessels than the average developed (OECD) country (Table 7). The general cargo element in the fleets, however, and particularly the multi-deck vessels that can be distinguished in the statistics from 1979 on, points to the importance of liner operations in the total maritime activity of the countries.

Table 7: National Merchant Fleets: Analysis by Type of vessel 1973, 1979 and 1986 1/

Country	Year	% of fleet total grt or 000 grt					
		Tankers (%)	Ore/Bulk Bulk/Oil (%)	All (%)	General Cargo		000 grt
					Single deck (%)	Multi-deck (%)	
Chile	1973	23	17	55			213 <u>2/</u>
	1979	5	37		8	44	236
	1986	3	55		4	20	115
Brazil	1973	33	15	48			1,005 <u>2/</u>
	1979	34	32		3	27	1,062
	1986	31	45		2	15	937
Argentina	1973	37	8	46			671 <u>2/</u>
	1979	33	23		4	30	706
	1986	31	24		4	30	636
México	1973	55	7	23			105 <u>2/</u>
	1979	56	6		3	13	116
	1986	40	20		2	7	106
Perú	1973	18	6	48			213 <u>2/</u>
	1979	15	31		1	31	202
	1986	19	25		3	30	286
Colombia	1973	6		91			203 <u>2/</u>
	1979	10			7	72	210
	1986	9	8		8	71	269
7 OECD Countries <u>3/</u>	1973	44	24	19			
	1979	53	22		2	10	
	1986	41	18		2	15	

Source: Lloyds Register, Statistical Tables.

1/ Vessels of 100 gross register tons and over.

2/ Single and multi-deck vessels.

3/ France, Germany, Italy, Norway, Sweden, U.K. and U.S.A.

The fleets covered by the statistics are those on the national registers of countries rather than those beneficially owned by residents, which include flag-of-convenience vessels. A major reason for the presence of foreign-flag and flag-of-convenience vessels in the Chilean-owned fleet was the charter-purchase agreements under which operators chartered (hired) ships with an option to purchase, normally on bareboat terms which leave the charterer with the totality of operating expenses. Charter rates under these contracts are in reality hire-purchase payments, made until the full price of the vessels, with interest, had been transferred to the seller whose rights as owner remain secured until the final payment. The flag-of-convenience offered further essential protection to the seller in view of Chile's law that required Chilean ownership for ships on her register. After the onset of the debt crisis in the early 1980s this method, normally involving the establishment by the owner of a subsidiary company in Panamá, with the cost of establishment falling on the Chilean charterer, became practically the only method by which Chilean companies could acquire new tonnage. Once the vessel had been paid for and transferred to Chilean ownership, the law of 1956 required the vessel to be transferred to the Chilean register before it could benefit from cargo reservation (see III.3.iii above).

3. Chile's Share

Cargo reservation only applied to Chilean flag vessels and to the limited amount of chartered tonnage that the law allowed to rank as "reputed Chilean". That being the ambit of the law, it is only natural that the official statistics should distinguish nationality by the flag alone, rather than by the nationality of owners and operators. The statistics were collected by the Customs and omit shipment from and to the Free Trade Zones and military shipments. They nevertheless form the sole available basis for computing Chile's share. Before deregulation, while cargo reservation acted as an incentive to Chilean companies to operate under Chile's flag, the share taken from the Customs figures may serve as a fair approximation to the share of Chile's shipping industry, or at least as a large and reasonably constant proportion of the whole. We use it in this sense, for the years to 1979, but not thereafter (see Appendix 2.)

In the years immediately preceding deregulation, Chile's share in cargo tonnage was generally below one-half. The share of import tonnage was greater than that of export tonnage, chiefly on account of petroleum cargoes. (Tables 8, 9). Among cargo classes, Chile's share in export tonnage of 1977 was lowest in solid bulk, the single largest export tonnage. The only cargo class in which Chilean operators had a tonnage share of more than one-half was solid bulk imports, which the law of 1976 had reserved entirely for Chilean vessels.

**Table 8: Chile's National Merchant Marine
Participation in External Trade, 1977**

(Thousands of tons and percentages)

Trades and cargo groups	National shipowners				Total percent-age	Foreign Shipowners		Total tonnage
	Own vessels		Chartered Vessels			Tonn-age	Percent-age	
	Tonn-age	Percent-age	Tonn-age	Percent-age				
<u>Exports</u>	<u>1,097</u>	<u>9.0</u>	<u>1,056</u>	<u>8.6</u>	<u>17.6</u>	<u>10,086</u>	<u>82.4</u>	<u>12,239</u>
General cargo	555	23.4	408	17.2	40.6	1,412	59.4	2,375
Refr. cargo	28	11.4	22	9.0	20.4	196	79.6	246
Solid bulk	456	5.0	576	6.4	11.4	8,029	88.6	9,062
Liquid bulk	57	10.3	50	9.0	18.3	448	80.7	556
<u>Imports</u>	<u>1,527</u>	<u>27.6</u>	<u>1,091</u>	<u>19.7</u>	<u>47.3</u>	<u>2,914</u>	<u>52.7</u>	<u>5,531</u>
General cargo	250	30.0	78	9.3	39.3	506	60.7	834
Refr. cargo	18	29	0	0.0	29	43	69.3	62
Solid bulk	180	12.1	653	44.0	56.1	651	43.9	1,485
Liquid bulk	1,077	34.2	359	11.4	45.6	1,714	54.4	3,150
<u>Total external trade</u>	<u>2,624</u>	<u>14.8</u>	<u>2,147</u>	<u>12.1</u>	<u>26.9</u>	<u>13,000</u>	<u>73.1</u>	<u>17,771</u>
General cargo	805	25.1	486	15.1	40.2	1,916	59.8	3,208
Refr. cargo	47	15.2	22	7.1	22.3	239	77.6	308
Solid bulk	638	6.0	1,229	11.7	17.7	8,680	82.3	10,547
Liquid bulk	1,134	30.6	409	11.0	41.6	2,162	58.4	3,706

Source: Sepulveda (1977), from data supplied by Oficina de Planificación, Ministerio de Transporte y Telecomunicaciones.

**Table 9: Participation of Chile's National Merchant Fleet
(Customs definition) in External Trade, 1978 - 1986**

t = tons
f = freight

TRADE YEAR	Chile's Share		Percentage Shares					
	tons	freight revenue	Chile		=	own vessels	+	chartered vessels ^{1/}
	000 t	000 US\$	t %	f %	t %	f %	t %	f %
<u>Exports</u>								
1978	2,405	79,057	23	30				
1979	2,160	82,870	20	27	10.2	16	9.4	11
1981	733	48,116	7	12				
1982	2,029	113,000	17	28				
1983	2,209	80,000	19	24	11	15	8	9
1984	1,555	35,013	13	10		8		2
1985	1,475	34,987	12	9	11	7	1	2
1986	1,648	47,291	12	10	10	4	2	6
<u>Imports</u>								
1978	3,603	104,534	58	49				
1979	2,261	109,890	45	43	25	28	19	15
1981	854	94,000	12	15				
1982	709	70,000	14	22				
1983	1,878	85,000	30	38	18	25	12	14
1984	963	51,400	18	21		19		2
1985	1,086	43,595	24	22	23	18	1	4
1986	1,006	50,364	20	24	19	19	1	5

Source: IASA (1986) from data supplied by Ministry of Transport and Maritime Directorate, and Maritime Directorate, Statistical Bulletin.

^{1/} 'Reputed Chilean' flag vessels, chartered to Chilean owners.

From Table 9 it appears that Chile's share of freight revenues in the years preceding deregulation exceeded its share of tonnage in exports, but not in imports. In exports, therefore, Chilean operators were not left with the lowest-paying commodities. In imports, however, which attract the higher freight rates, Chilean companies found themselves on average of all cargo, at a disadvantage relative to foreign operators.

4. The Shipping Companies

In 1978, on the eve of the deregulation of ocean shipping, Chile's shipping industry consisted of 12 companies, most of them operating in both coastal and external trades. Four of these owned about 80 percent of the merchant tonnage, not counting vessels under flags of convenience.

The Compañía Sudamericana de Vapores (CSAV, henceforth Sudamericana, founded in 1872) was the largest company by sales and net worth -- US\$ 118 million and 69 million respectively. Among Chile's non-financial enterprises, ranked by total assets, it occupied 19th place in 1976.¹² It owned and owns several subsidiaries in and outside of Chile as well as half the equity of SONAP, a shipping company specialized in oil and petroleum transport and connected with the national petroleum company (ENAP).

The Compañía Chilena de Navegación Interoceania (henceforth CCNI) came next in terms of sales (US\$ 53 million in 1978), capital and fixed assets.

Third in order of sales comes the state-owned company, Empresa Maritima del Estado (EMPREMAR) which evolved in 1953 from a maritime department of the railways. EMPREMAR was intended first as a coastal shipping enterprise, with an obligation to maintain services from Arica in the north, to Magallanes. It first entered ocean trades in 1968 and was then accorded preference in the transport for government and semi-government enterprises. EMPREMAR has the largest dead-weight tonnage among Chile's companies. In 1978 it ranked second, after Sudamericana, in net worth and numbers employed (954 against 1,100 for Sudamericana and 500 for CCNI).

Chile did not have, nor has now, specialized bulk transport or tramping firms. There were few independent chartering organizations. Sudamericana, CCNI, EMPREMAR and the rest among the more significant ocean transport enterprises (such as the liner company Transmares, of the Ultramar group) were and remain essentially liner companies, organized and managed as such and with their main business in liner transport. But by the late 1970s, all the larger shipping companies had special bulk transport and chartering departments. Chartering was also done by some of the large corporations. The Salpeter and Iodine Export Corporation (COVENSA) had its own chartering department; so had the Agricultural Trade Corporation (ECA) which had the monopoly in the import of grains and other products, and so had the Steel Corporation of the Pacific (CAP) which chartered tonnage for coke imports. The independent chartering offices (such as UNICHART or INTERMAR) recruited their specialists from the experienced staff of COVENSA. In the light of the difficulties that some sectors of Chile's industry experienced before deregulation in obtaining services by non-liner mode -- by tramp or bulk carrier or specialized vessels -- and of the great expansion of such transport almost immediately after deregulation, it is significant that the problems that arose before deregulation were not primarily due to a lack of

¹²World Bank, 1979, vol. 3, p. 190.

local expertise and familiarity with the international market for non-liner vessel services.

5. Financial Performance

The available financial information on the three major companies, on balance sheets and operating results, is subject to caveats that attach generally to the interpretation of accounting statements. By the value of its capital, Sudamericana stands out in 1979 as the dominant enterprise. In the value of fixed assets, however, Sudamericana and CCNI are closer to each other, indicating the high leverage that characterizes shipping enterprise (Table 10).

Table 10: Total Assets, Value of Owned Vessels, and Capital of Major Chilean Shipping Companies, 1979 - 1986 (year end).

Values in US Dollars, at Chilean 1986 Prices 1/

COMPANY	YEAR	VALUE OF ASSETS		
		TOTAL <u>2/</u>	OWNED VESSELS <u>3/</u>	EQUITY
		US\$ mn	US\$ mn	U\$ mn
Sudamericana (CSAV)	1979	126.6	66.8	98.0
	1982	98.4	70.1	77.8
	1984	90.0	67.9	65.0
	1986	146.1	72.5	88.6
Interocean (CCNI)	1979	86.4	64.7	17.3
	1982	90.9	93.3	35.1
	1984	98.8	114.3	24.6
	1986	91.1	79.0	29.5
Empresa Maritima (EMPREMAR)	1979	60.6*	54.1*	12.4*
	1980	42.2	43.7	15.4
	1982	41.2	34.5	12.5
	1984	53.6	33.9	7.6
	1986	51.7	24.1	10.6

Source: Figures marked with (*): computed from IASA (1986); others: computed from financial statements of companies.

1/ Chilean Peso values were adjusted with Chile's Consumer Price Index to approximate 1986 values, and converted into US dollars at the exchange rate of 31.12.1986. If Peso values for years before 1986 are inflated according to Chile's Wholesale Price Index ('Home and Imported Goods'), the US dollar values for those years is significantly greater than shown in the Table.

2/ After depreciation of assets.

3/ Before depreciation.

Profitability varied greatly between the companies. EMPREMAR earned no profits in 1978, CCNI reported marginally positive results on capital and only Sudamericana was clearly profitable to its owners. In the following year, EMPREMAR operations resulted in a loss. The other two leading companies reported profits. In terms of the returns on the total of resources employed, only Sudamericana reached more than 10 percent in 1979 (Table 11).

**Table 11: Financial Rates of Return to Resources
Employed: 3 Major Chilean Shipping
Companies, 1979 - 1987.**

(percentages)

YEAR	COMPANY:	Sudamericana (CSAV)	Interocean (CCNI)	Empresa Maritima (EMPREMAR)
		a. <u>1/</u>	a. <u>1/</u>	a. <u>1/</u> b. <u>2/</u>
1979		10.7 *	8 *	- 2 *
1980		12.2 *	12 *	12 * 16 *
1981		5.3 *	11 *	9
1982		- 15	- 1	- 5
1983		- 14	- 3	10
1984		7	5	- 1
1985		12.5	7	- 1
1986		12	6	16
1987		10	7	5

Source: (*) computed from figures presented in IASA (1988). Other percentages computed from company accounts.

1/ Method of Computation:

- L(t) - short and long-term liabilities + equity at end of year t
- R(t) - net income and interest paid in year t
- P(t) - Chile's Consumer Price Index, level in year t (year end)
- G(t) - financial rate of return on resources used in year t
- S(t) - approximation to total financial resources available in year t

$$S(t) = 1/2 [L(t-1).P(t)/P(t-1) + L(t)]$$

and $G(t) = R(t) / S(t)$

The implication of inflating liabilities reported for the end of year (t - 1) with the CPI for year (t) is that the full rate of inflation of year (t) is supposed to have occurred on January 1. The method thus gives too large a weight to liabilities at end of year (t - 1), but the bias is offset by the choice of inflator. Chile's CPI rose significantly less steeply than the price index for Home and Imported Goods, corresponding to the wholesale price index.

2/ Method of computation:

$$R(t) / [L(t) - \text{Net Income, year } t].$$

Net Income (or part of it) has to be deducted from Total Liabilities as at the end of the year because Liabilities include Equity, and Equity at year-end includes year's Net Income.

For the year 1978, Downer (1979) assembled information on company sales and net worth (Table 12). He concluded from his review of the financial position and resources of the leading companies that only Sudamericana, aided by a US banking consortium, was in a position to replace its tonnage, while CCNI lack the earnings and accumulated resources for replacement, and EMPREMAR was definitely not in a position to rejuvenate its fleet from own resources or by borrowing on the strength of its prospective earnings.

Table 12: Sales, Assets and Net Worth of 4 Chilean Shipping Companies, 1978

millions of US Dollars 1/

Company	Sales	Assets	Net Worth
Sudamericana	117.7	87	69
CCNI	53.2	61	15
Empremar	46.2	52	33
Sonap	13.9	34	10

Source: Downer (1979).

1/ Downer may have applied the exchange rate for the U.S. dollar of 1979. The absolute values in the table may therefore be too low. Relative sites would not be affected.

6. Industrial Organization

The degree of competition in Chile's shipping services is a matter of, first, the internal constitution of the industry and, second, of the general organization of shipping in Chile's overseas trades.

Before the advent of the Allende government in 1970, EMPREMAR was the only Chilean shipping enterprise in state ownership. The Popular Union government soon embarked on a policy of nationalization. Sudamericana and CCNI were taken over by the state in their entirety or by way of the transfer of majority shareholdings into public hands. In 1964, 15 percent of Chile merchant shipping tonnage was in the public sector; by 1973 this share had risen to 64 percent. The sale of these assets by the National Development Corporation (CORFO), began after the change of government but was only completed in the 1980s. The companies that had been brought under state control between 1970 and 1973 were nevertheless free, after the change of regime, to conduct their affairs independently, on commercial principles, and to compete with each other.

EMPREMAR, remained in public ownership. It was deprived of its exclusive rights to the transport of grain and sugar and was moreover expected to be commercially and financially independent as from 1975. This opening of internal competition, within Chile's shipping industry, was essentially the first step in the process of deregulation. It was not an easy step to take because the line had the backing of strong national interests, nor was the policy marked by total consistency. In 1974, the year before the company was to reach financial self-sufficiency, the public sector petroleum and iron ore corporations (ENAP and CAP) contracted with EMPREMAR, operating in joint venture with Japan's Kawasaki Kisen Kaisha, for the export of iron pellets to Japan and the import of oil from the Persian Gulf, on the return run to Chile. The terms of the contract are reported to have been favorable. The Japanese partner provided two vessels which were ultimately acquired by EMPREMAR. The company, for its part, continued in some ways to conduct itself like a public sector company with special obligations. It thus continued its Austral coastal service which was not a profitable operation.

In Chile's external trades a division of markets had established itself between Chile's shipping companies. The smaller ventures were wholly specialized in coastal trades, either operated principally between Chile and the East Coast of South America. That was (and remains) the case of NACHIPA (Naviera Chilena del Pacifico), Nav. Interoceargas, Transmares and Naviera Paschold, serving the trades with Brazil, Argentina, the Caribbean and, occasionally, West Coast ports. The trades with Brazil and Argentina are regulated by bilateral agreements, implemented by inter-company agreements. Entry by Chileans in these major South American trades is controlled within the agreements. In 1977, these trades were in the sole hands of CCNI and Transmares.

7. The Liner Conferences

The main intercontinental routes, including the route to the United States, were (and are) served by the three large companies. These routes are covered by a network of liner conferences and rate agreements. The conferences covering the trades from and to Europe and the Far East treat the West Coast as one conference area, quoting rates that are practically or completely identical for all major ports along the coast. In the US trades, on the other hand, the conferences distinguish more closely between ports; Colombia and Ecuador have separate US conferences. European and Japanese conferences are 'closed'; US conferences, subject to US regulation, are distinct in that they are 'open'. In closed conferences, admission of new members is at the discretion of the cartel. In open conferences, lines that fulfil certain conditions controlled by US law may enter at their discretion. All, however, suppress price competition between members, and may go beyond that in allocating sailings and loadings at individual ports. All seek to hold outside competition at bay, the least aggressive method being systems of dual rates that accord the lower rate to shippers who give all their trade

to the conference.¹³ Intuitively, the difference between open and closed conferences is narrowed down to a difference in the balance of residual power between conference and the outsider who has already managed to establish himself in the market to the point where he would think it to his advantage to forego price competition with the conference, and to maintain rather than increase his share in the market. An outsider would presumably not seek entry into a conference, closed or open, if his share in the market, likely to be frozen upon entry and to stay so for a substantial period, is lower than he thinks he can attain. Newcomers who have yet to establish themselves in the market will not see much difference between open and closed conferences.

There is every reason to believe that cargo reservation was instituted in 1956 as a means of lessening the control that international liner conferences exerted on the ocean trades of Chile. Once a share in the market had been assured to them, Chile's companies as a group had every interest (as explained in Chapter II) to seek admission into conferences and to support the establishment of agreements, where none existed, to suppress price competition.

By the late 1960s, Sudamericana had secured entry into the North American and European conferences. The company was a full member of the West Coast of South America Northbound (6 members, including also the Peruvian State Line and Grancolombiana), and, for the inverse direction, the Atlantic and Gulf/West Coast of South America (7 members, with the same three South Americans as the northbound conference). Of these two, only the southbound conference offered a rebate to contractors (of 15 percent); the northbound conference offered no rebates. One may infer that competition northbound was weaker than southbound, the direction of the higher-value commodities. Sudamericana had also secured entry into the (closed) European/South Pacific and Magellan which covered both directions. This conference had two South American lines among its 11 full members: Sudamericana and Grancolombiana, with Consorcio Naviero Peruano as a mere non-voting affiliate. It operated both a deferred rebate and a contract rate system of loyalty rebating. Within the European conference, Sudamericana was a member of the Europac agreement with the Peruvian, Colombian and Ecuadorian lines for the service between the European Atlantic coast and the Pacific and Magallanes. The conference covering the trade with Japan, Korea and Okinawa, the Japan-West Coast South America, on the other hand, had no South Americans among its 10 members, while the Japan-Latin America Eastbound which covered a much wider area (including México, Central America and both coasts of South America) had the Flota Grancolombiana as the only South American member. For the rest, its membership overlapped with that of the Japan-West Coast conference. Each operated a dual rate system.

¹³Since 1984, US conferences can no longer operate loyalty contracts and the associated dual pricing system (full rates and contract rates). Instead, members -- in practice, members under conference control, can conclude service contracts with individual shippers, at rates below the standard posted rate. (See Shashikumar, 1989). The Shipping Act, 1984, introduced further changes, notably the right of conference members to independent action in the matter of rates and service, provided a specified period of notice is observed.

Sudamericana, as the oldest and largest of the companies, was the first to be admitted to major conferences. CCNI had in the 1960s secured associate (i.e., non-voting) status in the European conference. In 1974, it was admitted to the Japan conference where it pooled with the Japanese group.¹⁴ The arrangement followed the norm of the Japanese conference in its dealings with other West Coast countries: CCNI had rights to 50 percent of Chilean trade within the pool but if it carried to or from other South American countries its revenues were offset against the half-shares of those countries. From the late 1960s on, CCNI was also a member of the Chile-Argentina conference and freight pool, and a member of the Chile-Brazil, Perú-Brazil, Chile-Perú and Chile-Uruguay freight agreements, and while not a member of the Argentina-Perú conference, it applied their tariff.

EMPREMAR, the last large company to enter major international trades, concluded in the 1970s a service and pooling agreement with Spanish, Peruvian and Ecuadorian lines for trade with the Mediterranean, but outside the European conference (Sepulveda, 1979).

In negotiation between conferences and aspiring entrants, sailing rights and pool shares form major issues, and they represent major determinants of cartel cohesion. There is no reliable information on the shares accorded to Chile's members in the European conference; it must not be assumed that this corresponds to the half-share that Chile's law had reserved for transport to and from Chile. Pool shares have to be related to the carrying capacity of members, and known conference agreements often restrict members to operating with their own tonnage, subject to temporary exemptions granted by the conference. In the US conferences, Chile's share may at times have exceeded one-half: in 1981, the US lines' revenues share in the trade with Chile was only 27 percent (Office of Technology Assessment, 1983).

The overall share of Chilean operators in general and refrigerated cargo was well below one-half in terms of tons and less in terms of revenue (Table 8). Revenue per ton in imports is much higher than in exports (Table 13). The discrepancy results not from cost differences or from an excess of general cargo imports over exports: the opposite is the case. It rather results from liner conference pricing methods which set rates, within bounds, according to commodity value. For Chile's conference-minded operators, the assurance of a share of import cargoes carried at rates not too far below the average rate was an advantage that conference membership could secure, but cargo reservation by itself could not.

¹⁴K Line, NYK and Mitsui OSK.

Table 13: Freight Revenue per Ton of Cargo in Chile's Foreign Trade, US\$, Current Values

Year	General Cargo		Refrigerated Cargo		Dry Bulk	
	Export \$	Import \$	Export \$	Import \$	Export \$	Import \$
1978	44.8	149	201		10	15
1979	49.4	191	210		12	20
1984	46	149	283		6.4	15
1985	43.4	156.5	235.5	71.8	8.9	14.4
1986	39.9	163.9	222	62.1	14.1	12.2

Source: IASA (1986) and Maritime Directorate.

8. Assessments of Effects: The Cost and Quality of Transport

An analysis of conference rate-making in the trades of the West Coast of South America, in the late 1960s, suggested that the great excess of southbound over northbound rates -- in the ratio of 3 to 1 -- could not be accounted for by cost differences (Devanney, Livanos and Stewart, 1972). Stowage factors, as one determinant of cost, were approximately equal in both directions. To find the cost of the prevailing system, the study constructed an alternative shipping system for the West Coast that minimized the joint cost of operators and shippers, optimizing over the number of ships in the service, speeds, vessels size, time in port and inventory costs. The resulting 'efficient' system deployed fewer ships, larger and slower, than the actual fleet of 1969-1971. The costs of the conference system were thus thought to spring chiefly from non-price competition that characterizes the behavior of cartel members quite generally, and from the need of sales cartels to accommodate independent producing units (firms) rather than optimize production capacity (vessels). The average freight rate resulting from the optimized system was US\$52 per ton, as against the prevailing 1970 average of US\$82, or US\$72 if the rate-negotiating (rebating) experience of Sudamericana reflected the true level: a difference of US\$38 per ton on average.

The Devanney, Livanos, Stewart simulation study is relevant to the cost of regulation only in so far as cargo reservation can be said to have reinforced the conference system in Chile's trades. A more direct approach to the cost of cargo reservation in Chile is attempted in Part II of this note. The investigation of one segment of Chile's overseas shipping points to a marked decline in average freight charges after deregulation, relative to charges on similar commodities from other exporting countries, and a strengthening of the cost element and a weakening of the demand factors in liner freight charges.

The constraints that cargo reservation was capable of imposing on Chile's trade and industry were due, first, to the operation of the 50 percent reservation rule itself, and then to the control procedures: the assigning of individual shipments, the laborious steps to be gone through in seeking exemption from the assignment, and the ambiguous criteria for granting exemption, especially when users wanted to employ non-liner transport.

The whole impact of the system cannot be judged from the experience of the 1970s alone. By 1973, the system had been in force for 17 years. During that time it will have worked its effects with results that were no longer easy to observe in the 1970s because production, trade and shipping had adapted to them. Merely in terms of the experience of the 1970s, the system appears to have presented least of a burden, if indeed any, on the established, major export and import trades. Copper, a liner cargo, occupied a commanding position in both the export trade and the shipping market of Chile. An industry of such national importance could presumably negotiate with liner operators on even terms, or better. The export of iron pellets was similarly unlikely to have felt constrained by cargo reservation. That was also true of the exports of nitrates and iodine, or the import of wheat, maize and other agricultural products by the Agricultural Trade Corporation. The effects of cargo reservation are also thought to have been minor on the relatively small exports of logs. If the product was to compete at all in foreign markets, it required specialized vessels not available in Chile's fleet, and strictly competitive rates. Nor does cargo reservation appear in the 1970s to have interfered with the established modest flows of sawnwood and panels to Argentina, or of paper and pulp to Argentina and Brazil.

By contrast, the impact of the regulations fell on established exports industries in their efforts to expand sales in existing markets and to enter new ones. It also fell on the new export industries. Leading examples in the first group were paper, pulp, sawnwood and fruit; in the second group, fishmeal and simple manufactures. Their exports grew rapidly across the 1970s:

	Value of exports in US\$ mn		
	1970	1973	1978
Paper and pulp	32	30	159
Sawn pinewood	4	3	70
Fresh fruit	12	14	115
Fishmeal	15	14	106
"Other manufactured products"	47	20	327
Chile's total exports	1,249	1,248	2,408

The exports of the 5 groups of rapidly growing or essentially new exports -- not an exhaustive list -- amounted to 9 percent of Chile's aggregate exports in 1970s, and to 32 percent in 1978. It was in these trades that the direct and indirect incentives to export which Chile's general policy created after 1973 were in conflict with the protection given to national shipping.

The export of fresh fruit requires prompt shipment in refrigerated space. The largest reefer capacity operating on the West Coast of South America was that of The Prudential Line (subsequently the Delta Line) but Sudamericana entered the trade with reefer vessels in the mid-1970s. Reefer capacity has to be booked in advance, for the brief exporting season. Since shippers could not predict whether their shipments would be assigned to the Chilean or to foreign flag carriers, they could not safely commit themselves to a foreign shipowner. As a result of cargo reservation, the implementation method and informal administrative action (in delaying the exit of foreign-flag vessels from port), shippers felt it safest to use Chilean flag shipping. Sudamericana thus captured 80 percent of the fresh fruit trade on its established routes to Europe and the East Coast of the United States. Chile's forestry products faced high transport cost relative to the delivered prices of logs, sawn timber, pulp and paper. Sawnwood and panels went traditionally to Argentina but in the 1970s the industry sought markets in Venezuela, Europe and the Arab countries. The market limits thus depended crucially on freight charges and quality of service: Brazil is better located for access to Europe, and New Zealand and Australia for trade with Asia. Paper and pulp were classed as conference cargoes and claimed as such by the conferences. Outsider competition that could have lowered rates was held at bay by the assignment procedures and by the reservation rule itself which narrowed the market in which an outsider could hope to establish regular service. Paper and pulp are peculiarly vulnerable to taint and damage when stowed with other cargoes. Limits on free choice among carriers with different experience and equipment thus acted as limits on the technical quality of service that was readily available to Chile's exporters. Inventory costs were raised by the limited availability of national flag vessels of a non-liner type. Insurance costs were raised by delay and the risk of damage. Exporters reacted by trying to arrange their shipments for times when national vessels were unlikely to be available, and by elaborate efforts to consolidate cargoes of different producers and products to fill a chartered vessel. In the words of a major exporter of forestry products, the regulation was turning industrialists and exporters into shipowners: the standard consequence of regulation, whether in shipping or trucking, that turns users into own-account operators.

The price charged for shipping services does not exhaust the total cost of shipping to trade and industry. A more inclusive account of the effects of cargo reservation on different economic sectors has to distinguish between coastal and ocean shipping, between bulk and general cargo and between major traditional cargo flows and the newer or more rapidly growing ones.

On coastal shipping, the bare facts appear in Table 14. Ever since the opening of the Panamerican Highway in 1965, connecting Arica in the far North of the country with Puerto Montt in the far South, general cargo tonnage had continued to drop. By 1978-79 it had virtually disappeared, except for steel ingots, a few other government cargoes and subsidized movements by EMPREMAR and CCNI, to the Southern-most ports (the road to which crosses Argentinian territory and had to be avoided after the outbreak of conflict with Argentina, in 1977). But it is not clear to what extent, if any, the flight of general cargo from coastal shipping has to be imputed to cargo reservations rather than to the state of the ports. The productivity of Chile's public ports was low and had been declining steadily through inefficient organization and restrictive labor practices enforced by the unions. General cargo is especially sensitive to port productivity, so that the high cost of using the ports would certainly have diverted some private cargo from water to road transport. Coastal transport of solid bulk, on the other hand, grew steadily. The effects, or the perceived effects, of the exclusion of foreign shipping from Chile's cabotage can then only be inferred from the fact that it was found right or necessary to include coastal shipping in the subsequent liberalization of the shipping regime. The deregulation measures of 1979, discussed in Chapter V (below), opened the way for foreign vessels to compete, under certain conditions, for the coastal transport of large loads. In 1985, and therefore 4 years after the reform of the public ports and the consequent great improvement in their productivity, the modification of the 1979 measures maintained the access of foreign vessels to coastal shipping.

Table 14: Cargo Tonnage in Chile's Coastal Shipping,
1960 - 1986

(000 metric tons)

CLASSES OF CARGO				
YEAR	GENERAL	SOLID BULK	LIQUID BULK	TOTAL
1960	695	942	1,051	2,689
1965	515	1,656	2,363	4,533
1970	251	1,933	2,449	4,633
1974	298	2,318	3,617	6,234
1979	211	2,627	2,114	4,952
1981	240	1,705	3,871	5,816
1982	306	2,044	3,263	5,613
1986	435	2,968	3,143	6,546

Source: Ministry of Transport.

What could reasonably be ascribed to cargo reservation was the arbitrariness with which shipments were assigned by Central Bank officials to Chilean and non-Chilean vessels; the difficulty of obtaining waivers from the entitled Chilean company if it could not offer space at the right time and the unavoidable dispute on what was an acceptable time for positioning a vessel, the resulting delays, inventory costs, market risks and the cost to the shipper of having to settle for an 'imperfect fit'. Where there could be no doubt about the bulk character of a cargo, for instance, shippers came up against the predictable difficulty of appealing to the provision of the 1956 and 1976 laws that made cargo reservation conditional on freight charges demanded by Chilean operators to be no higher than the international market rates. There were no clear standards of comparison. Traders felt that the decision of the arbitrating authorities on what was an adequate vessel, an adequate time for making the vessel available as well as the justified price were biased towards the interests of the Chilean shipowners, bringing in their own vessels or what they could charter for the voyage. Shippers of refrigerated cargo argued that conferences impeded the introduction of advanced reefer technology (such as reefer containers) since members who had invested in less efficient equipment would have had to agree to a lowering of rates for the inferior service they were offering. Shippers seeking entry into markets to which no sufficiently frequent service was provided perceived themselves hampered by conference rate-making policy which would not price transport with transshipment lower than direct shipment. Shippers of what was potentially bulk cargo found that the decision on what was, or was not, general cargo rested with the conferences, supported by its Chilean member. Inefficiencies due to the cargo reservation system thus seemed to mirror and reinforce the inefficiencies of the conference system.

9. The Passage to Deregulation

The economic policy pursued by the government since 1973 entailed a substantial change in the structure of production and foreign trade and compelling incentives to turn from import substitution to exporting. As the private sector responded, not without casualties, the number of firms and entrepreneurs to whom ocean transport costs became a crucial factor in economic success or survival, increased greatly. The established export interests were pressing towards new markets. Cost consciousness was further raised when the policy of mini-devaluations came to an end in mid-1979 and the peso was fixed in terms of the US dollar.

There was then a clear constituency for the cause of deregulation. Within the government, views differed. Strong interests, based in part on considerations of national security, argued for the continuation of a policy that seemed to have been successful in building up the merchant tonnage under Chile's flag, though not yet wholly successful in securing the commercial position that would make the national industry invulnerable to increased competition. It was also argued that the main inefficiency affecting Chile's ocean transport lay in the ports. The state of the public ports had obviously contributed much to the decline of coastal shipping. Since coastal shipping was an important source of revenue for Chile's shipowners, deregulation of external shipping before port efficiency had been raised

would deny them some measure of compensation for the loss of cargo reservation. But negotiations in preparation for a reform of the ports, between port authority, labor and government, had been proceeding since 1974 and were unlikely to arrive soon at a satisfactory conclusion. The argument prevailed, that the complement to trade liberalization, its final stage reached in 1979, was liberalization of the ocean shipping regime. Since this could be introduced rapidly, it should not wait for reform in the ports.

When it became clear that the government had decided on deregulation the discussion turned to the reach of reform. A major issue was the extent to which cabotage should be opened to non-Chilean carriers. A further issue concerned the position of Chilean owners under bilateral agreements that reserved cargo to the partner country, and generally the policy towards cargo reservation by others: a group of countries that accounted for perhaps one-quarter of Chile's export trades. The shipowners furthermore negotiated for emancipation from restrictions that had either been imposed on them by the regulations or had resulted from general economic policy. Specifically, they sought freedom to sell vessels at their own discretion and a lifting of the obligation to set aside a fixed proportion of net revenues for vessel acquisition. They also sought greater freedom in outflagging. This had become the obvious escape route from the high cost of operating under the Chilean flag, determined by the legal crewing scales, by wages and salaries enforced by the unions and wage indexation with reference to past inflation as ordained by public policy.

By way of preparation for the reform, the interested parties -- shipowners and shippers, with prominent participation of the forestry products industry -- were encouraged to draft proposals. The measure of deregulation that emerged in 1979 presented a compromise between the cases made for the two sides.

V. Deregulation: The Shipping Regime, 1979 - 1988

1. Change of Principle

Since 1980, Chile's shipping has been governed by two laws: No. 3.059 of December 1979, and No. 18.454 of November 1985. The first marks a change of principle. The latter modifies it in certain respects, but without departing far from the main lines of the reform.

The law of 1979 retains cargo reservation, in coastal as well as foreign shipping, but in so attenuated a form relative to the preceding regime that it has to be seen as an act of deregulation. The title of the laws of 1979 and 1985 is the same as that of 1956: An Act for the Promotion of the Merchant Marine. That title was a fair expression of the central purpose of the 1956 law. In 1979, however, the needs of Chile's foreign trade take first place among the reasons for the new law as stated in the preamble, followed by the need for a merchant marine able to provide efficient service in internal and external trades. In 1956, the promotion of Chile's merchant marine was to be achieved by protecting it against foreign competition. In 1979, the role of public policy in promoting the merchant marine had changed to supporting the free access of national shipping enterprise to the international shipping markets (Article 4).

2. The Reform of 1979

(i) Cabotage: cargo reservation within limits. Coastal shipping which the law of 1956 had reserved totally for Chilean vessels, remained reserved, but within much narrower limits. The transport of cargoes of over 5,000 tons could be put out to tender to ships irrespective of their flag. For cargoes below 5,000 tons, shippers could seek quotations by direct ('private') approach to carriers of any flag, thus escaping the formalities and prescribed periods of notice for public invitations to tender. Cargo reservation only persisted in the sense that Chilean owners were to have preference if they could meet the best offer in terms of price and quality, obtained by the shipper. The Ministry of Transport was to act as controlling authority and arbitrator upon appeal.

(ii) Foreign trades: the principle of reciprocity. The earlier rule that reserved 50 percent of cargoes, within each distinct category, was replaced by the reciprocity rule. This made cargo reservation dependent on the policy of the country whose flag was seeking to carry Chile's exports or imports. The percentage of Chilean export or import cargo reserved for Chilean national companies is equal to the share reserved by the country of the foreign carrier. Vessels of countries that reserved no cargo for their own flags are thus given free and equal access to Chile's shipping. The law established a Commission ('Article 4 Commission') that was to determine from

time to time the percentage of reservation to be applied in the trades with individual foreign countries.

The charges that Chilean operators may levy for the transport of cargo reserved under this rule were not to exceed the rates prevailing in the international market (that is, for liner transport) or the best offer received by the shipper (that is, for bulk transport). Even when the price quoted by the foreign carrier exceeds that of the Chilean company, the shipper may employ the foreign flag if he can show that the quality of foreign service is superior.¹⁵

(iii) Shipowners entitlement to reserved cargo. The law again placed a limit on the amount of chartered tonnage operated by Chilean companies that could claim a right to reserved cargo. For chartered tonnage to rank as 'reputed Chilean' it must not exceed 50 percent of the company's Chilean registered tonnage, including in this, tonnage operated under bareboat charters with option to buy: the standard method for acquiring ships for Chile's fleet and adding 13 percent to Chile's own deadweight tonnage in 1980 (see IV.2 above). The main innovation of the 1979 law in this matter is, however, that it no longer excludes vessels owned or part-owned by Chilean nationals from the right to rank as 'reputed Chilean.' Chilean-owned ships flying flags of convenience could thus carry reserved cargo.

(iv) Shipowner's right of access to the markets. The law accorded to all Chilean companies equal access to the coastal trades and the external trades. It declared that no Chilean shipping company should be impeded when seeking to enter "any regular services that would be established": the state would back Chilean companies seeking to join conferences. The Ministry of Transport together with the Article 4 Commission were instructed to prevent such exclusions.

(v) Fiscal treatment and financial obligations. The law removed the obligation on shipping companies to allocate part of their net profits -- 30 percent since 1974 -- to a capital construction fund and therefore also abolished the exemption of this part of profits from taxation. Transitional arrangements were made for funds accumulated or obligations assumed under the superseded scheme. Instead, revenues from shipping services in the foreign trades were to be treated for purposes of taxation as resulting from export activity, benefiting from tax concessions granted for the stimulation of exports. The restriction on the sale of vessels (to foreigners) disappeared.

(vi) Fiscal treatment of foreign owners. Foreign participation in Chile's coastal shipping was to be treated for tax purposes as a developmental activity and subjected to the same taxation of income as Chilean operators.

¹⁵Article 7 of the Implementing Regulation to Law 3.059 (Decreto No. 86 of March 26, 1980).

(vii) Shipping operations on public account. Special shipping services required by the state, in the public interest, are to be put out to tender to Chile's companies.

3. The Modification of 1985

The modifications introduced in 1985 responded to internal and organizational developments in Chile's shipping, and to changes in external circumstances.

(i) Foreign participation in cabotage. The conditions laid down in 1979 for foreign participation in coastal shipping were procedurally complex and presumably led to contention. The 1985 modification simplified the rules, but only at the price of a retreat into greater restrictiveness. It also introduced what amounts to an import duty on coastal shipping by foreign vessels, or on coastal shipping carried out with chartered foreign vessels.

Cargoes up to 900 tons were no longer open to foreign competition but totally reserved to national ships. Above that limit, shippers may seek competitive offers from any flag, by public invitation to tender with a prescribed period of notice and with provisions for a public examination of the bids. For purposes of comparing foreign and national bids, the former are raised by the prevailing standard rate of import duty (10 percent). Contracts are then awarded strictly to the lowest bidder, though presumably on condition that he meets the specifications stated in the invitation to tender. The room explicitly left in 1979 for allowing shippers to select a foreign vessel on grounds other than price is no longer available.¹⁶ When foreign vessels other than those 'reputed Chilean' are chartered for coastal operations, a tax of 20 percent is levied, under the Income Tax Law, on the charter hire paid to the foreign owner.¹⁷

(ii) Shipowners's right to enter trades. The law confirms the right of all Chilean shipping companies to participate in the country's trades, cabotage or external; but it no longer speaks of an equal right. The reason for this variation appears in the same section of the law which acknowledges the right of Chilean companies to join liner conferences, pools and consortia, exempt from Chile's anti-cartel law.

(iii) Entitlement to reserved cargo extended to conference. The entitlement to cargo reserved under the reciprocity rule is extended to vessels of foreign companies that have entered into transport agreements with Chilean companies and that will compensate their Chilean partners under those agreements for reserved cargo taken by the foreigners. The right to reserved cargo is thus extended to the entire conference or inter-company agreement and the enforcement of rights is left to its internal working.

¹⁶Law 3.059, Art. 3, and Implementing Decree No. 86, Art. 7.

¹⁷Income Tax Law, Resolution No. 7, of January 9, 1987.

(iv) Retaliation. Chile's response to the protectionist measures that spread in the early 1980s was to adopt a policy of retaliation against the ships of countries that excluded Chilean companies from their trades with third countries. Where such total or partial exclusion was introduced by a foreign country unilaterally, Chile reserved the right to exclude that country's ships from Chile's trades with the third country. Where the exclusion resulted from bilateral agreements between two foreign countries, Chile would exclude the vessels of each from Chile's trade with the other. The same principle of retaliation was also applied to the taxation of freight revenues earned by foreign vessels from the transport of Chile's exports or imports. Under the income tax law, a tax at the rate of 5 percent was levied on vessels of countries that taxed such revenues.¹⁸

4. The Reciprocity Rule in Practice

In the law of 1979, there was some ambiguity -- possibly intended -- in the provisions on cargo reservation in external trades. What the law seemed to say was that in trade with countries practicing cargo reservation, Chile would reserve an equal percentage to Chilean flag vessels. From 1979 to 1986, however, practice appears to have been more liberal than the letter of the law: the share that Chile reserved for herself under the reciprocity rule was in fact accessible to the vessels of any country that allowed Chile's vessels free access to its own trades. In 1985, practice was brought in line with the words of the law: in trades subject to the reciprocity rule, Chile reserved her share to Chilean flag vessels.¹⁹ By then, all or most of the trades in question had been covered by agreements between Chilean shipping companies and those of the cargo-reserving partner. Cargo was then, in practice, and by regulation, 'reserved' to the participants in those agreements.

The reciprocity rule, in one form or the other, together with the cargo sharing under the Bilateral Agreement with Brazil, affected about one-quarter of Chile's external trade (Table 15).

5. The Essence of the Reform

The regime prevailing until December 1979 had reserved all coastal shipping for Chilean flag vessels, subject to government approval of services and tariffs. In Chile's external trades, it had reserved 50 percent of export and import cargos and all bulk imports for the Chilean flag, subject to rates and charges no higher than those posted by liner conferences or ruling in the international market for tramps and bulkers, and with provision for waivers. Shipowners benefitted from a variety of fiscal reliefs. In

¹⁸Article 1 of Law No. 18.031 of September 1981.

¹⁹Resolution No. 1, 10 March 1986, and Regulation 24 of 14 February 1986, Art. 20.

Table 15: Chile's Trade Subject to the Rule of Reciprocity and to Bilateral Agreements, 1980 and 1983

Reservation Applies to Trade With	1980		1983		
	Reserved Share	Chile's		Chile's	
		Exports	Imports	Exports	Imports
	%	US\$ million		US\$ million	
Argentina	50	278	226	118	200
Bolivia	50	27	47	11	9
Colombia	50	176	49	42	0.1
Ecuador	50	-	220	34	40
Paraguay	50	6	31	3	22
Perú	50	-	59	40	37
Dominican Republic	40	-	-	5	-
Uruguay	50	27	20	6	8
Venezuela	50	70	264	30	225
Nine countries		584	916	289	541
As percentage of Chile's external trade		13%	19%	8%	20%
Brazil		458	389	156	188
Ten countries		1,402	1,305	445	729
As percentage of Chile's external trade		22%	26%	12%	27%

Source: Resolution No. 863 of June 18, 1980. Ministry of Development and Reconstruction, National Institute of Statistics, Comercio Exterior: Exportación & Importación, 1980, 1983.

return, they had to operate under a variety of restrictions. These were intended to prevent misuse of the fiscal exemptions (no free sale of vessels), and to ensure that the gains from protection and fiscal concessions -- if they gave rise to profits -- would be devoted to the development of Chile's merchant marine (allocation of 30 percent of profits to the capital construction fund; implicit restrictions on outflagging and on chartering-in tonnage). Competition of own-account operations -- vessels owned or controlled by ship users -- with the professional shipping companies was controlled.

The reform narrowed the domain of cargo reservation in the coastal trades by allowing foreign operators to compete under specified circumstances. Theoretically, under the 1979 deregulating law, foreign ships could compete with Chileans over the entire body of coastal cargo. The

modification of 1985 which bears all the marks of hard bargaining, simplifies and backtracks by giving absolute preference to Chilean national vessels for cargos of less than 900 tons -- that is, most general cargo -- while admitting foreign competition for larger loads. The new rule provides for foreign bids to be increased by the standard rate of import duty before they are compared with Chilean bids. This represents a pure margin of protection rather than a tax in the normal sense because it entails no payment to the Revenue in case where a foreign bid, "after tax", wins the contract. (The method has the merit of avoiding foreign retaliation.) Chartering of foreign (flag) vessels -- whether direct by shippers, or by Chilean shipping companies going above their allowed quota of chartered vessels "reputed Chilean" -- attracts an "additional" income tax of 20 percent of the charter hire. In 1985, some 23 percent of cargo tonnage in Chile's coastal shipping should have been subject to these new rules on foreign flag participation (Anuario, 1985). When the system resulting in 1985 is compared with the outright banning of foreign flag vessels from coastal shipping that prevailed till 1979, it represents a substantial liberalization of international trade in shipping services. A substantial part of coastal shipping has been laid open to foreign competition, the earlier quantitative restriction having been replaced by real or notional taxes. But when compared with the system of 1979, there has been a partial return to protection.

In the external trades, cargo reservation was withdrawn from the trades with all the countries that did not themselves reserve cargo for their national flags. Thus, in mid-1980, reservation was limited to Chile's trades with 9 Latin American countries that practiced flag discrimination, and with Brazil. The earlier total reservation of bulk imports was revoked.

The distinction between public (professional) and own-account operators regarding their right to transport the cargo of third parties no longer appears in the law.

The sum total of these measures of deregulation was of primary benefit to shippers. But deregulation also freed the shipping companies of rules that had restricted their choices and operating methods. The law revoked the earlier restrictions on the sale of vessels. It relieved shipping companies of the obligation to reserve a prescribed part of their profits, tax-exempt, for the purchase of vessels. The implicit restrictions on outflagging disappeared. Lastly, the modifying law of 1985 complied with what must have been the demands of the shipping companies, in explicitly confirming their right to participate in liner conferences, pools and consortia, unhindered by rules against restraint of trade, a right that must have existed implicitly for most of the years since 1956. The division of cargo in trades subject to cargo reservation under the reciprocity principle, was left to the conferences. At the same time, the equal right of all Chilean companies to participation in all trades, coastal and foreign, was demoted to a right, but not an equal one.

Did the changes in law and practice in 1985 and 1986 signify a partial retreat from the policy of 1979? In the case of coastal shipping, there was retreat, even if the imposition of notional or real taxes has been

justified (not wholly convincingly) as a means to equalizing the tax obligations falling on foreign and Chilean operators. In the external trades subject to the Reciprocity Rule, the exclusion of all foreign flag vessels from access to Chile's share in those trades seems only to have become the practice in 1985. This retreat from a competitive regime may have been made at the instance of the foreign, cargo reserving partner in the trade: there is no incontrovertible evidence of retreat. Nor, however, is there in all this evidence of a willingness to advance further to a fully competitive regime.

VI. After Deregulation: the Surrounding Events

1. Introduction

The consequences of deregulation of ocean shipping have to be looked for in two directions: the development of the terms and quality of shipping services available to Chile's economy, and the condition of the country's shipping industry. Each of these, however, is overlaid by general economic developments in Chile or affecting Chile, and by the state of the international shipping industry from 1979 to 1987. Lastly, the shipping policy of other countries, especially those of South and Central America, has also affected the way in which Chile's shipping and the different participants in the activity adapted themselves to the change of regime.

2. The Economy and Foreign Trade²⁰

The year of deregulation, 1979, and the 18 months following were a period of high economic activity. The volume of exports reached a new high level in 1980. In that year, however, the deficit in the current account of the balance of payments rose by two-thirds: from US\$1.2 billion in 1979 to US\$2 billion. In the following year, 1981, the value of exports declined by 16 percent and while the Central Bank's quantum index of exports only dropped by 4 percent, the tonnage of dry cargo loaded in foreign trades declined by a full quarter (Table 3). The current account deficit rose to US\$4.7 billion. The decline of GNP by 16 percent in 1982 serves as the summary indicator of an economic and financial crisis that manifested itself in failures of major banks and businesses, and steeply rising unemployment. The decapitalization of large portions of Chile's private sector, including the private shipping enterprise, is reflected in the decline of the market capitalization, in U.S. dollars, of the stocks traded on the Santiago bourse (IFC 1988):

	<u>1980</u>	<u>1981</u>	<u>1983</u>
Number of listed companies	265	242	214
Market capitalization, US\$ mn	9,400	7,050	2,599
Exchange rate, peso/US\$	39	39	78.84

The crash of 1981-82 had external and internal causes, the former abetting the latter. The growth rate of output in the industrial countries declined during the late 1970s, revived mildly in 1980, but turned actually negative in 1982. The recession of the late 1970s thus lasted into the early 1980s. Interest rates in 1980-82 rose internationally to unprecedentedly high levels, with an immediate effect on the cost of new borrowing.

²⁰This account follows, selectively, the papers by Harberger (1983), Corbo (1983, 1985) and World Bank (1984, 1987).

The volume of world commodity trade stagnated in 1981. In 1982 it actually declined (by 2.5 percent), with the usual concomitant adverse effect on the terms of trade of primary producers. Chile's export price index, after a minor rise from 1979 to 1980, dropped a full 13 percent in the next year, and by 17 percent in 1982. The policies of the 1970s had opened Chile's economy to the point where exports accounted for 24 percent of GDP (1980). The downturn of world trade was therefore bound to have an immediate impact on the economy, on export producers and traders and on the shipping industry.

The internal cause of the collapse of 1981-82 is found in the combination of a fixed exchange rate (since June 1979) with a labor law that provided for the indexation of wage rates on past inflation. In 1979, the year in which the rate of the peso was fixed on the U.S. dollar, the Consumer Price Index rose 33 percent. It then rose 35 percent in 1980, and 20 percent in 1981, the year in which export prices declined by 13 percent. Wage costs were thus rising as external demand dropped off. With the large appreciation in the real exchange rate Chile suffered a heavy loss of competitiveness.

The effects of fixed exchange rate with backward indexation of wage rates were masked in 1981 and 1982 by large capital inflows, induced by the combination of high peso-rates of interest with a fixed nominal exchange rate and continuing domestic inflation. Interest rates on deposits varied from 45 percent in 1979, to 37.5 percent in 1980 and 41 percent in 1981; rates on loans during the 3 years were at least one quarter higher: 62, 47 and 52 percent respectively. Those who believed in the fixity of the exchange rate were thus induced to lend foreign funds to Chile's banks and enterprises, and the banks and enterprises had a strong incentive to borrow abroad since the nominal interest rate that satisfied foreign lenders translated into a much lower real rate -- negative in 1979 -- on account of domestic inflation. Chile's banks were prevented by law from assuming the exchange risk on onlent foreign funds, so that enterprises incurred debt denominated in foreign currency. In the later part of 1981, as the recession continued in the industrial countries and as the effects of fixed exchange rate combined with backward wage indexation made themselves starkly felt in the results of Chile's firms, the balance of payments went deeper into deficit and the capital flow reversed direction. The peso was devalued in June 1982. By then, much Chilean enterprise was near insolvency and unemployment was high (24 percent of the workforce at end-1982). There followed a banking crisis, affecting major banks as well as lesser financial institutions and necessitating government intervention. Private enterprise, shipping included, found itself encumbered with a sharply increased peso burden of debt denominated in dollars, adding to the pressure of high domestic costs, not to mention the effects on producers and traders of the crisis in the financial sector.

In June 1982 the peso was devalued from CH\$39 to CH\$46 to the U.S. dollar. Soon after, it was pegged to a basket of currencies, floated in August and then repegged to the U.S. dollar, the rate being adjusted daily in line with the differential between domestic and world inflation. Wage indexation was suspended in June 1982.

Throughout the years of crisis, and beyond the start of recovery in 1983, Chile persevered with an open-economy policy. There were only temporary retreats, when import taxes were raised to cope with a growing external deficit (and, incidentally, to replace state revenues eroded by falling copper prices). The promotion of exports and of market diversification formed major objectives of the policy that evolved from 1982 to 1985. Macroeconomic and exchange rate policy were framed with that intention; so were specific incentive measures (notably a program to promote forestry and forest product exports) and so was the country's shipping policy.

National production began to increase in 1983. By 1986, GDP had risen 13 percent without, however, recovering the level of 1981. Exports grew twice as fast: in GDP terms, by 23 percent over the period 1983 - 1986, or by over 30 percent in terms of the Central Bank's quantum index.²¹ The tonnage of goods loaded in foreign trade in 1985 exceeded the level of 1980, a year of booming exports, and was one-third above the tonnage of 1981 (Table 3). Export growth was accompanied by diversification of products and markets. The share of copper, 50 percent in 1978, was 41 percent in 1987. The export of fresh fruit rose rapidly; that of forestry products, with a substantially longer gestation period, rose somewhat but the increase in planted area (by some 70,000 ha per year between 1974 and 1986) promised great increases in supply. Market diversification is reflected in the doubling, between 1978-79 and 1986-87, of the share of initially minor or non-existent export destinations (Table 5).

3. World Shipping, 1979 - 1986

Cargo reservation as pursued by Chile until 1979 could not totally insulate the national shipping industry against developments in the world shipping economy. Even more rigorous systems, as practiced by other countries in South America or Asia could not accomplish this; certainly not without the risk of ever sharper conflict between users and suppliers, and between different objects of national policy. Deregulation in 1979 naturally raised the sensitivity of Chile's shipping sector to the state of international maritime transport.

The rise of oil prices in 1973-74 was followed in 1975 by a decline in the tonnage of world seaborne trade, practically without precedent in the post-War II years. It occurred in the transport of oil, of iron ore and the broad class of Other Cargos that covers everything other than crude oil, oil products, iron ore, coal and grain.²² In the preceding five years, tonnage had been growing at about seven percent annually. For the rest of the decade, after some recovery in 1976, it grew at less than one percent per year. A further setback came with the international trade recession of 1980-

²¹Laspeyre index, 1980 price-weighted. The index for 1980 was four percent higher than in the following year.

²²Fearnley 1986.

81 which lasted a full four years throughout which seaborne tonnage declined annually: cargo carried in 1983 was 17 percent below the tonnage of 1979. A slow recovery started in 1984 but total tonnage in 1986 had still not exceeded that of 1979 except in the class of Other Cargo.

The depression in demand for shipping which began in 1975 was not foreseen. On the contrary, throughout the 1960s rising demand had led, by the classic accelerator process, to annually increasing orders for new vessels. These duly emerged from the shipyards to add to excess capacity, initially in the tanker segment of the world merchant fleet, then in the readily substitutable class of oil/ore and ore/bulk/oil carriers, and soon after in the entire tramp segment. The excess was fed further by the major shipbuilding countries which subsidized ship sales to keep their yards employed. The deadweight tonnage of the world merchant fleet grew between 1973 and 1982 at an average annual rate of five percent and only began to decline in 1983. In the class of vessels most closely competitive with those owned by Chilean companies -- excluding oil tankers and ore and dry bulk carriers -- deadweight tonnage continued to grow between 1973 and 1984 at 3.7 percent per year and only started declining marginally in 1985. The liner segment of the world fleet was the last to be affected by large excess capacity. It arose ultimately as the consequence of large additions to container carrying capacity. By 1986, container slot capacity was estimated to have exceeded demand by 25 percent.²³

The concepts used in estimating excess capacity are often open to debate. Freight rates illustrate the situation of the freight markets less ambiguously (Table 16). Tramp charter rates (voyage charters) were highly volatile in the 1970s. The upswing at the end of the decade (the time of deregulation of Chile's shipping) was soon reversed. Rates in 1986 were lower than in 1973, while world inflation had been proceeding in the meantime at some 4 - 7 percent annually. (The United States index of producer prices rose over that period at 6.5 percent p.a. on average: altogether by 132 percent over the 13 years). The world movement of liner freight rates is more difficult to sum up because so many liner routes are cartelized. The only available index refers to Germany's ocean trades, outbound and inbound, and even after removing from it the effect of fluctuations in the DM-US dollar rate (columns A' and B' of Table 16) it is bound to be less representative of the average behavior of liner rates in different regions (such as the West Coast of South America) than the tramp charter indexes. Liner freight rates, moreover, refer to a different type of service, principally because liner rates, unlike tramp voyage charter rates, cover the cost of port handling of cargo ('liner terms'). But the movement of the German index until 1980 (columns A or A'), showing the liner segment to have enjoyed significantly better prices than tramps, is confirmed by the annual OECD surveys of the industry.²⁴ The next 3 years -- following immediately on Chile's deregulation measures of 1979 -- saw rate levels sliding. 1982 was reported to have witnessed the worst levels of financial performance that

²³OECD 1988.

²⁴OECD 1978, 1979.

a large number of liner companies throughout the world had ever experienced.²⁵ The index of rates facing German shippers only recovered somewhat in 1984. For those who kept their accounts in U.S. dollars (column B') significant recovery had to wait until 1986.

Table 16: Indices of Dry Cargo Tramp Charter Rates and Liner Freight Rates, 1973 - 1986

1980 = 100

Year	Dry Cargo Tramps Voyage Charter	Liner Freight Rates			
		Original series		Re-based on US dollar	
		A	B	A'	B'
1973	75	49		33	
1974	102	66		46	
1975	66	72		53	
1976	62	75		54	
1977	62	80		63	
1978	65	84		76	
1979	84	94		94	
1980	100	100	100	100	100
1981	87	110	115	89	93
1982	71	112	116	82	85
1983	76	112	120	80	86
1984	77		148		94
1985	74		156		96
1986	70		130		109

Sources and explanations: Dry Cargo Voyage Charter: Norwegian index, based on fixtures quoted in US Dollars. Norwegian Shipping News, also reproduced in UN Monthly Bulletin of Statistics. Liner freight rates: refers to ocean trades of Germany. Series A: sample of 940 rates, weighted according to relative importance of different cargos and routes in 1985, and quotes in different currencies. Index formed by combining the proportional changes in these rates. While the rates are not converted into a common currency, the omission of the Currency Adjustment Factor - a conference surcharge - effectively results in a series representing costs to German shipper. Series A' adjusts series A by dividing by an index of the DM/US\$ exchange rate. Series B: sample of 828 rates (108 commodities), including Currency Adjustment Factor and bunker surcharges, converted into DM. Weights: shares of commodities in total freight bill, inbound and outbound, 1980. Series B': since Series B represents again the cost in DM to German shipper (or his trading partner), the series is converted in the same way as Series A'. Statistisches Bundesamt, Preise und Preisindizes für Verkehrsleistungen. Fachserie 17 (Preise), Reihe 9. Also reproduced in Statistisches Bundesamt, Statistisches Jahrbuch für die Bundesrepublik Deutschland, and in OECD, Maritime Transport.

²⁵OECD 1982, p. 100.

4. Shipping Policy of Developing Countries

The combination of recession in international trade with shipping depression, the latter continuing well beyond the upturn of the world economy in 1984, evoked protectionist responses in many developing countries. Indonesia, Bangladesh, the Philippines and Sri Lanka in Asia, Nigeria and Tanzania in Africa enacted new cargo reservation laws between 1980 and 1985 or intensified existing policies for the protection of national shipping.

In the countries of Latin America, cargo reservation and other forms of maritime protection were common instruments of economic policy. Fleets that had grown behind such protective walls continued growing throughout the 1970s. The relative prices and even the absolute prices of new vessels were falling after 1975; those of second-hand tonnage fell faster and further, reflecting the decline in the present value of vessel operations as world trade was stagnating while excess capacity in each vessel class was rising. The countries that appeared as buyers in those markets were either those that relied on relatively low operating costs (such as China, with low wages) or those whose shipowners could rely on the enforcement and even the extension of cargo reservation. The fleets of Argentina, Brazil and México were thus growing until 1982-83 when the halt in world trade, falling export prices and the cessation of foreign lending forced growth to slow down. In the meantime, cargo reservation was spreading. México and Perú introduced new cargo reservation measures in the early 1980s; Argentina, Colombia and Venezuela each intensified the application of protective rules that already existed in law.

5. Liner Conferences and Cargo Reservation

The liner segment of the international shipping industry was not immune to the recession that spread out from the tanker and bulk carrier segments because operators of those vessels sought increasingly to make inroads into liner cargo. Added to those competitive pressures from the fringes were the incursions from 'state-owned fleets,' chiefly of the Soviet Union and East Germany that were alleged to operate on non-commercial principles. Lastly, containerization created new divisions within the liner industry according to ship types, and these, together with the high cost of fully containerized vessels made for coalitions (consortia) within and across established liner route-cartels. Nevertheless, during the first three or four years of the shipping recession, till 1978 or 1979, liner companies of the OECD countries, mostly organized in conferences, managed to make profits.²⁶

As the depression of trade and shipping continued into the 1980s, the position of conferences world-wide changed. Outsider competition became intense on major routes, including Australia and New Zealand and on the trans-Pacific and trans-Atlantic routes where major members withdrew from the

²⁶OECD 1978, p. 125.

conferences. All the evidence suggests that liner cartels lost much of their cohesion and power in the first half of the 1980s.

That impression does not, however, hold for the conferences serving Central and South America. The cargo reservation laws of the maritime protectionist policies of that region bolstered the position of the cartels, or at least sought to do so. México's cargo reservation measure of 1981 attempted, with varying degrees of success, to exclude outside competition with conference liners.²⁷ Argentina (by Resolution 619 of April 1986) reserved all export cargos to members of approved pools or conferences. Colombia reserved its cargo to its own company or associated lines and the licensing procedures by which the law is implemented tend to exclude non-conference lines. Venezuela's cargo reservation law confers 'associated lines' status on lines -- the conference lines -- that have pooling agreements with Venezuela's national lines. The cargo reservation laws of Perú similarly respect the shares allocated to Peruvian national lines under pooling agreements and in implementing the law, the tendency is to exclude outside competitors.²⁸

Cargo reservation policy in Central and South America (as elsewhere) thus relies on conferences as an efficient instrument for securing to national operators a share in inbound and outbound cargos and, especially, in shipping revenues. The efficiency of the instruments depends on the ability of conferences to suppress outside competition. When this ability to defend the territory is threatened by growing competition from independent lines and tramps, the defense of the national share dictates measures to protect the conference in its entirety. It was therefore perfectly logical for the conferences to have opposed Chile's deregulation measures of 1979.

²⁷OECD 1986.

²⁸OECD 1986.

VII. Chile's Shipping After Deregulation

1. Introduction

An account of the full sequel to Chile's liberalization of ocean shipping has to cover the experience of the country's shipping industry after 1979, and of the country's exporters and importers; the former being the intended direct beneficiaries of cargo reservation, and the latter, of deregulation. It should also include an evaluation of the policy change in economic rather than in commercial terms. That, however, is beyond the ambition of this note and requires more data than are readily available. It remains a challenging and attractive task.²⁹ The damage which this omission does to the economic significance of the available circumstantial evidence may, however, be less serious than it might have been but for the reform of Chile's customs tariff, exchange rate regime and public sector pricing, and the dismantling of controls and regulations that occurred in the 1970s and was continued after the setbacks of 1980-83. The broad program of economic reforms should have brought relative prices closer to efficient levels; except during the 3-1/2 years, starting with 1981, when the negative effects of a fixed exchange rate and the subsequent crisis distort the picture badly.

2. The National Merchant Fleet

One of the declared objectives of cargo reservation in Chile (as in other countries) was to promote the growth of a national merchant fleet, invariably interpreted, as being the national flag fleet. In those terms, Chile's merchant fleet in 1986-87 was of about the same deadweight tonnage as in the years immediately preceding deregulation (Table 17). The tonnage jumped in 1980 and declined thereafter to 1984. It has been growing since then, without, however, reaching the level of 1980.

²⁹We are not aware of any recent economic evaluation of the reform of Chile's foreign trade regime that would allow comparisons with Behrman's (1978) study of the system prevailing in 1968.

Table 17: NATIONAL MERCHANT FLEET OF CHILE ^{1/}
(1973 TO April 15, 1988)

YEAR	Chilean register and flag		Chartered with Option to Purchase		Chilean register with flag of convenience		Chilean owners, foreign register, and flag		TOTAL	
	UNITS	TWD	UNITS	TWD	UNITS	TWD	UNITS	TWD	UNITS	TWD
1973	53	518,758		25,525					53	544,282
1974	55	531,000		15,989					55	546,989
1975	57	585,000	5	154,870					62	739,870
1976	60	609,927	5	197,723					65	807,650
1977	59	621,442	6	259,771					65	881,213
1978	63	854,851	5	236,535					68	1,091,386
1979	64	765,031	5	232,805					69	997,836
1980	75	932,308	6	119,175					81	1,051,483
1981	69	791,214	4	90,188					73	881,402
1982	63	604,950	2	57,499	8	230,529	19	275,269	92	1,168,247
1983	67	750,747			6	140,833	18	274,885	91	1,166,465
1984	62	717,856			6	140,833	15	265,446	83	1,124,135
1985	65	817,776			4	61,229	14	236,570	83	1,115,575
1986	69	801,617					9	175,853	78	977,470
1987	70	801,578					9	174,751	79	976,329
1988 (15/4)	73	891,361					10	187,599	83	1,078,960

^{1/} After 1982, 'Chartered with option to purchase' is entered under 'Flag of Convenience' or 'Foreign Register and Foreign flag.' The latter category includes vessels under flag-of-convenience.

Source: D.T.M. Ministerio de Transportes
Data from: DGTM and Lloyd's Register

The ships counted in this way exclude tonnage that Chilean owners were in the process of purchasing under hire-purchase contracts ('Chartered with Option to Purchase', Table 17). Until 1982, these two categories make up the total merchant tonnage in Chilean ownership, as reported in Chile's statistics. From then on, however, one finds a substantial tonnage in Chilean ownership, some on Chile's register and some on foreign register, but all flying foreign flags. This wider category of tonnage essentially in Chilean ownership has also not changed much in size between 1978-79 and 1985-86, having reached a high point in 1982 and declining thereafter. But the flag composition of this aggregate underwent great changes, with large shifts between national and foreign flag throughout the 1980s. After 1979, the choice of flag was made on commercial considerations undistorted by the cargo reservation incentive to operate under the national flag.

3. The Shipping Companies

Even without the removal of cargo reservation, Chile's shipping industry was bound to suffer severely from the economic crisis of 1981-82 and the prolonged recession thereafter, with the renewed downturn of the international shipping markets after 1980 superimposed on the internal difficulties. It is therefore remarkable that this adverse constellation claimed only one casualty (Marchile, with a tonnage of 12000 dwt) among Chile's shipping companies.

All the 3 leading companies - Sudamericana, CCNI and EMPREMAR -- had to write down their capital after 1979 or 1982 (Table 10). For Sudamericana and CCNI, the year 1984, the turning point in Chile's economic and foreign trade performance, marked the return to profitability. Some of the loss of capital has been recovered, and the rates of return to total resources employed in the mid-1980s were of roughly the same order as reported for the year before deregulation, notwithstanding the persistently depressed state of the international freight market (Table 11). The progress in the financial performance of the state-owned EMPREMAR has been less steady, but it does not seem to have worsened by comparison with the years before deregulation (Tables 10, 11).

4. Survival and Recovery

Several factors proved helpful to the survival and recovery of the national shipping industry. Recovery was aided by the state's persistent export-oriented policy and the actual growth of foreign merchandise trade. Survival, on the other hand, was helped by developments external to the industry and by its own tactics and adaptation.

Important help to shipping resulted from the reform of ports and the port labor system in 1981.³⁰ The labor monopoly that had given rise to substantial rental incomes for registered port workers, was dissolved. Entry

³⁰Law 18.032 of 1981.

into the port labor force, shore workers and on-board stevedores, was freed, restrictive practices were ended and ports moved from working 1 shift to working 3. The reform was followed by a sharp rise in port productivity. In Valparaiso, average ship turn-round time was brought down from 3 days to 23 hours. Since the cost of working in ports on the average liner voyage amounts typically to 40 - 45 percent of voyage cost, all users of Chile's public ports benefitted. Chilean owners benefitted according to their share in the foreign trades. Competition between the lines, and between liners and tramps, will have channelled part of the saving to the users. But since liners are usually the more expensive vessels and more sensitive to the cost of cargo working than tramps or bulkers, their competitive position as a group should have been strengthened by improvements in port performance. In the foreign trades, Chilean companies operated liners as the mainstay of operations.

Lower port costs also benefitted coastal shipping where reservation continued within limits, though the earlier restrictions on itinerary, pricing and suspension of service had not survived the reform of 1979. Most Chilean companies, including all the major ones, operate in cabotage.³¹ The early revival of coastal tonnage, after a steep drop in 1981, was therefore helpful to the industry in the most critical years. The rise in port productivity was followed by growth of coastal shipping, particularly in the class of general cargo, typically liner cargoes, which is more dependent on port efficiency than bulk cargo (Table 14).

5. Adaptation

Deregulation had given Chile's shipping enterprise wider room for manoeuvre to cope with the adverse circumstances of the following years, and it was exploited vigorously. The restriction on selling vessels freely had been lifted. The removal of impediments to outflagging or, simply, of the disincentives to outflagging and to the chartering of foreign vessels on what the companies regarded as the optimum scale, will have been found even more useful. The crewing regulations for Chilean flag vessels had been stiffened in 1981.³² In Sudamericana's fleet of cargo carriers, the Maule, under Chile's flag, operated in 1983 with 14 officers and 22 crew while her sister-ship, the Malleco, under flag-of-convenience, was worked with 2 officers and 19 crew.³³ The wages of the large complements under Chile's flag were indexed on last-quarter inflation, while the exchange rate for the US dollar was fixed from June 1979 until June 1982 (at which point wage indexation also

³¹Of the 12 Chilean companies operating in foreign trades in 1985, 11 were also active in coastal shipping. Forty percent of EMPREMAR's cargo tonnage was coastal, 20 percent of Sudamericana's, 12 percent of CCNI's (Anuario, 1985.)

³²Law 18.011.

³³DGTM (1983). Each vessel was of the same size (15,862 dwt) and age.

ended). Outflagging was then an escape from high operating costs.³⁴ Foreign flag was also the condition for acquiring new vessels on credit. While the debt remained to be paid off, the rights of sellers and lenders were secured by placing the vessels notionally on charter to a foreign subsidiary of the Chilean buyer, thereby avoiding possible complications that might arise under Chile's laws. Among Latin American countries in the early 1980s, Chile was the largest user of foreign flags: 30.1 percent of gross tonnage in Chilean ownership, followed at a distance by México and Venezuela (23.6 and 20 percent respectively) and at a great distance by the fleets of the strictly regulating countries: Brazil (8.1 percent), Argentina (0.3 percent), and none in the fleets of Perú and Bolivia (Farrell-Gonzalez, 1984). CCNI had 66 percent of her tonnage under foreign flag, and Sudamericana, 46 percent. After June 1982 when the Peso was unpegged and backward indexation of wages was abandoned, wage rates declined to moderate levels.³⁵ Chilean owners thereupon reflagged some of their vessels. But in 1987, Sudamericana still operated 7 of her 15 vessels under Panamanian or Liberian flag; CCNI had 3 of her 8 ships under foreign flag, and the state-owned EMPREMAR, 2 out of 7 (Fairplay, 1987).

Structural adaptation in the leading companies involved changes in management, in the composition of their fleets and changes in operations.

Companies reduced their staff and brought new and often younger talent into managerial positions. There were significant changes in the technical as well as the age composition of Chile's merchant fleet after 1979. A rough indication of adaptation in terms of vessel types is the declining percentage of multi-deck general cargo vessels -- the archetypal liner ship -- in the national flag fleet (Table 7). The company fleets, whatever the flag of vessels, exhibit after 1979 a growing element of multi-purpose ships, combining container capacity with bulk or general cargo capacity, to match the growing directional imbalances in Chile's foreign trade. CCNI entered the decade with two such vessels, for bulk or container carriage, built in 1978 and 1979; EMPREMAR acquired two, built in 1982 and 1983, and Sudamericana, one large multipurpose container vessel built in 1984. More recent acquisitions consist of new fully containerized vessels: 1 has been added to Sudamericana's fleet (built 1984), and 2 to the fleet of CCNI (built 1982). A particular significant addition to Sudamericana's fleet were 2 large multipurpose reefer ships for the fruit trade (built 1987, 1988). (Fairplay, 1987; NYK, 1988.)

Renewal and technical changes in the companies' equipment went together with extensions of operations and changes in the type of services. In the rapidly developing export trade in fresh fruit, deregulation had caused Sudamericana's share to drop from 80 to some 20 percent. With new and

³⁴The inflation of the cost of operating under Chile's flag is documented by a comparison between two sets of sisterships in Sudamericana's fleet. Daily operating cost for a roll on roll off ship was raised by 41 percent, and for a bulk carrier, by 96 percent over the cost of operating the respective sisters sailing under Liberian flag. (Farrell-Gonzalez, 1984.)

³⁵In 1988, the typical salary of a master was US\$2,000 per month, and that a sailor, US\$200.

suitable vessels and strong competitive efforts, the company managed to raise its share to over one-third.

There has also been a marked extension of bulk or neo-bulk operations, with owned or chartered tonnage; of tramping or bulk-ship transport as distinct from conventional cargo liner service. This was undertaken independently by Chilean companies, as well as in liner conferences, in the course of the conferences' attempts to compete with outside transport of bulk or neo-bulk in full ship loads. Sudamericana, in the European conference, thus participated in its Residual Service, a euphemism for competitive transport of cargo in ship loads or in large lots on negotiated terms rather than at posted tariff rates. New services have been opened: Sudamericana to Asia and the Mediterranean, CCNI to South Africa, each in association with other lines. In coastal shipping, roll on-roll off services developed, followed by the first and highly successful appearance of multi-modal container transport, initially in a joint venture between EMPREMAR and a leading freight forwarder, and subsequently in a service organized by the freight forwarder and Sudamericana.

Lastly, after the withdrawal of the National Port Authority, EMPORCHI, from cargo operations in its ports, all the leading companies established their own cargo services in various ports.

6. The Competitive Factor

The regular services on all of Chile's main trade routes, outbound and inbound, are covered by conferences or freight agreements. Strong and aggressive conferences, it might be argued, would have reacted to the withdrawal of cargo reservation with a systematic attempt to appropriate the cargo in Chile's trades. They might have done so gradually to avoid government counteraction, even if Chilean companies had been in the conference: conference agreements and shares in pools can be renegotiated. On this view, the limited adverse impact of deregulation on Chile's shipping industry can be explained by a general weakening of conference power and control over the various routes. In that sense, deregulation came at about the right time.

The contrary view is that the impact of deregulation on Chile's companies was cushioned by the existence of the conferences and Chilean membership in them. Generalizing on this view, once cargo reservation has been effective in getting conferences to admit national companies to membership, it should be safe to deregulate, but not before. The job of protecting the share of national companies in the national trade would then simply have been transferred to the internal workings of effective cartels, operating their cargo or revenue pools, while the cost imposed on shippers and administrators by the procedures of the protective system can be saved. In that view also, deregulation in Chile came at the right time, but for different reasons.

Membership in conferences and inter-company accords, under government supervision, appears to have been most effective in protecting the business of Chile's shipping industry in the trades with South American countries. Most of those were subject to cargo reservation or other protective measures. Chile had, moreover, equipped herself with the means to protect her shipping industry against encroachments by protectionist measures adopted at the other end. The collisions that occurred with Colombia, Venezuela and Perú activated the Reciprocity Rule or the retaliation provisions in Chile's deregulation laws and were invariably resolved by the creation of conference-type inter-company agreements.

On the world's main ocean routes also, conferences continued to exist within the traditional framework. They continued to fight off outsider competition by all available means and functioned to share service and revenues among their members. The government of Chile, never openly hostile to the conference system, exerted efforts to harness the power of conferences to the interests of the state-owned shipping company when it assisted EMPREMAR in 1981 to enter the European conference, at the expense of Sudamericana's share in the European pool. That conferences had not relapsed into passivity was demonstrated vividly in 1987 when EMPREMAR withdrew its service to the East Coast of the United States. The company had operated as an outsider, charging freight rates some 10 percent below conference levels and its withdrawal was followed almost immediately by an increase in the conference rates on the route. When EMPREMAR re-entered the trade, induced by the promise of a substantial share of a large Chilean corporation's import cargo, conference rates were immediately lowered to their previous level.

But conferences can only protect the share of members in the conference's trade. Their share in the market depends on the success with which the conference defends itself against competition from outsiders, and from competing modes of ocean shipping. Outsider operations by large shipping enterprises, in competition with old-established, major conferences (on the Atlantic and US-Far East routes) became common in the late 1970s and the 1980s. Moreover, the large container consortia that had been formed acted ever more independently of the conferences to which their members belonged. A widely observed sequel to Chile's deregulation of ocean shipping was the great increase in transport by chartered vessels -- tramp or bulk ships. Some growth in non-liner transport of Chile's exports would have resulted, without any transfer between modes, from the growth in the volume of solid bulk cargoes in Chile's exports. But the fastest growth in the country's exports was in the categories of General and Refrigerated cargoes (Table 18). Each of these contains commodities that liner conferences traditionally regard as 'liner cargo' and strain to protect against the increasingly successful incursions by independent operators. Pulp and paper, timber and forestry products, steel and reefer cargoes are prominent in this class of cargoes over which conference control has been slipping during the past 15 years. What was observed in Chile points to a transfer of cargoes from conventional liner shipping, organized by conferences, to other modes of ocean transport. The analysis of Chile's exports to the United States by type of shipping service, in Part II of this note, confirms this conclusion. It shows a large transfer of refrigerated cargo from liners to tramps in the

years after deregulation, and a substitution of tramps for liners in dry cargo shipments.³⁶ What has been established for this trade agrees with reported developments on the world's main ocean routes.³⁷ But if the position of liner conferences has come under increasingly strong competitive pressure on the main trade routes, and in the carriage of commodities that are important in Chile's exports, then their power to protect the market share of their members will also have declined. By implication, therefore, the survival and recovery of Chile's shipping industry after deregulation owes rather more to the resilience and adaptive capacity of its constituent enterprises than those who warned against freeing the market had predicted.

Table 18: Chile's Ocean-borne Exports and Imports,
by Type of Cargo. Selected Years. 1/

(000 metric tons)

YEAR	EXPORTS/ IMPORTS	TYPE OF CARGO		
		GENERAL CARGO	REFRIGERATED	SOLID BULK
1978	Exports	2,930	285	7,109
	Imports	1,001	64	1,851
1979	Exports	3,285	291	7,038
	Imports	951	84	1,436
1983	Exports	3,829	451	6,317
	Imports	749	51	1,947
1985	Exports	4,282	634	7,558
	Imports	929	30	1,257
1986	Exports	4,619	776	7,902
	Imports	941	31	1,170

Source: IASA (1985) and DIRMAR

1/ Excludes trade through free zones.

³⁶Part II, Chapter II, 2 and 3, Table 5.

³⁷OECD, 1980; 1981, 1983.

7. Chile's Share

The targets of cargo reservation in favor of national flag carriers were stated in terms of shares of cargo quantities, but the ultimate aim was shares of freight revenue. Deregulation has defeated that objective. The freight revenue shares of national flag ships (enhanced by chartered tonnage within the permitted limits) fell after deregulation to about one-half of their anterior level (Table 19).

Table 19: Chile's Share of Freight Revenue

Revenue Share of:	Freight on Exports		Freight on Imports	
	National 1/ Flag %	National 2/ Companies %	National 1/ Flag %	National 2/ Companies %
1978	30		49	
1979	27		43	
1983	19	38	31	43
1984	13	31	18	54
1985	12	32	24	57
1986	12	30	20	49

Sources: Table 9, and Central Bank, Research Department.

1/ Excluding trade of Free Zones and military shipments, but including freight earned by chartered 'Reputed Chilean'.

2/ Total freight revenue earned by Chilean shipping companies.

But if one allows industrial promotion to mean, promotion of national enterprise, then the focus, in the mere matter of operating revenues, ought to move from revenues earned from national flag shipping to the revenues earned by national shipping firms.

Comprehensive data on the operating incomes of Chile's shipping companies are lacking for the years before deregulation. But if the incentives and disincentives created by cargo reservation were effective then the total shipping activity of the national companies should not have been very different, before deregulation, from national flag shipping activity as defined. Operating incomes on either definition should then also have been not too far apart. Not so, however, after deregulation when the possibility of profiting from cargo reservation no longer entered into the companies' decisions on flag, registry or operations with chartered foreign tonnage. In the shipping of Chile's exports after deregulation, the national companies earned about half of their revenues, and possibly more, from operations under

foreign flags, whether in their own or in chartered ships, or as intermediaries arranging carriage by foreign shipowners.³⁸

The data on freight revenue earned by national flag vessels omit shipments not controlled by Chile's Customs. This omission cannot possibly explain more than a small part of the wide gap between revenue shares of national flag, and of national company shipping (Table 19). Post-deregulation company shares may, therefore, be compared with the pre-deregulation revenue share of Chile's flag shipping: it is safe to assume that the shares on the two definitions, referring to different shipping regimes, measure roughly the same market shares. Many of the rules and exemptions provided by the cargo reservation system could not have been implemented unless company activities coincided substantially with flag activities as defined by the cargo reservation law. Proceeding on that basis it seems that the withdrawal of protection did not have much of a negative impact on the companies' share of national freight revenue.

8. Trade and Industry: The Shippers

Chile's exports of goods and non-factor services amounted to 21 percent of GDP in 1974, and to 31 percent in 1986. The export industries that had grown fastest and contributed most to the increase in the share of exports, sold their products in very competitive markets. Chile's exports of pulp, paper and other forestry products, of fresh fruit, vegetables, fish and simple manufactures compete with the products of other large producers most of whom are geographically closer to the main markets. High dependence on exports, except in abnormal situations, also entails high dependence on imports: Chile's imports in 1986 were equal to 27 percent of GDP. As a relatively minor buyer of most of the goods that she imports, Chile has not much influence over the prices at which she buys. But notwithstanding this high dependence on foreign trade, and competitive markets, ocean transport cost might still not have much of an effect on major economic variables -- on the level of output and employment, returns to investment and the cost of living -- if they were small relative to the f.o.b. values of exports and imports. That, however, is not the case (Table 20). International comparisons are possible only for the transport cost for imports, and then only for transport costs inclusive of insurance, relative to f.o.b. values of goods. (Johansen, 1988 (Table 42)). Even on that basis, Chile's 10.4 percent (excluding insurance) is about twice the level found for developed countries in 1986; close to the level for Sub-Saharan African coastal countries, but higher than the c.i.f./f.o.b. ratios in the imports of all other developing regions.

³⁸ Annex 2. The available data do not permit a similar calculation for earnings from the carriage of imports.

Table 20: Ocean Freight as a Percentage of Merchandise Value F.O.B. in Chile's Foreign Trade, 1986 (Customs data.)

(Values in US\$ 000, and percentages)

EXPORTS	Total Freight		Value f.o.b.	Freight/Value f.o.b.
	US\$ 000	%	US\$ 000	%
General cargo	184,126	39.0	2,436,506	7.6
Solid bulk	111,767	24.0	726,551	15.4
Liquid	3,863	1.0	25,364	15.2
Refrigerated	<u>171,973</u>	<u>36.0</u>	<u>448,855</u>	<u>38.3</u>
Total	471,729	100.0	3,637,276	13.0
IMPORTS				
General cargo	154,200	72.0	1,566,608	9.8
Solid bulk	14,262	7.0	118,331	12.1
Liquid	43,034	20.0	351,765	12.2
Refrigerated	<u>1,943</u>	<u>1.0</u>	<u>6,296</u>	<u>31.0</u>
Total	213,439	100.0	2,043,000	10.4

Source: DGTM (1987) from Customs data.

A decline in freight charges in Chile's trade, would therefore count as an important benefit of deregulation, if it could be attributed to it. One must then ask, why deregulation should have lowered the freight charges on Chile's trade?

Chile's law, till 1979, reserved cargo to national vessels subject to the condition that the rates charged would be no higher than those prevailing internationally, for similar transactions. If one assumes that this condition was not just enforceable but also enforced, and, further, that Chile's shipper were allowed free choice among types of vessel and service available at the time, then the cost of the system to trade and industry would have been reduced to the pure cost of regulation. It would then consist solely of the cost of being restricted, for one half-of one's shipping requirements, to ships, ship-types, service and service quality available in Chile's national merchant fleet as the law defined it: the cost of seeking exemption from the restriction and of having to use a less appropriate vessel or service than could have been obtained in the international market. These costs arise primarily in the exporter's or importer's own enterprise. They would not register in the freight rates paid for any particular vessel or service though there was obviously room for side

payments to get one's cargo onto the most suitable vessel in the national fleet. Once deregulation had allowed free choice among vessels, modes and services irrespective of nationality, shippers were free to select the most appropriate service or mode available in the wider set. This might, but need not, result in lower average freight cost per ton of Chile's trade (depending on whether the preferred foreign vessel or service was not just more appropriate in quality but that the type of service chosen was also cheaper than the vessel used under cargo reservation, both rated at world market levels). Freight rates would then only change, as a consequence of deregulation, if the type of service that lost the cargo lowers its charges for the transport to or from Chile. Unless offset by rising charges for the substitute mode, this competitive reaction would have reduced the average freight on Chile's trade.

In principle, this need not happen at all. Since cargo reservation segments the market and lowers the cost of supplying the reserved segment, competition among Chile's shipowners could have reduced their rates to Chile's traders below international levels and thus compensated them somewhat for having to incur the cost of an imperfect fit.³⁹ On the other hand, cargo reservation seems the ideal breeding ground for collusion among the national shipowners, to suppress competition, but there is no evidence of that in Chile, beyond collaboration within the same conference (e.g., Sudamericana and EMPREMAR).

Altogether, therefore, there is no strong reason for expecting the removal of cargo reservation of Chile's type to cause a significant drop in freight rates for individual commodities or indeed in the average freight charge per ton of aggregate trade. Such a development, however, becomes more likely when one considers the way in which the system worked in practice. Chile's liners supported and lent coherence to the conference system. They were in a position to prevent cargo from moving to lower-freighted modes. In the case of transport by tramp, when the competent authorities, upon appeal by Chilean shipowners, had to compare national and foreign quotations for tramp transport of Chilean cargo, there was room for leaning towards the Chilean bid.

An analysis of freight charges on Chile's exports to the United States does indeed suggest that liner rates declined more after deregulation than the rates on similar commodities from other origins.⁴⁰ Tramp charges, on the other hand, rose more because of the increasing volume of outbound shipments with no offset on the inbound trip. But the movement of average freight charges over time can only be linked to differences in the shipping regimes if one first eliminates any possible effects of differences in the commodity and mode-of-shipment composition of the trade flows. This can be done, first, by comparing the development of freight charges in Chile's trade and in the trade of the cargo-reserving countries of the East Coast of South

³⁹See Chapter 2, s. 7, above.

⁴⁰Part II, section 1 and Tables 1 and 6.

America, in terms of a base-year weighted index. One then finds that the charge per ton in a sample of Chile's exports to the US rose, between 1978 and 1986, by 2 percent. For the East Coast countries, however, over the same period and on similar exports, the index rose by 23 percent (when freight charges are weighted by East Coast quantities) or by 37 percent (weighting with Chile quantities). To complete the test, that the contrasting development of the two freight charge indexes cannot be attributed to differences in the commodity and mode-of-shipping composition of the two samples, one has to weight Chile's freight charges with East Coast weights. On that basis, Chile's freight index for 1986 (1978=100) declined by 17 percent, against a 23 percent rise for the East Coast. Next, one may compare the changes in the determinants of liner rate-making, in Chile's trade and in the trades of groups of other countries. Of the factors that enter rate-making, one finds costs gaining in importance after deregulation while the elasticity of demand for the service -- the basis of monopolistic pricing -- lost in significance. The gains from deregulation thus include not only free access to international shipping resources but also more competitive pricing of services.

The other component of the gain from deregulation arises directly from the lifting of the restrictions, legal or administrative, on the transport choices of exporters and importers. But it has to be sought in the reduction of costs internal to the trading enterprises and, moreover, in costs of operations that would not have been undertaken under cargo reservation; it is therefore easier to describe than to quantify.

Untrammelled access to the international shipping markets was crucial to Chile's exporters during the crisis years 1981-82. In the experience of fruit exporters, the quality of shipping service, including the speed of transit and timing of delivery, were a major determinant of the price that could be obtained in foreign markets.⁴¹ Quick and reliable service allowed operations with less working capital because inventories could be smaller and because exporting firms could obtain advance payment for exports from buyers who could rely on delivery of cargo in good shape and at the right time. (Arriagada, 1985). Without reefer capacity of good quality and at the right time, the massive growth in the exports of fruit and other fresh food would not have come about. Cargo reservation had impeded or prevented contracts with international shipping enterprises for regular service over a long period. Deregulation allowed the fruit exporting groups to charter direct in the international market with long-term commitments.⁴² Supply responded to demand and major international reefer ship pools opened offices in Chile. The forestry products industries also entered, immediately after deregulation, into long-term contractual commitments to international bulk services. Pulp shipments to Europe in specialist vessels could now be integrated with the bulk transport of fertilizer and raw materials from

⁴¹In the U.S. market for Chile's grapes where Chile's sales depend on been able to supply before American growers, the price at the start of the season declines by US\$1 per box per day, the average price declining 60 percent between the beginning and the end of January.

⁴²The SOL group with the Japanese Reefer Express, UNIMESA through international brokers.

Europe to Brazil: by the Gear Bulk consortium of French, Norwegian and British bulkship owners which had been shipping to Brazil since the early 1970s. (Drewry, 1974). No such arrangement would have been possible under cargo reservation because the quantity of cargo necessary to attract the carriers could not have been committed. Freedom to choose resulted in lower rates and savings in inventory costs. When shipments were no longer assigned to flag and access to the international charter markets was freed it also became easier for exporters and importers of different commodities to charter jointly: exporters of fishmeal with importers of fertilizer, and importers of wheat, fertilizer and sugar with exporters of forest products, nitrates and fishmeal. Lastly, freedom from flag discrimination opened the possibility for tactical moves by exporters and importers to force a lowering of conference freight rates: by using, or by credible threats to use, "outsiders" or to combine with other exporters to organize their own regular service. Several successful moves of that kind were made by major trading interests.

The overall visible result has been a substantial increase in transport by chartered vessels, often in the form of regular bulk or tramp services under contract to Chilean traders, and a consequent decline in the cost of shipping exports and imports; also a transfer of cargo from liner services to the competing modes of ocean transport, and a decline in liner freight rates specific to Chile's trades. Less visible but stressed by industrialists and traders as a major consequence of deregulation has been the reduction of the costs, internal to the business, of getting access to adequate shipping service, of inventories, of entering new markets and maintaining old ones when prices fall.

VIII. Overview, and Conclusions

1. Background, and the Relevance of Chile's Experience

In 1956, Chile introduced a system of cargo reservation in coastal and external shipping. In 1979, that system was dismantled, almost wholly in respect of external shipping and partly in cabotage. In both its rules and the methods of implementation, Chile's system of 1956 was similar to what other developing countries, in Latin America and elsewhere, have instituted and still retain. What was and remains distinctly unusual, were the fact and form of abolition (or 'deregulation') in 1979. The question arises, therefore, whether Chile's policy and experience were conditioned by unique circumstances or whether they have wider relevance?

In most aspects relevant to the situation of coastal and foreign shipping, and to shipping policy, Chile is representative of a variety of other developing countries. Her geographic position at a great distance from the world's main markets and moreover in a region of relatively light ocean traffic, make for relatively high ocean transport costs. Competition among carriers is weak in such circumstances, and the market power of traditional liner cartels is correspondingly strong. For other countries, the causation may be different but the results are similar. Her national merchant fleet is similar in tonnage to that of other middle-size maritime developing countries (say, Colombia, or Malaysia) and the national shipping industry includes a small number of well established firms, one state-owned and another that ranks among Chile's 20 largest non-financial corporations in asset terms.

Like other countries that pursued policies of import substitution, supported by controls of foreign trade, foreign exchanges and internal prices, Chile's exports till the early 1970s were highly concentrated in terms of commodities and markets. Copper, nitrates and iodine, and iron ore made up 80-90 percent of export value. Copper moved in liners, nitrates and iodine partly in liners but largely in tramps, and iron ore in bulk carriers. The dominant exports were controlled by a small number of corporations who could make their voices heard to the government and hold their own in negotiations with liner conferences or in the international charter markets. The break in policy came with the change of government, in September, 1973. Controls were removed gradually but consistently throughout the 1970s, the economy was opened to the world markets and exports were relied on to stimulate recovery and promote growth. Success on these lines was contingent on an expansion and diversification of export products and markets, the more so because the external conditions were not helpful. Copper prices in constant US dollars had attained a historic peak in 1970, or, in current money, in 1974; then fell and continued falling till 1978, and then rose steeply for 2 years, before resuming their downward trend. The terms of trade were deteriorating throughout most of the 1970s and beyond. Growth of national income has therefore been slow, but the government persisted in its

open economy policy. The results are reflected in the share of exports in GDP: 15 percent in 1973; 23 percent in 1979, and 31 percent in 1986.

Chile is not, therefore, a special case in terms of her shipping situation and her national shipping industry, in her economic structure, in the external conditions that affected her trade and in the declining markets for her main traditional export, nor in the turn of policy from import substitution to export orientation. What is unusual is the persistent and systematic manner in which open-economy policies have been pursued, extending them to the country's ocean transport and the national shipping industry.

2. Cargo Reservation and Consequences

The law of 1956 reserved all of coastal shipping to Chile's national vessels, and 50 percent of foreign trade cargoes, separately within each category of cargo and separately in exports and imports.

National vessels were vessels registered in Chile, which presupposed 75 percent Chilean ownership, and flying Chile's flag, which presupposes registration as well as a Chilean crew and compliance with prescribed manning scales.⁴³

To supplement their fleet, national companies were permitted to charter foreign vessels up to 50 percent of their own tonnage and operate them as national vessels, provided that the chartered vessels did not belong to Chilean owners.

The profits of national shipping enterprise were taxed at concessionary rates, but the resulting savings as well as 13 percent of profits, tax exempt, were to be allocated to a capital construction fund. The free sale of national vessels was prohibited.

To protect trade and industry -- the shippers -- rates charged for the transport of reserved cargo were not to exceed the levels prevailing internationally. For liner transport, this limitation came soon to mean, the rates posted by the liner conferences. For other modes -- tramps and bulkers -- the rates were to be those established for comparable operations in the competitive international markets: difficult to determine in individual cases.

The 1956 measure had multiple objectives. It was to protect the national merchant marine by the imposition of a quota -- in fact, a value quota -- but to do so at minimum cost to the country's exporters and importers. It was to assist the entry of Chile's shipping enterprise into territory dominated by the international liner conferences, and it was carefully designed to lead to the growth of a merchant fleet owned and manned by Chileans, and under Chile's flag. The combination of objectives is not

⁴³Registration is thus a necessary but not sufficient condition for flag. Exceptionally, a vessel on Chile's register could be permitted to fly a foreign flag. (Cf. Law 12.041 of 1956, Art. 3, and the Navigation Act, Law 2.222 of 1978, Arts. 3, 9, 12, 13, and 14.)

uncommon; it is familiar from United States legislation. It had the backing of the navy, because national ships can be commandeered in emergencies and all maritime personnel are automatically members of the naval reserve,⁴⁴ and of labor because employment on national vessels is reserved to nationals.

Chile's national merchant fleet did indeed grow substantially. Its total tonnage doubled between 1965 and 1979, not as fast as world tonnage but faster than world tonnage of the category of general cargo vessels which continued to form the bulk of the fleet of Chile as of other developing countries.⁴⁵ Chile's share of export tonnage at the end of the 1970s was about 20 percent, and of export freight revenue, about 30 percent. In imports, the cargo share was higher, at 47 percent, and in the associated freight revenue, 45 percent. In the carriage of general cargo, essentially in liner transport which was the mainstay of the national companies' operations, the tonnage share was about 40 percent in both exports and imports. The companies, however, which had acquired the tonnage and provided those shares in external transport, appear to have been only modestly profitable at the end of the 1970s. The financial rates of return on total resources employed by the two leading private companies in 1979 (a year of strong cargo movements and an improved international freight market) were 11 and 8 percent; the state-owned company made a loss. It is thus not clear how much benefit the enterprises derived from the protective system which imposed on them labor costs well above the levels of foreign shipping industries.

The impact that Chile's regulation of shipping was capable of exerting on exporters and importers was determined by the 50 percent rule itself and, second, by the method of application. Chile's trade routes were covered by liner cartels and the national companies joined them when they could or else priced their services according to the conference tariffs. With half the trade reserved to Chile's flag, not enough was left of the market to attract independent carriers who might have established regular services in competition with the conferences, nor would such competitive entry have been in the interest of Chile's shipping companies. The scope for external competition was further narrowed by the way in which the law was applied: by assigning individual shipments to either national or foreign flag. The assignment was difficult to predict by the shipper, and exemption depended on the issue of waivers by each of the national companies that operated on the route in question. Liner conferences pool cargo and revenues. A Chilean conference member, when asked to issue a waiver because it had no ship available to take the cargo, could therefore not be indifferent to the competitive status of the ship that the shipper was proposing to use. It would readily waive its rights in favor of another conference member but would be less cooperative when the ready vessel was an independent competitor. Further, when non-liner shipping seemed appropriate for the cargo, there was the possibility of conflict with the conference (or

⁴⁴Decree Law 2.222 (1978), Art. 98.

⁴⁵World tonnage of general cargo vessels -- tramps but mainly liner-type ships -- rose by about 50 percent.

with Chilean companies outside the conference but applying the conference tariff) over whether the cargo was not really 'liner cargo'. Even when there could be no disagreement on the point, the assigning procedure prevented shippers from contracting with foreign shipowners or bulkship consortia for the regular transport of their products simply because they could not be certain that they would be allowed to load the cargo on those ships. Moreover, the provision that Chilean national carriers should not charge more for their service than was charged internationally for similar service left ample room for dispute and delays.

On the evidence of the 1970s, Chile's traditional exports and imports were not noticeably affected by the regulations. They were either exempt from the restrictions, or else, were powerful enough to protect their interests, or they had adapted to the system in terms of the quantities and destinations of their exports. It was the new or the expanding exports that felt the impact of cargo reservation. Fresh fruit, fish, pulp and paper, fishmeal and simple manufactures sought connections with new markets and had to establish themselves there by prompt delivery of goods in good state. The technical quality of vessels and service that was demanded by some of the new commodity flows was not available in Chile's fleet. Exporters found access to available foreign bulk shipping services blocked by the obligation to give half their annual cargo to Chilean vessels, as well as by the assignment method.

An expansion of exports is the most obvious condition for the success of a policy that lets so much depend on opening the economy. Experience after 1973 showed plainly that this expansion had to come from new export industries, or new markets for established products. By 1979 it was clear that impediments to such new ventures had to be moved out of the way if the momentum of the new export flows was to be maintained. While the low productivity of Chile's public ports was generally seen as the country's main shipping problem, and could indeed be blamed for the continuing decline of coastal shipping, negotiations for port reform had been going on since 1974 and by 1979 were still not in sight of an end. Deregulation of shipping was therefore undertaken first, as a necessary adjunct to the general policy of opening the economy.

3. Deregulation

The law of 1979 abolished cargo reservation totally in the external trades, except with countries that reserved cargo for their own ships. In those trades, Chile reserves the same share for national vessels that the other party are reserving for theirs. The trade affected in this way by the principle of Reciprocity amounted in the early 1980s to somewhat less than one-quarter of Chile's total trade. In practice, till 1985, Chile allowed the ships of all freely trading countries to compete freely for what was theoretically reserved to the Chilean flag. In 1985 there was a partial retreat from this fully competitive system in that cargo notionally reserved to Chile's flag under the Reciprocity principle became so in reality.

Cargo reservation in coastal shipping was substantially relaxed. Cargoes above 5000 t could be put to public tender, open to all flags; for lesser volumes private quotations could be obtained from any flag. In each case the lowest bid or quotation could be accepted, with preference to Chilean national ships in cases of equal bids or offers. This measure also underwent change in 1985, signifying again a certain retreat into a more protectionist regime. Shipments of 900 tons or less were reserved totally to Chilean national vessels, presumably to protect Chile's operators in the transport of general cargo which was reviving strongly after the reform of the ports in 1982. Larger shipments were open to international competition, subject to preference margins and taxes that thus acted like import duties, replacing the original quantitative restriction.

The totality of these measures amounts to a more thorough liberalization of shipping than has been undertaken by other countries that practiced cargo reservation. The partial retreat from the line drawn in 1979, and the redrawing of the line in the cabotage regime suggests that reform was not driven by doctrine but by the quite pragmatic considerations of the wider costs and benefits of protection. There was also an element of caution in shipping policy: Chile signed the UNCTAD Code of Conduct for Liner Conferences which prescribes the division of conference line cargo or revenue between the companies of importing and exporting country and third countries in the proportion 40:40:20; but it did not ratify it. Chile's Reciprocity principle is not compatible with the code. Nor has the government encouraged competition with the liner cartels; in 1981, after economic conditions had turned severely adverse and Chile's companies were making losses, it helped the state-owned company into the European cartel, wholly at the expense of the existing Chilean member. Competitive undermining of the cartels in trade with Chile did follow on the reform, but only as an indirect result.

4. After Deregulation

The years after deregulation put Chile's shipping industry to a harsh test. The international shipping depression which started in 1974 resulted in growing excess capacity and falling rate levels till the end of the decade. After a revival at the turn of the decade, rate levels started to slide again and continued sliding for 3 years. The severest test, however, came with the decline of Chile's economy into deep recession. The 18 months after the deregulation of shipping were a period of high activity in the economy and foreign trade. Trade volumes and values dropped sharply in 1981, followed in early 1982 by a financial crisis and a deepening of the recession: GNP in 1982 fell by 16 percent. By 1983-84 which marked the beginning of slow recovery, Chile's shipping companies, like other corporate enterprise, had lost a substantial part of their capital.

The export industries reacted immediately to the new freedom in shipping, searching the international markets for the most economical way of transport to established and new destinations. Free access to service modes, quality, itinerary and timing of transport irrespective of flag became particularly important during the years of crisis and recession. The

government persevered, with only temporary retreats, in an open-economy policy. The growth of exports that could make up for steadily failing revenues from copper and iron ore was indeed essential for success. But from 1979 to 1982, the incentives to export were severely eroded by the combination of a fixed exchange rate, high inflation and backward indexation of wages. Some of the major new exports face unavoidably high ocean transport costs: for fresh fruit and fish, pulp, paper and other forestry product this amounts normally to between 15 and 25 percent of the price in the foreign market. In those circumstances, unhindered access to the most reliable and economic transport available was essential for exporters who were trying to retain their markets or gain new ones.

The full result of the response of trade and industry to the removal of cargo reservation was of two kinds: direct and indirect. The direct result is reflected in a large switch, quickly accomplished, between ocean transport modes. In Chile's exports to the United States the results can be quantified. The substitution of tramps or bulk vessels for liners went furthest in the shipping of refrigerated cargo: the share of liners dropped from 40 percent in 1978 to 4 percent in 1986. Substitution was also substantial in dry cargoes that move in loads large enough to fill a substantial part of a tramp or the smaller bulker: pulp, paper, other wood products, fishmeal or nitrates. On that and other routes, exporters chartered direct in the international market or entered into contracts with international bulkship pools. Different exporters now consolidate their individual shipments and charter jointly, or integrate their shipments into trade flows from or to other regional countries. The indirect effect, however, was to induce more competitive behavior on the part of the liner conferences and liner services that followed their pricing lead. As shipments switched from liners to tramps or bulk services and when Chilean conference members could no longer inhibit competition by working the levers of cargo reservation, conference pricing in Chile's trades became more competitive. More room was given to service on negotiated terms, and cargoes that had formerly been in contention between conferences and tramps were offered transport by competitively priced conference bulk services.

Judging from the statements of exporters and importers, the largest benefit to Chile's trade resulted from the removal of restrictions on the choice of ocean carrier and service. But the savings from this direct effect of deregulation are distributed over a great variety of functions and activities and therefore difficult to quantify. The indirect effect, on the other hand, working through increased competition between carriers, should express itself in the freight charges relative to those in the foreign trade of other countries which continue to operate cargo reservation. An analysis of the determinants of liner freight charges in U.S. imports shows that liner rate-making in Chile's trade became more competitive after deregulation than in the export of similar commodities from the East Coast of South America where cargo reservation continued to rule. An alternative way of tracking down the indirect effect of deregulation, in the same sample of exports to the U.S., is to compare the percentage changes of freight charges from Chile and from the East Coast of South America for the same list of exports:

**Average Freight Charges per Ton, 1986:
20 Commodities Imported by the U.S.**

(Laspeyre index)

<u>Weights:</u>	<u>From:</u>	1978 = 100	
		Chile	East Coast South America
1. Each origin's cargo quantities and modal distribution as in 1978		102	123
2. Chile's cargo quantities and modal distribution as in 1978		102	137
3. E. Coast of S. America cargo quantities and modal distribution as in 1978		82	123

Source of data: Part II.

Chile's freight charges index in this trade rose by 2 percent. Had charges followed the same path as those paid by exporters on the East Coast of South America, the increase would have been between 23 and 37 percent, depending on the responsiveness of freight charges to differences in the relative quantities within these baskets of identical commodities: essentially, on whether the charge per ton is lowered as quantity rises. (The third line in the panel, weighting freight charge changes with East Coast relative quantities and modal mix of 1978, confirms that the faster rise in the East Coast index cannot be explained by differences in the base-year composition of the two samples. The residual explanation is then the difference in shipping regimes and its consequences.) We estimate, therefore, that deregulation was associated, 6 years after the event, with a saving of some 22 - 25 percent of the freight bill on Chile's exports to the U.S. This is also likely to have been the order of the general indirect effect of deregulation, via a more competitive supply of ocean transport.

A higher freight bill would of course have raised the operating revenue of Chile's shipping companies. For a rough idea of the order of losses and gains involved, assume that freight charges in 1986 had been raised by 10 percent across the board, on imports and exports, with no change in the cost of supplying shipping service. The freight bill on the country's exports and imports would have risen by US\$90 mn while Chile's shipping companies would have added US\$34 mn to their gross profits. Assume, however, that Chile's companies had decided not to follow such a general increase in freight charges, had therefore kept their prices constant and had in consequence managed to raise their share of aggregate freight revenue (from an unchanged national tonnage of exports plus imports) by one-half, from 38 to 57 percent. If the ratio of the companies' operating and sales expenses to their operating revenue was on average equal to 0.89, as reported in 1986 by Sudamericana, Chile's leading shipping company, then the result would have been to add US\$16 mn to the gross operating incomes of Chile's companies, but

US\$38 mn to the aggregate freight bill for Chile's exports and imports. This back-of-the-envelope calculation shows that in any plausible circumstances, relevant to Chile in the 1970s and 1980s, only competition among the foreign suppliers of shipping services can restrain prices sufficiently to yield net gains to the economy. Chile's cargo reservation scheme, like that of other countries, did nothing to stimulate such competition; if anything, it had the contrary effect. Deregulation provoked such external competition, with effects that are reflected in the development of Chile's freight charges relative to those of her cargo reserving competitors.

The speed and scale of the response of Chile's producers and traders to deregulation testify to the restrictiveness of the system that was withdrawn in 1979. Since the restriction had been intended for the protection and promotion of the national shipping industry, it is the experience of that industry when deprived of protection that seems the most noteworthy chapter in Chile's experience with deregulation of shipping.

Among the firms that made up the industry, deregulation and the consequences of economic crisis and recession appear to have caused only one clear casualty. It seems, in addition, to have motivated some mergers. But there were also additions: the official list of shipowners listed 19 firms in 1980, 23 in 1986. The leading firms lost part of their capital in the years of crisis but by 1986 much of the loss had been recovered. After two years of negative results, the two leading private companies are earning returns on total resources of the same order as on the eve of deregulation.

The survival of the enterprises owes something to events outside their own sphere. Exports rose again strongly from 1984 onwards. Operating costs in Chile's trades were reduced by the drastic reform of ports and the resulting increase in port productivity. Important help came also from the growth of coastal shipping, to be attributed in part to the improvements in the public ports, but for the rest to the industry's own efforts.

An immediate response to deregulation and the disappearance of the incentives to operate under Chile's flag was outflagging on a large scale. By 1983, some 30 percent of Chile's merchant tonnage was under foreign flag, the obvious escape from the high cost of manning rules and wage levels. In the next stage, with better access to finance, the quality of the companies' fleets was adapted by bringing in new or young ships and by adapting the technical composition of the fleets to what the market seemed to indicate: more bulk carrying capacity in multipurpose vessels, container capacity and, especially, reefer ships. All the leading firms became more active in providing bulk services, in chartering vessels for operations under their own control or in chartering on behalf of customers. All entered into port cargo operations. New services were inaugurated. Management in several firms was reformed and entrusted to new executives.

There is little doubt that membership in conferences or inter-company agreements protected the revenues of Chile's shipping companies in the Latin American internal trades. In the main inter-regional trades,

however, the market shares of liner conferences were being eroded by defections, by the growth of independent operations for the transport of traditional liner cargoes in quasi-bulk form, and the growing independence of container consortia. To suggest conference membership as a major reason for the survival and recovery of Chile's shipping companies is to do less than justice to the vitality and adaptability of the firms as they emerged after deregulation and the economic crisis of the following years.

Protection of the national shipping industry is not, however, an accurate description of the overt objective of Chile's cargo reservation law, nor a full one of the presumed ultimate aims. Cargo was exclusively reserved for ships owned by Chileans and flying Chile's flag (enhanced by a limited volume of chartered foreign flag tonnage, provided it was not owned by Chileans). Overtly, the object was to build up a merchant fleet owned and operated by Chileans. Underlying this was a "naval" objective, and an economic one. Deregulation did nothing to further the naval objective, of increasing the tonnage under Chile's flag and manned by Chileans: national tonnage in this sense was about the same in 1986 as in 1979, and rather less than in 1980 (when ships under contract of purchase were finally paid for and added to the fleet). The question is then, whether deregulation conflicted also with the objective of promoting the national shipping industry, at minimum cost to Chile's trade and industry? The mechanisms in the regulatory apparatus that were to protect users against monopolistic exploitation by the sheltered shipping companies were obviously failing in the 1970s, in relation to the new export flows, and they missed their purpose in ways not foreseen by the authors of the protective system. In that respect, it was regulation that had failed. The positive economic objective, to promote the national shipping industry, was framed in terms of target shares of national flag vessels in export and import freight. In those terms, deregulation defeated the economic objective: by 1985-86, Chile's flag share of export freight had dropped by two-thirds, and of import freight, by one-half, below the levels of 1978-79.

By the mid-1980s, however, Chile's companies were earning no less than 40 - 50 percent of their freight revenues from operating under foreign flags, whether in vessels owned by Chilean companies or chartered by them for their own or their customers' use. The aggregate share of Chile's national companies in freight revenue from Chile's exports and imports after deregulation was, if anything, somewhat higher than the revenue share of the national flag had been before deregulation.⁴⁶ Under cargo reservation, however, the share of the national companies should not have been very different from the share of the national flag. If that is a valid assumption, it follows from the data that deregulation did not significantly affect the revenue share of Chile's shipping companies. If an industrial promotion objective has to be stated in terms of market shares, the natural focus would be the share of the national companies. In that sense, deregulation seems to have done not much worse, or no worse, for the shipping

⁴⁶The national flag share, in this calculation, includes revenues earned from chartered vessels within the legal limit of 50 percent of owned tonnage that Chilean companies could employ like national vessels, in cabotage or the remaining trades.

industry than cargo reservation had done, and at a substantial saving to trade and industry.

5. Some General Conclusions

Chile's experience suggests certain conclusions of general relevance to the regulation and deregulation of ocean transport:

- (i) Governments do not ordinarily legislate protective measures against the interests of important existing groups of producers. Chile's cargo reservation rules of 1956 did not conflict in any critical way with the interests and needs of the main exporting and importing, industries of that period. (Nitrates, which might have been hurt, were explicitly exempted from compliance with cargo reservation). Minor exporting interests, on the other hand, tend to get overlooked and new entrants into the production of tradables have to fight their way across the obstacles of the protective system. The costs of the system fall on new initiatives but only attract attention and cause concern when traditional exports get into difficulties or new export industries, having surmounted the transport barriers erected by the system, take a visible place in the foreign trade accounts. Cargo reservation acts like a tax on new enterprise, and the costs tend to get counted too late.

- (ii) Immediately after deregulation, Chile's exporters and importers transferred large portions of their cargo from customary to alternative modes: from liners to chartered vessels or alternative bulk services, much of it to be carried by foreign companies. By that time, however, Chile's own companies already had considerable experience in chartering and in operating with bulk or tramp vessels. They also owned or controlled vessels appropriate for such operations and were seeking in the 1970s to adapt themselves to the new demands. But the dimension of the transfer of cargo between modes and flags after deregulation indicates the inadequacy of local resources. Protected industries, even one as vigorous as Chile's shipping industry, do not on the whole adapt very fast to demand changes, nor can a national fleet of medium size possibly reproduce the variety of technical resources available internationally. In a restricted market it is difficult to obtain a reliable idea of what kind of transport service local exporters and importers find optimal for their trades, at given prices of their products and inputs, and within the range of operational technology. The broad conclusion from Chile's experience is that the real cost of protection is not easily ascertainable and certainly not predictable, even within broad limits.

- (iii) The side effects of cargo reservation, as of other forms of protection, are difficult to foresee and difficult to control. Provisions intended to minimize or limit the cost of the regulations to transport users are therefore likely to fail in their purpose. A side effect of Chile's cargo reservation rule and the way in which it was administered was to suppress competition among foreign ocean carriers even though that should have been in the interest of the country and its industries. It had the effect of strengthening the hold of liner cartels over Chile's trade, for longer than might otherwise have been the case, and to reinforce the internal cohesion of the cartels. Once the restrictions had been lifted, competition among foreign suppliers of ocean transport caused Chile's freight rates to fall significantly relative to those facing her competitors in international trade who continued to protect their shipping.
- (iv) Cargo reservation, in Chile as elsewhere, is intended and designed to protect national flag shipping, not the total operations of national shipping enterprise in the transport of national exports and imports. Two explanations are available for this common feature. First, government intended by this means to retain full control over the beneficiaries from protection and their use of the proceeds. What is normally to be assured in the way of resource use is investment in ships and the growth in nationally owned fleets of ships. Second, protection of national enterprise by the imposition of quotas on the import of shipping service is more readily accepted by other states and by the international liner cartels if it is limited in this way. Organized labor also approves because use of flag normally requires the employment of nationals. As a consequence, the volume of shipping entitled to protection is less than what national shipping companies could provide to their customers by recourse to chartering and contracting with alternative shipping modes available in the international markets. The cost to users who have to comply with cargo reservation is raised correspondingly, and in the various ways that appear from the study of Chile's experience. Looked at merely as a measure to promote industrial development, cargo reservation thus appears inefficient, and even less justifiable as an economic policy than standard quota method of protecting industrial production.
- (v) A distinctive characteristic which shipping shares with air transport but with few other industries is that its productive equipment, in the shape of ships of all kinds, qualities and technologies, can be leased or chartered in a highly competitive international market, on a great variety of terms. Cargo reservation systems, however, typically require the protected operations to be carried out with the

operators' own vessels. This condition is normally already implicit in restricting protection to national flag vessels, since flag is conditional on the ship being registered in the country and registering usually requires national ownership of the total equity or a large proportion of it. Chile, like other regulating countries, reinforced the incentive for national ownership by restricting the national companies in the chartered foreign tonnage that they could employ in carrying reserved cargo. For the mere purpose of industrial development, however, the acquisition of capital assets, where they are not essential for carrying on the business, seems less important than acquisition of experience and contacts in the domestic and the world markets through which shipping services are traded. It is those skills that have made for success in international transport services. The reasons for requiring operation with owned tonnage are similar to those for limiting the protection of cargo reservation to national flag operations. The naval interest argues for this requirement, and so does the belief that only commitment to high fixed costs guarantees serious commitment to the activity. Lastly, the rules of international liner conferences require members to operate principally with their own vessels. But liner conferences have an interest in raising the financial scale for entry into ocean shipping while industrial policy should aim at lowering barriers to entry. Nor is good choice of investment guaranteed by these rules. If investment is to be encouraged, there exist more neutral methods. The decision on what to own and what to lease is best made on the technical and commercial judgement of operators. Hazarding a guess, a neutral policy for the promotion of Chile's shipping enterprise would in all probability have resulted in a different composition of Chile's owned fleet than what emerged in 1979, with more reefer and tramp or small bulk ship capacity and fewer conventional liner-type ships.

ANNEX I

The Freight Rate Effect of Cargo Reservation

1. A point made in defence of Chile's cargo reservation policy was that freight rates did not rise after the regulation was put into force. The facts are not easy to establish without ambiguity. Assuming, however, that rates 'did not rise' (say, relative to rates on similar routes) the question remains, what is to be inferred from this stability?

2. Since Chile's law decreed that rates charged for the transport of reserved cargo may not exceed the prevailing levels -- for liner cargo, therefore, that they may not exceed liner conference tariffs -- rates could only have risen if the conferences had raised their tariffs. But if the conferences had priced optimally (as cartels), before cargo reservation was instituted, they would only have had reason to raise their tariff if (a) Chilean companies had joined the conference, and (b) if the costs of the Chilean companies had been above, say, the cost of the mean conference member, or (c) if the Chilean companies, with costs equal to those of the conference, had competed with the conference prior to cargo reservation (or, simply, before entering the conference).¹

3. On the other hand, had Chile's companies entered the market competitively, rates should have declined rather than risen, even if Chilean costs had been substantially above those of the conference. The point is demonstrated below, on a number of simplifying assumptions:

- (i) that the conference behaves like a passive monopolist, which is a reasonable assumption in the circumstances of the case, and
- (ii) that the total tonnage of Chile's cargo remains the same each year so that the reserved 50 percent can be represented by a certain tonnage.

The assumptions do not detract from the generality of the argument. An exception to the proposition stated at the beginning of this paragraph is mentioned at the end of this note.

4. Cargo reservation results in certain cost savings for the protected companies (see III.7 of the main text). In Fig. 1, Chile's shipping service supply curve therefore performs a vertical jump upwards when the total reserved quota has been taken up. The supply curve without cargo reservation is NZ, after reservation of X_r tons per year it becomes RZ. \$NR per ton are cost savings per ton attributable to cargo reservation, for the first unit of traffic. (RZ is flatter up to X_r , than NZ because of savings in variable costs.)

¹A more careful statement of the relative cost conditions that would lead the conference to raise its tariff upon admitting Chilean members is unnecessary for purposes of our argument.

5. The optimal pricing policy for a conference is shown in Fig. 2(a). The cartel equates Marginal Revenue (MR) associated with the market demand curve DD', with Marginal Cost (CS), giving the profit-maximizing quantity X_m (tons per year), which will just be taken up by the market at price P_m . If the cost of aspiring entrants to the market, for the first unit of service offered by them, is equal or greater than this P_m the conference can safely ignore the high-cost incursion. In Fig. 2(a), $P_m Z$ is the supply curve of the Chilean entrants, after cargo reservation but with the provision that rates for reserved cargo must not be greater than conference rates. In this case, the cartel continues to charge P_m , undisturbed, and the Chilean companies are left without cargo, reservation or no reservation. That has not been the experience.

6. Assume, therefore, that Chilean costs are lower than $P_m Z$. In Fig. 2(b) we assume them to be below P_m for the first unit of service, but well above conference costs. With RZ as the Chilean entrant's supply curve, the conference now finds itself with demand portrayed by the curve TKD'. This is the residual demand, obtained by horizontally subtracting the entrants supply curve (RZ) from the market demand curve (DD').²

7. To prove the point, that competitive entry by the Chilean operators should have lowered the freight rates, it is sufficient to observe that the demand curve effectively facing the conference after Chilean entry (TKD') is flatter up to point K than it was before entry (DD'). The elasticity of demand for conference service has therefore increased and it will lower its tariff. (To determine the actual optimal rate one would have to encumber the diagram by drawing into it the Marginal Revenue curve corresponding to TKD' which is discontinuous at each of the 3 points of inflection of TKD'.)

8. Competitive entry, behind the shield of cargo reservation, should therefore have lowered the rate level, even if Chile's companies had higher costs than the established lines. If rates 'did not rise' the inference is that the entrants did not set out to compete but rather attempted accommodation with the conferences. A possible strategy would have been to compete only for additions to cargo tonnage, leaving the conference members with a relatively static volume of business.

9. Various alternative explanations can be imagined for the failure of freight rates to rise after the introduction of cargo reservation: for instance, that the state withdrew some of its own shipping business from the market by fiat, assigning it to Chilean operators and causing the demand facing the conference to be lowered (DD' moving to the left).

²TKD' thus traces the difference, at each ordinate (= price), between the market demand at that price and the entrant's supply at that same price. In Fig. 2(b), if the price is measured by P_c , the share of the conference will be X_c tons and that of the Chilean operators, X_n tons, the two adding up to what the market takes at that price.

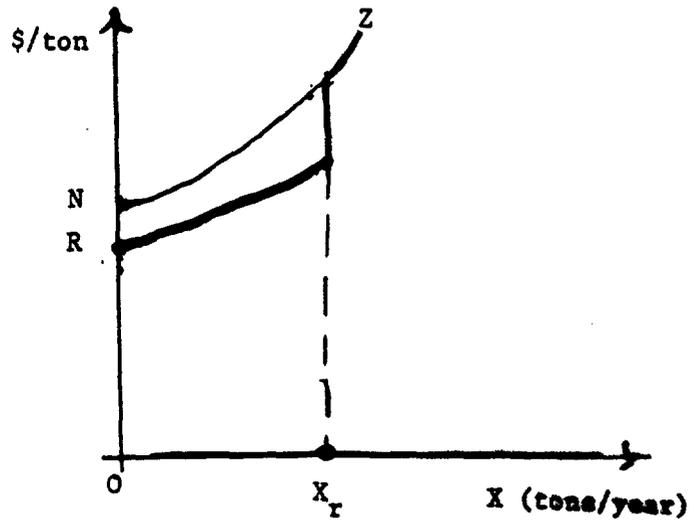


Fig. 1

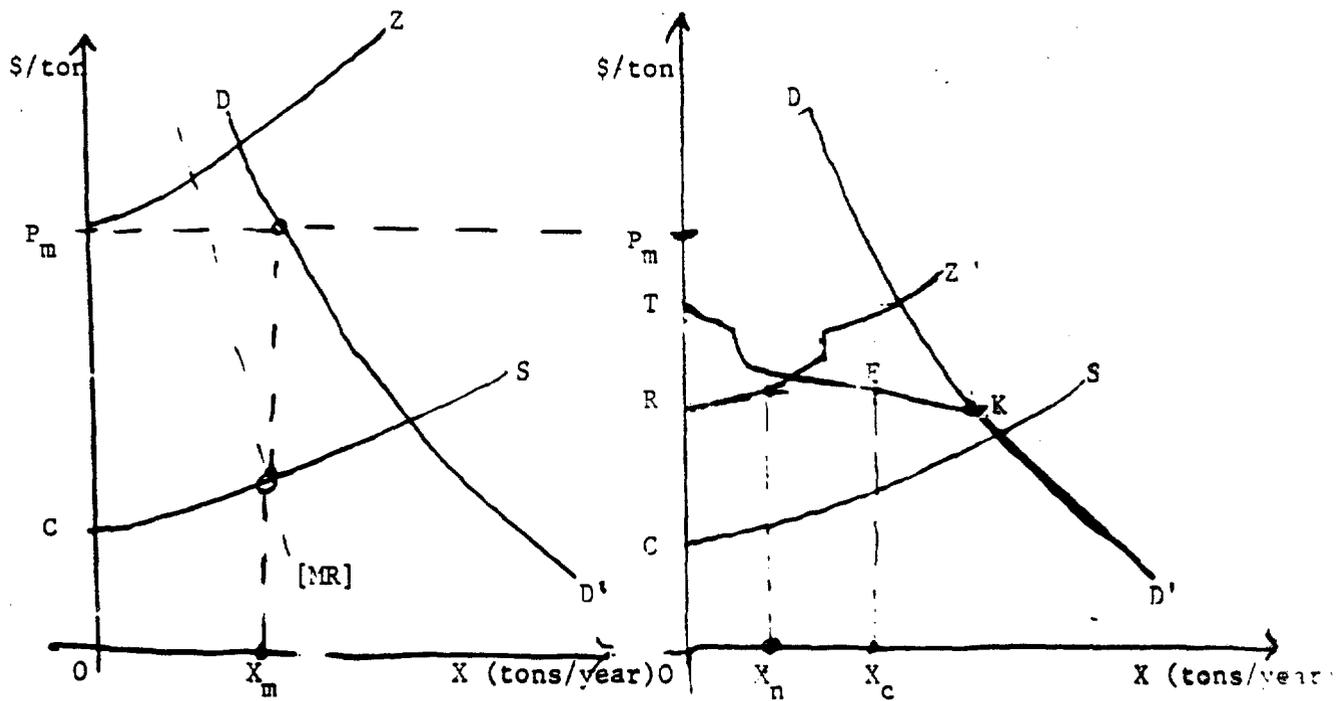


Fig. 2(a)

Fig. 2(b)

ANNEX II

Chile's Share

The relative importance to Chile's shipping enterprise of operating with vessels flying foreign flags, whether owned by them or chartered, can be roughly estimated. Chile's Central Bank records freight payments on imports and exports, from returns furnished by the companies and agencies. Chile's Customs also records freight payments on imports and exports, omitting, however, freight paid on shipments from or to the Free Trade Zones and on military shipments. This difference in coverage accounts presumably for the excess of payments recorded by the Central Bank over those reported by the Customs. The excess is greatest for imports: between 25 and 44 percent in the years 1984-86. It is much less for exports, lying between 7 and 10 percent of the aggregates reported by the Customs.

Each source also distinguishes freight payments made according to nationality. The Customs distinguish between payments made to ships according to their flag: Chilean or foreign.¹ The Central Bank distinguishes between national and foreign companies (as is required for the compilation of the balance of payments).²

Agreement between the two sources is closest on the aggregate freight expenditure on exports. According to the Customs, Chile's national flag share in export freight payments was some 25 - 30 percent of the national companies share as reported to the Central Bank:

Freight on Exports, in US\$ mn

	Total Freight Payment			'National' Share		
	1. Centr. Bank.	2. Customs	3.(1)/(2)	4.Centr. Bank	5.Customs	6.(4)/(5)
1984	378.2	354.6	1.07	118.6	35.0	3.39
1985	432.1	404.6	1.07	139.6	35.0	4.0
1986	519.9	471.7	1.1	158.3	47.3	3.35

Even when the entire excess of the Central Bank estimate of aggregate freight payment (col. 1 minus col. 2) is added to the share of Chile's flag vessels (col. 5), the export freight payments to those vessels would still only account for 50 - 60 percent of what Chile's companies received for the

¹Maritime Directorate.

²Central Bank, Research Department.

carriage of exports, whether in their own ships or in chartered ships incorporated in their fleets or in ships chartered for an occasion.

This calculation assumed that all exports from the Free trade Zone and of security cargoes were carried on Chile flag vessels. For freight on imports, the discrepancy between total freight cost as reported by the Central Bank, and by the Customs, is too great to allow this assumption to be repeated. Failing information on how payments covered by the Central Bank but omitted by the Customs were distributed between flags, one can only compare the reported shares of national flag and of national companies. In the years 1984-1986, the companies' share exceeded the reported flag share (with a narrower coverage of trade) by factors greater than 3.

PART II

THE FREIGHT CHARGE IN CHILE'S EXPORT TRADE 1978 and 1986

The determinants of freight charges for
Chile's ocean-borne exports to the U.S.

I. MODEL AND DATA

1. Object and General Design

The object of the following analysis was to investigate the determinants of the ocean freight charges that faced Chile's shippers to the United States in 1978 and in 1986, that is, before and after the measures that deregulated ocean shipping in 1979. The analysis is confined to Chile's exports to the U.S. because data are readily available for this trade, but not for others.

The analysis is based on 20 commodities, major and minor Chilean exports to the U.S. in 1978 and 1986. It is carried out separately for U.S. imports of these commodities from Chile and further countries, grouped in 3 regions:

- the entire West Coast of South America: Chile, Peru and Ecuador;
- the East Coast of South America: Brazil, Argentina and Venezuela; and
- a set of 'other' origins, chiefly in Europe and Asia: Canada, Mexico, Panama, Sweden, Finland, Denmark, Britain, Netherlands, France, Germany, Spain, Portugal, Israel, Italy, China, Korea, Taiwan, Japan, Australia, New Zealand, Zaire and South Africa.

2. The Model and Variables

Competitive conditions in ocean transport should tend to keep freight charges equal to costs, that is the marginal cost of ocean transport. Deviations from competitive conditions permit operators to charge shippers according to the elasticity of demand for their services. Liner operators (in common with other suppliers of transport services) tend to judge the elasticity of demand for their services by the unit value of commodities. Unit value is not, of course, the only criterion for judging elasticity of demand; the volume of the trade in a given commodity, more accurately the volume of a shipper's trade, is another. Large volumes on regular offer are easier to transfer from regular liner service to irregular carriers (tramps), or from liner conferences to independent liner operators.⁴⁴

⁴⁴E. Bennethan and A. Walters (1969).

Our procedure was therefore to regress freight charges per ton of different commodities on several variables, some representing costs and others, demand. The regression equation:

$$\begin{aligned} \text{Freight charge per ton (US\$)} &= \text{Constant} \\ &+ a_1 \text{ Unit Value (US\$)} \\ &+ a_2 \text{ Adjusted Distance (naut. miles)} \\ &+ a_3 \text{ Stowage Factor} \\ &+ a_4 \text{ natural log of Quantity (m. tons).} \end{aligned}$$

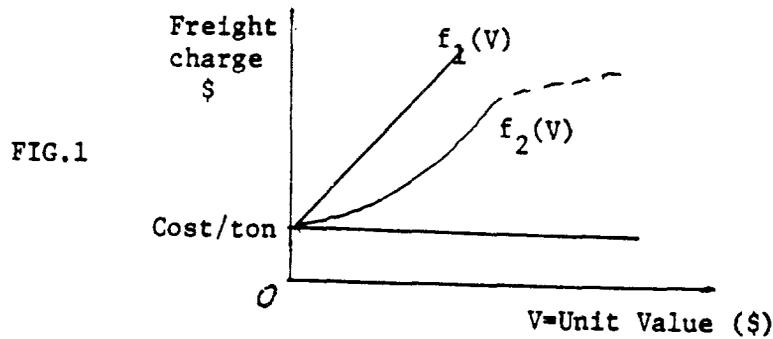
was estimated by Ordinary Least Squares.

Distance is measured between ports of origin (or shipping) and port of destination in the U.S. We adjusted distance for port time by raising each observed distance by the mileage = equivalent of 2 days, on the assumption of vessels sailing 24 hours each day at 15 knots. The expected sign of the coefficient on distance is positive.

The stowage factor is a characteristic of the commodity and measures the volume taken up by 1 m.t. of the commodity. The factor is expressed as cubic meter per metric ton. The expected sign is positive for commodities with a volume-weight ratio above the average for which ships have been designed, and negative for commodities with a heavy weight relative to their volume.

Distance and stowage factor are unambiguous cost factors.

Unit Value is the f.o.b. value of cargo, per ton. There is no obvious connection between the value of a commodity and the costs incurred in transporting it but where the carrier has market power there will be a connection with the freight charge. The reason is that operators assume, not unreasonably, that unit value is inversely related to the elasticity of demand for transport. We therefore take a statistically significant coefficient on unit value, positively signed, as signalling the absence of strong competition in ocean transport. This conclusion needs qualifying because our data for the 'charge' for transport include not merely payment for transport but also for insurance. We therefore have to expect some minor response of 'freight charge' to unit value. It should, however, be minor since cargo insurance rarely exceeds 8 percent of the true freight charge and is normally below that level. In evaluating the results of linear regression of freight charge on unit value it has also to be remembered that the relation cannot, in theory, be homogeneous. Except during freight wars, the freight charge should never be less than the cost of transport, per unit of cargo. The true relation, up to high levels of unit value, should therefore be like f_1 in Figure 1, or, as some earlier data seem to suggest, like f_2 :



(When high unit values are reached one expects the curve to bend forwards because shippers will find means of escape -- by air, if not by sea -- when rates exceed certain levels.) The curve of freight charge on unit value from the regressions will therefore have a positive intercept (f_1) or possibly, if an underlying true curve like f_2 is linearized, a negative intercept. It will be less stable, under changes in the sample, than the true relationship (or a curve fitted to observations running like f_2 in Fig. 1).

In Quantity of (annual) commodity flow in tons, requires a different interpretation according to whether transport is by liner or by tramp or bulk carrier. We assume that the quantity of the aggregate annual flow as given in our data reflects the probability of the average quantity exported by any one shipper: 'large' flows are taken to imply relatively 'large' shipments. In the case of cargo shipped by liner, there are certain costs, specifically of handling and documentation that decline with quantity. In this case, there will be some savings in operator's costs as quantity of shipment rises. Beyond that, however, quantity should represent the bargaining power of large shippers and its counterpart: the power of liner conferences or companies to discriminate in pricing against the small shippers. In the case of tramps, if their service is competitively supplied, we expect quantity to reflect the economies of size in vessels. In either case, the expected sign on the coefficient of In Quantity is negative.

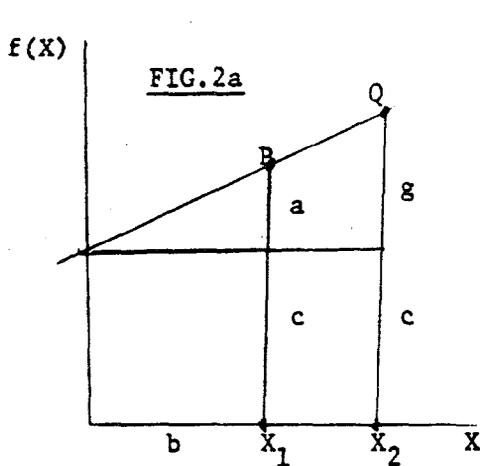
To summarize: our basic observation for the regression analysis is $\underline{x}_{i,j,u,s}$. \underline{x}_i is a vector of particulars relating to the annual flow of commodity i ($i=1, \dots, 20$) to U.S. port u ($u=1, \dots$) from foreign port j ($j=1, \dots$) by service s ($s=1, 2$). The aggregation is always over u , and subaggregates are formed over the other categories.

3. Pitfalls

In examining the results of the regressions one has to be alert to two different kinds of hazard. The first is the risk of multicollinearity, that is the possibility of independent variables being correlated. When they are strongly correlated, the analysis will not reveal the isolated effects of each of the correlated variables on the dependent variable -- on freight charge per ton. In our model, the most likely independent variables to be locked together in this way are Unit Value and Quantity: the former being computed as the

quotient of the total value of the annual commodity flow and its quantity. In the discussion of results we will draw attention to the few cases that are affected by this condition.

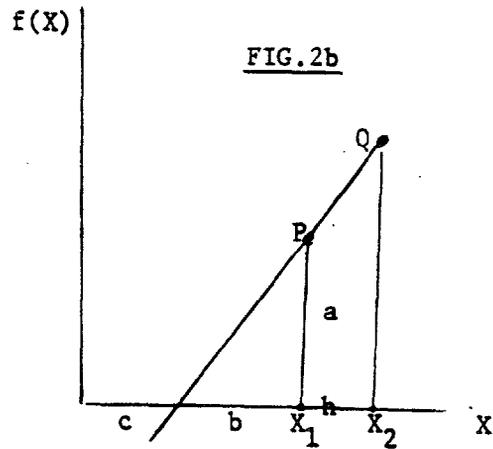
The second potential hazard is in the interpretation of elasticities. Some of our later discussion of the results of linear regression analysis is in terms of the elasticities of freight charge per ton with respect to the different variables, computed at the regression means of those variables. It is natural that one should want to draw inferences from differences in the elasticities for the same variable (say, unit value) between samples of different origin-destination flows or of the same flow in different years. It is therefore essential to remember that the elasticity is only constant along a straight line drawn in natural space if the line is led through the origin. With positive or negative intercepts, the elasticity at points on the line varies as one moves along it. The direction in which it varies depends on the sign of the intercept:



$f(X) = A + BX$
elasticity at P:

$$\frac{b}{a + c} \cdot \frac{a}{b} = \frac{a}{a + c}$$

as $X_1 \rightarrow X_2$, $a \rightarrow g$
so elasticity rises.



$f(X) = -A + BX$
elasticity at P:

$$\frac{b + c}{a} \cdot \frac{a}{b} = 1 + \frac{c}{b}$$

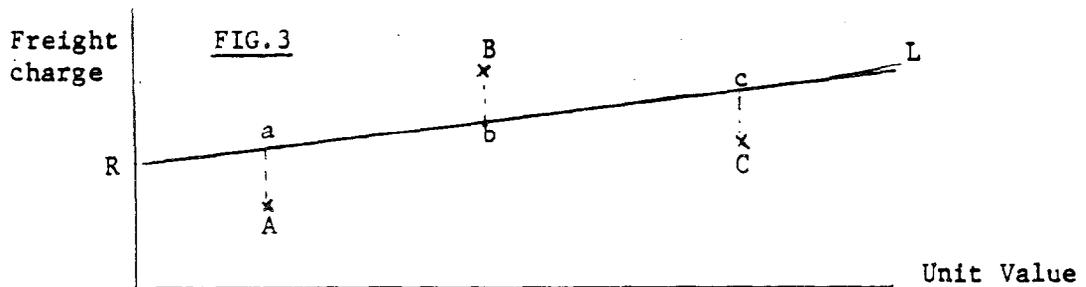
As X rises from $c + b$ to
 $c + (b+h) \equiv c + g$,
elasticity falls to $1 + \frac{c}{g}$.

With a positive intercept, and irrespective of the sign of the derivative (the slope) the absolute value of the elasticity rises as one moves out on the line parallel with the independent variable; it falls if the intercept is negative. In our later discussion of the results of the regression analysis we refer to

elasticities computed at the regression means. If the regression mean moves as we move from one sample to the next -- say, it rises because the second contains more high-valued commodities or longer distances -- the elasticity may also change, and it will change if the regression coefficient is the same in both samples. The trouble is that the elasticity may either rise (Fig. 2a) or fall (Fig. 2b). Differences in elasticities are therefore not by themselves, evidence of difference in behavior: the explanation may lie not in differences in the pricing system but in differences in the regression means. The meaning can only be inferred from an inspection of both the regression coefficients and the elasticities.

4. Significance⁴⁵

All our data are cross-section for a particular year - 1978 or 1986 - and as such they involve certain methodological difficulties, especially in the interpretation of the statistical or sampling properties of the results. Consider a simple illustration where only unit value is measured as the independent variable. Let there be three observations, A, B, and C, for different routes (Fig. 3). The effects of the other variables are assumed to have been eliminated. The measured regression line is shown as RL.



Consider the 'errors' of observation A, measured by Aa, and similarly for B (Bb) and C (Cc). In normal statistical theory we would regard these as random errors, positive on some occasions and negative on others. In theory the deviation is an experimental or observational error which has no systematic component. But such an interpretation is quite wrong for an analysis of freight charges. We may in fact know that there is a good reason for Bb being positive: it may be the rate for a particularly difficult route or port. Whenever we sample B, we know that it will have a positive deviation from the regression line. There are constants particular to the route which we have not included in the analysis. While these are patently not 'experimental' errors, standard statistical method nevertheless treats these constants as though they constitute part of the experimental error. Consequently, the 'errors' of the analysis are much exaggerated. Having thus noted that the measured standard errors are

⁴⁵E. Bennathan and Walters, (1973).

considerably overestimated, we shall be interpreting coefficients as 'significant' which would normally be rejected as being insignificant at conventional 95% levels.

5. The Data

Our data on the transport charge on commodities imported into the several ports of the United States are taken from the U.S. trade statistics series SA 305 - General Imports, published in annual as well as monthly form by the U.S. Department of Commerce, Bureau of the Census. The statistics distinguish between type of service: liner, tramp and tanker, and the distinction is based on a systematic tracing of vessel calls at U.S. ports. The data are ordered by U.S. port of unloading and foreign port of loading, and then by commodity, giving quantities, value and charge. Our Distance variable, before adjustment, therefore measures nautical miles between specific foreign and specific U.S. ports.

Twenty Chilean export commodities were selected from Chile's trade statistics (see Appendix II-1). Other origins of such imports into the U.S. were then sampled so as to include among them major as well as minor exporters of 'Chile' exports to the U.S.

Stowage factors were taken from standard manuals. Four different commodity/service samples were formed: dry cargo carried by liner; refrigerated cargo carried by liner; dry cargo carried by tramp, and from within that sample, bulk type commodities (fish meal; potassium nitrate; sodium nitrate; unwrought copper, not alloyed) carried by tramp. The class of refrigerated cargo carried by tramps could not be analyzed for lack of sufficient number of observations as reported in the U.S. trade statistics.

A fuller account of the procedure followed in assembling and treating data is given in Appendix II-2.

II. Discussion of Results

1. Liner Freight Charges

In terms of the observations that make up our sample -- annual port-to-port flows of different commodities, distinguishing service, or "mode" -- liner transport dominates as a mode:

	<u>Number of Observations, by mode</u>			
	<u>Total sample</u>		<u>Chile sample</u>	
	by liner	by tramps	by liner	by tramps
1986	942	295	153	79
1978	977	236	95	24

This preponderance of liner shipments in our total sample was not intended but results from the commodity composition of Chile's exports to the United States in 1986 which determined the commodities that were sampled. Moreover, each commodity that appears on tramps in our sample appears also in the cargo carried by liners; but not vice versa. The dominance of liner shipping (in terms of the proportion of shipments carried by that mode) and the overlap of liner and tramp cargo are more pronounced in Chile's trade with the US than in her total outbound trade. In terms of total tonnage of exports, or of ton-miles of ocean transport, tramp carriage certainly predominates: iron pellets, nitrates or fish meal are carried wholly or to large part, in chartered vessels. But in terms of the value of exports or the list of export commodities, Chile's main exports are liner cargo as defined by liner conferences who stake their claim to those commodities by naming them in their tariffs; or were clearly understood to be claimed as liner cargo in 1978.

Liner conference tariffs (or the company tariffs of independent operators) do not, however, post rates for all liner or conference cargo, valid as published during the currency of the tariff. Commodities that are sensitive to outside competition are usually either 'open rated,' or closed rated but with a rate that has to be obtained from the company or the conference secretaries but is not published.⁴⁶ These are the most variable rates. Bunker surcharges and currency adjustment factors import further elements of variability into today's liner freight charges. By comparison with freely traded tramp services, however, the liner rates display a good deal of stability over time. They are

⁴⁶When a rate is 'opened,' members of the cartel are theoretically free to vary their price for transport independently. Closed rates that are not published (and have therefore to be obtained by enquiry from the conference) can be varied freely by the cartel to meet outside competition.

therefore relatively more suitable for analysis by our model when applied to annual data than are the fluctuating tramp rates.⁴⁷

The numbers in Table 1 (Dry Cargo, by Liner) point first to substantial differences in the mean unit values of the four trades: from Chile, the West Coast of South America (including Chile), the East Coast and the group of Other countries, to the United States. (Note, however, that these are regression means: Simple averages of the observations constituting the different samples.) The composition of those commodity flows is obviously different, whether in terms of the relative size of different commodities, or of quality or even of the nature of similarly named commodities. The difference is greatest between the South American trades and those from the others. Such differences are known to be associated with differences in the cost or marginal cost of sea transport. In our analysis, however, cost differences connected with the type of commodity (except insurance premiums) are largely accounted for by the stowage variable and the quantity variable. They should not therefore interfere with the interpretation of what is discovered for the other variables. On the other hand, similarities or contrasts in the coefficients on the different variables are strictly relevant to the economic or competitive regime of ocean transport in the different trades. We examine these coefficients, mainly in terms of elasticities computed at the regression means, starting with the results for 1986.

One notices first the clear contrast in the unit value elasticity of the freight charge (Table 1b) between the South American outbound trades and those from the other origins. Within the South American group, moreover, Chile has in 1986 the lowest unit value elasticity. The South American groups are again distinct from the other group by their markedly higher distance and quality elasticities. For Chile's trade to the US, the distance coefficient has to be evaluated with caution because of the relatively small variation of distances between Chile-US port pairs.⁴⁸ But the coefficient on distance -- an indicator of the cost of transport service -- is also adequately defined for the inclusive West Coast where the variance of distances to US ports is much greater. The results for 1986 suggest, therefore, that liner rates in the West Coast export trades to the US were determined by conditions somewhat different from those operating in the outbound trades from the East Coast to the US, and very different from those in the trades of the countries -- mainly European and Asian -- making up the group of other origins. Comparing the first with the last of these groups, the freight charges for the West Coast exports responded less to differences in commodity value (a demand factor) and more to differences in the cost of carrying cargo.

⁴⁷The series of US trade statistics from which our sample was drawn is also available in monthly form. But no sample of adequate size could be collected on that base.

⁴⁸The coefficient of variation of the distance variable for Chile is always close to 10 percent.

Even stronger contrasts appear when one compares changes in the determinants of freight rates between 1978 and 1986. In the South American outbound liner trades one finds the unit value elasticity declining steeply, steepest for Chile, but increasing for the others. The coefficient on the distance variable for the West Coast trades was insignificant in 1978 but emerges with tolerably clear definition in 1986 (Table 1a). The quantity coefficient was again of doubtful significance in the South American trades of 1978 but emerges clearly defined in 1986.

In interpreting these results we note first that the signs of the regression coefficients (that is, whether an increase in the variable tends to raise the freight charge or lower it) were on the whole as predicted by theory, whenever the coefficients appeared significant. (Theory predicts no particular sign for the coefficient on stowage factor.) Second, we have to distinguish between variables representing operators' costs: stowage factor and distance and, partly, quantity, and those assumed to be related to demand: unit value and, again, quantity.

The marked decline in the unit value elasticity of the freight charge between 1978 and 1986 suggests increasingly competitive or cost-based transport pricing in the South American outbound trades to the US, quite specifically those of Chile. Of the cost factors, the coefficient on stowage factor is everywhere significant, in both years. Distance emerges to tolerable significance in the West Coast trades where it lacked significance in the earlier year. We take this as evidence for the progress of competitive -- cost-based -- pricing, associated with the lesser role of pricing based on the market power of liner combinations (which seek to price according to the elasticity of demand for their services rather than the cost of providing them). The development of the quantity coefficient is less easily interpreted. In the South American trades it emerges to stronger significance but declines numerically in the West Coast trades. The increase in significance points to the growing market power of large shippers. This interpretation might fit the case of the East Coast trades (Brazil, Venezuela and Argentina to US ports). It would also be the inference applicable to the West Coast trades except that the value of the coefficient on (\ln) quantity has declined. If one is willing to overlook the weak definition of the relation in the Chile sample for 1978, the inference would be that competition between the carriers has narrowed the scope for discrimination between large and small shippers. In either case, however, it would follow that the market power of the lines has weakened: either in relation to large shippers or in relation to all.

Our model cannot explain much of the liner freight charges for refrigerated cargo. The sign pattern of the estimated regression coefficients is perplexing (Table 2a). Unit value turns out as the only variable capable of explaining freight charges in both years, at conventionally acceptable levels of significance, and of the cost factors, only distance appears to have been significant in the West Coast trades, in both years. Even these sparse results are highly suspect because of the high correlation between the unit value variable and other independent variables: either with stowage factor and

quantity, or with distance, or with all three. Multicollinearity thus affects the analysis in each sample and in each of the two years.⁴⁹

2. Tramp Charges Per Ton

In a competitive market for shipping services, apart from mistakes, prices would reflect costs. If our model were applied to transactions in such a market, during a period of stable demand and supply conditions, it should show freight charges as determined by distance, stowage factor and quantity, the latter variable registering the economies of large size in vessels. Any residual responsiveness of freight charges to the value of the goods would then be seen as reflecting cost effects not exhausted in the three cost-variables of the model (such as insurance cost or, perhaps, refrigeration). The conditions on which these theoretical expectations are premised are therefore: competitiveness of the service, and stability of demand and supply curves during the period of observation.

The frequency of tramps, however, and thus the intensity of competition, tends to be highest along the world's main shipping lanes where the risk of long runs in ballast is reduced. The West Coast of South America is not close to those heavy traffic flows. In Chile, a substantial proportion of the tramps that are used appears to be on charter to liner companies active in Chile's trades, and operated as ancillaries to organized and cartellized liner trades. One cannot be completely sure that the tramps in our sample for 1986 represent fully competitive operations and they are unlikely to have done so in 1978 when cargo reservation covered shipment by all modes. Nor did the conditions in the competitive tramp shipping markets of 1978 and 1986 display much stability. The excess of bulk carriers and smaller tramping vessels which became apparent with the onset of the international shipping depression of 1974 had still not been worked off. Charter rates declined from 1978 to 1986 and were highly volatile within those years. Daily rates for one and the same vessel moved by 30 percent or more between the spring and winter of 1986.⁵⁰ Such variability in the market rates for tramp service is likely to swamp all other variations in tramp charges on account of distance, stowage factor or quantity.

These circumstances point in different directions. The presence of tramps operated under the auspices of imperfectly competitive shipping organizations sets up an expectation that tramp charges will be determined by factors similar to those determining liner charges. Fluctuations of transport

⁴⁹In each case, the size of the coefficient of simple correlation between the independent variables exceeds that between each of the correlated independent variables and unit freight charge, the dependent variable.

⁵⁰Examples abound in successive issues of Drewry's Shipping Statistics: The Vulcan, a tweendecker of 18,271 dwt, was trip chartered at \$3,450 per day in May, and at \$2,800 in November; the Standard Endeavour (88,314 dwt) obtained \$4,650 p.d. in October, \$3,875 in November 1986; the Andromeda (tweendecker of 14,158 dwt): \$2,400 p.d. in March, \$3,000 in November.

supply price throughout the sample period, on the other hand, lead to the expectation that none of the variables in the model will function effectively in explaining recorded shipment charges.

We shall discuss the outturn of our analysis of tramp charges in US imports, in two stages. We turn first to the entire sample of dry cargo on tramps, thereafter to that component of the tramp cargo that is likely to be carried generally in bulk.

What distinguishes the South American outbound trades to the US in our sample from those from other regions is the great increase, between 1978 and 1986, in tramp shipments (Table 3b). Special to Chile's trade, however, is the steep rise in the mean tramp freight charge per ton to the US. This contrasts not only with the development of freight charges in the other trades but especially with the general decline, during the same period, in the mean liner freight charges for dry cargo (Tables 3a and 1a). A major factor in this divergent movement of mean tramp rates was the rise, between 1978 and 1986, in the imbalance of tramp cargos to and from Chile. The growth of wheat production substituted domestic wheat for about 1 mn tons of imports (1978) while the liberalization of shipping policy in 1979 facilitated the switch of cargos (from a growing aggregate tonnage) from liners to tramps. As more tramp tonnage had to sail empty to Chile, outbound rates had to rise.

Our sample of other origins is made up largely of countries lying close to the world's major ocean routes. Return hauls in and to those regions are easier to find and rates are correspondingly lower. One might therefore look on the regression results for that group of countries as an appropriate benchmark for judging the state of the market in remoter regions. The analysis suggests (Table 3b) that tramp charges for the group of other countries in their outbound trades with the US were explained chiefly by unit value (the variable with the highest partial r^2) and by the quantity of the annual flow, representing presumably the economies of large vessels. Unfortunately, however, unit value and quantity are so highly correlated in the samples of shipments from other origins and from the East Coast of South America as to make it unlikely that the independent effect of either on the freight charge was established by the regression.⁵¹ Comparisons have therefore to be treated with caution.

A surprising result of the analysis of the data for Chile and the West Coast is the level as well as the change over time of the unit value elasticity of tramp freight charges. Not only are the 1986 unit value elasticities for tramp transport greater than they are for dry cargo liner freight charges but they also rose markedly, instead of falling, from 1978 to 1986.

⁵¹In the 1978 samples, the simple correlation coefficient between unit value and ln quantity was -.64 for the other origins, and -.79 for the East Coast group. Each exceeded the coefficient of simple correlation between the dependent variable and at least one of the two (correlated) independent variables.

Costs, as the base of the charge, are represented by distance. The coefficient on distance changes from a significant value with a perverse sign in 1978 to a weakly determined coefficient with the expected sign in 1986. The quantity coefficients have the right sign but are better defined in 1986 for liner transport than for tramps. (If one could ignore the low determination of the quantity coefficient for tramps in 1986, and assuming that tramp transport in 1986 was more competitively offered to Chilean shippers than was liner space, one might take the excess of the quantity coefficient for liners over tramps - Tables 1a and 3a -- as the measure of liner conference discrimination against relatively small shippers.)

In terms of the partial R^2 's, the dominant determinants of tramp charges for Chile and West Coast shipments to the US are the stowage factor and unit value of cargo, the latter with a markedly higher elasticity than found for the group of other origins.

In the second stage of examining tramp charges we concentrate on the few commodities exported by Chile to the US that are known to be travelling in bulk. The sample (carved out from that for tramp transport) is markedly smaller and the mean quantities of the commodities covered, markedly larger, as one would expect:

Regression means of ln quantity, 1986 samples

	<u>Chile exports</u>	<u>Total sample</u>
Liner carriage	5.2	4.0
Tramp carriage	7.2	5
Dry bulk, tramps	8.7	8.4

The number of available observations on such shipments from origins other than Chile was not large enough to permit a separate analysis of shipments from the various non-Chile origins.

The outturn of the attempt can be briefly summarized (Table 4). As in the case of dry cargo tramp transport, one finds again a relatively large increase in the number of Chile observations, from 1978 to 1986. The change between the years in (regression) mean unit value, declining when unwrought copper is included in the sample and rising when copper is omitted, reflects the relative price behavior of copper and the few other classic bulk commodities in Chile's exports to the US. The mean freight charge per ton is less than half of the charge for all dry tramp cargo and it rises over the period, for reasons already stated.

The regression analysis seems to tell that unit value loses power, as a determinant of freight charge, between 1978 and 1986. In the latter year, the relation is weakly defined for the flow of non-copper commodities but once copper is included it recedes into complete insignificance. The relative sign

or significance of this variable in the two years, when copper is included or omitted, reflect the negotiating power of the copper exporter: while copper is relatively valuable per ton, the exporter can bargain for a relatively favorable rate. Of the cost variables, only distance functions as an explanation of freight charge in 1986, having emerged from insignificance or perverse sign in the earlier year.

On balance, therefore, there is some indication in these sparse results, of progress towards cost-based pricing. But it is decidedly veiled.

3. Conclusions

Two kinds of conclusion can be hazarded: one about the appropriateness of our procedure; the other, about results that pass the test of economic reason and statistical significance.

Regarding procedure, our model patently fails to reveal much of the determinants of charges formed in the generally competitive tramp sector of the international shipping industry. The most obvious explanation lies in the nature of our data, being annual aggregates of the values and quantities of trade flows from a period of high volatility in the tramp market. Performance was much better in the analysis of liner freight rates. We attribute this to the relative stability of those rates over periods of one year or longer. The stability corresponds to the requirements in the market for regular general cargo services, but is much fortified by the commercial organization of liners in multi-company cartels.

In discussing the results of the analysis it needs stressing that it only focuses on one segment of the outbound trades of the different countries or country-groups: their exports to the United States, of 20 commodities similar to those that Chile exports to that market. Moreover, the organization of liner transport on these routes is characterized by the presence of several 'open' conferences, including among them the conferences covering Chile's trade with the US (but not each of the trades on the other routes covered by our sample). (See Part I, Chapter IV, S.5).

The analysis of the sample of liner freight charges for dry cargo transport suggested that the determinants of these charges underwent a remarkable change between 1978 and 1986. The indicators of demand-based pricing, that is pricing by sellers with the power to discriminate between commodities and shippers according to their elasticity of demand for service, weakened markedly. The indicators of cost-based pricing, on the other hand, gain much explanatory power. We find this development in all the South American trades in our sample, in striking contrast with the trades of the group of other exporters (chiefly European and Asian). Within the entire South American group, however, this development went furthest in the trades of Chile, and of the West Coast of South America which includes Chile as its dominant component. We interpret these results as saying that liner shipping services (for dry cargo transport) were available to Chile's shippers on significantly more competitive terms in 1986, that is, after deregulation of ocean shipping.

Something of the same tendency to cost-based pricing might be detected in our data of freight charges for bulk-type commodities carried by tramps. But the sample is small and the evidence is weak. Any inference from the results for the wider sample of dry cargo transport by tramps has to be seen as speculative.

The purpose of the regression analysis was to reveal the determinants of freight charges, first in the year preceding the deregulation of ocean shipping in Chile and, second, six years after the event. The level of charges appears in that analysis in the shape of regression means which are simple averages of the charges in the samples. As such they possess a certain representative character, but changes in them convey no information on changes in the average freight cost of commodity flows. Those are determined by the joint effect of changes in freight charges and in the tonnages of the different commodities that comprise the flows carried by the different modes. Unless commodity composition or freight charges are deliberately held constant over time (as in the computation of index numbers) there is no reason to expect consistency between changes in the regression means of freight charges and in the average of charges weighted by tons of cargo. We do, however, find some agreement between the results of the regression analysis and the changes in the modal distribution of the cargo flows between 1978 and 1986 (Table 5). Much the most striking development was the shift of refrigerated cargo exported by Chile to the United States, from liners to tramps and, next to it, a similar modal shift of dry cargo. Together, the two redistributions add up to a substantial loss of share by liners which is consistent with the more competitively-based formation of liner charges that appeared in the regression analysis. The decline in dry cargo transported by liner is only marginal and due to the diversion of copper shipments to other markets, compensated largely by a growth of non-copper cargos to the United States. The proportional share of liners in non-copper dry cargo did in fact rise (though tramps took three-quarters of the absolute increase). By these modal shifts, the average freight cost on our sample of Chile's exports to the United States was reduced between 1978 and 1986 (Table 6). Cargo was shifted from liners whose charges per ton declined between 1978 and 1986, to tramps whose charges per ton rose over the same period but yet remained well below those for liners.

TABLE 1^a: United States Imports from Various Origins:
Commodities Exported by Chile

Area of Origin:		Dry Cargo, By Liner					Values in US\$, nautical miles, or metric tons
		CHILE incl. copper	excl. copper	West Coast South America	East Coast South America	Other Origins	
Year							
<u>REGRESSION MEANS</u>							
Unit value	1986	759	643	873	951	2,859	
	1978	1,001	916	1,021	1,561	2,581	
Adjusted Distance	1986	5,199	5,240	5,123	5,957	6,938	
	1978	5,205	5,283	5,026	6,515	7,122	
ln Quantity	1986	5.24	4.74	5.37	4.28	3.63	
	1978	5.42	4.51	5.76	3.77	3.32	
Freight charge	1986	92	104	92	133	250	
	1978	104	123	95	205	258	
<u>REGRESSION COEFFICIENTS (t-value in parentheses)</u>							
Unit value	1986	.03 (4.58)	.035 (4.1)	.035 (10.1)	.046 (10.1)	.05 (12.7)	
	1978	.124 (3.3)	.113 (2.39)	.125 (3.9)	.157 (16.7)	.046 (16.8)	
Distance	1986	.014 (1.92)	.018 (2.14)	.01 (1.6)	.002 (.52)	.006 (1.4)	
	1978	-.04 (-.8)	-.05 (-.8)	-.03 (-.8)	.008 (.65)	.007 (2)	
Stowage factor	1986	35.02 (5.29)	24.96 (2.8)	35.88 (5.8)	19.3 (2.2)	7.35 (.47)	
	1978	84.52 (2.2)	92.1 (1.95)	83.3 (2.5)	-31.16 (-1.4)	46.67 (4.4)	
ln Quantity	1986	-9.35 (-4.35)	-9.17 (-3.25)	-8.6 (-4.3)	-10.1 (-3.8)	-16 (-3.1)	
	1978	-14.26 (-1.03)	-25.14 (-1.1)	-12.5 (-1.1)	8.1 (1.1)	-22.7 (-6.4)	

TABLE 1^b: United States Imports from Various Origins:
Commodities Exported by Chile

		Dry Cargo, By Liner				Values in US\$, nautical miles, or metric tons
Area of Origin:		CHILE		West Coast	East Coast	Other
		incl. copper	excl. copper	South America	South America	Origins
Year						
<u>ELASTICITIES:</u>						
Freight charge with respect to						
Unit value	1986	.25	.22	.33	.33	.58
	1978	1.19	.84	1.34	1.2	.46
Distance	1986	.81	1.0	(.61)	(x)	(.17)
	1978	(x)	(x)	(x)	(x)	.18
Quantity	1986	-.1	-.09	-.09	-.1	-.06
	1978	(-.13)	(-.2)	(-.13)	(+x)	-.09
<p>Note: Brackets indicate that the estimated regression coefficient is of low significance in terms of t-value: t equal or less than 1.5 but greater than 1.0. Bracketed x indicates t-value of 1.0 or less.</p>						
Adjusted R ²	1986	.55	.46	.64	.63	.41
	1978	.16	.14	.17	.75	.49
Number of Observations	1986	121	102	131	134	451
	1978	94	70	116	125	582

TABLE 2^a: United States Imports from Various Origins:
Commodities Exported by Chile

Area of Origin:		Refrigerated Cargo, By Liner				Values in US\$, nautical miles, or metric tons
		CHILE incl. copper	excl. copper	West Coast South America	East Coast South America	Other Origins
Year						
<u>REGRESSION MEANS</u>						
Unit value	1986	5,720		6,562	6,857	5,471
	1978	3,024		3,982	6,291	6,723
Adjusted Distance	1986	5,492		4,789	5,213	6,754
	1978	5,547		4,843	5,459	6,779
In Quantity	1986		2.7	3.4	3.7	3.3
	1978		4.97	4.4	3.7	2.3
Freight charge	1986	393		361	348	239
	1978	250		239	277	381
<u>REGRESSION COEFFICIENTS (t-value in parentheses)</u>						
Unit value	1986	.02 (2.6)		.02 (2.9)	.002 (.2)	.006 (1.9)
	1978	.03 (2.8)		.02 (2.3)	.014 (6.5)	.04 (7.3)
Distance	1986	-.01 (-.2)		.05 (2.7)	-.002 (-.1)	.02 (4.2)
	1978	-.03 (-.9)		.01 (1.1)	-.01 (-.8)	.001 (.1)
Stowage factor	1986	-31.4 (-.5)		31.6 (-.7)	27.7 (.3)	-.69 (0)
	1978	121 (2.9)		97.1 (2.5)	17.9 (.7)	7.4 (.0)
In Quantity	1986	.79 (.05)		-1.35 (-.2)	-24.9 (-2.1)	-4.6 (-.7)
	1978	-7.04 (-.7)		1.9 (.3)	1.6 (.4)	-35.1 (-1.9)

TABLE 2^b: United States Imports from Various Origins:
Commodities Exported by Chile

		Refrigerated Cargo, By Liner				Values in US\$, nautical miles, or metric tons
Area of Origin:		CHILE		West Coast	East Coast	Other
		incl.	excl.	South	South	Origins
		copper	copper	America	America	
Year						
<u>ELASTICITIES:</u>						
Freight charge with respect to						
Unit value	1986	.29		.31	(x)	(.14)
	1978	.31		.25	.32	.74
Distance	1986	(-x)		.69	(x)	.57
	1978	(x)		(.28)	(x)	(x)
Quantity	1986	(x)		(-x)	.07	(x)
	1978	(x)		(x)	(x)	(-.1)
<p>Note: Brackets indicate that the estimated regression coefficient is of low significance in terms of t-value: t equal or less than 1.5 but greater than 1.0. Bracketed x indicates t-value of 1.0 or less.</p>						
Adjusted R ²	1986	.31		.32	.01	.15
	1978	.22		.1	.68	.55
Number of Observations	1986	38		59	49	118
	1978	26		41	31	82

**TABLE 3^a: United States Imports from Various Origins:
Commodities Exported by Chile**

Area of Origin:		Dry Cargo, By Tramp					Values in US\$, nautical miles, or metric tons
		CHILE		West Coast	East Coast	Other	
		incl. copper	excl. copper	South America	South America	Origins	
Year							
<u>REGRESSION MEANS</u>							
Unit value	1986	519	335	596	569	1,782	
	1978	589	347	661	1,035	1,735	
Adjusted Distance	1986	4,779	4,722	4,662	5,893	6,442	
	1978	4,875	4,822	4,682	5,157	6,821	
In Quantity	1986	7.1	7.1	7.2	4.6	4.16	
	1978	7.4	7.5	7.2	4.3	3.1	
Freight charge	1986	51	56	49	96	191	
	1978	37	36	44	96	198	
<u>REGRESSION COEFFICIENTS (t-value in parentheses)</u>							
Unit value	1986	.054 (3.7)	.1 (5.3)	.05 (4.4)	.026 (1.5)	.05 (4.9)	
	1978	.022 (3.0)	.026 (2.1)	.006 (.5)	.05 (4.7)	.09 (8.6)	
Distance	1986	.011 (.86)	.028 (2.1)	.01 (1.1)	.004 (.86)	-.00 (-.05)	
	1978	.002 (.5)	-.00 (-.04)	-.02 (-2.6)	-.00 (-.05)	.01 (1.8)	
Stowage factor	1986	66.5 (4.2)	5.1 (.22)	58.6 (4.8)	26.5 (1.2)	1.74 (.03)	
	1978	12.46 (2.3)	11.27 (1.4)	-1.0 (-.1)	71.98 (3.97)	92.3 (4.5)	
In Quantity	1986	-1.7 (-.5)	-3.5 (-1.01)	-3.2 (-1.1)	-6.3 (-1.6)	-22.1 (-2.8)	
	1978	-6.4 (-3.6)	-6.8 (-2.3)	-15.0 (-5.8)	-8.54 (-1.1)	-17.4 (-2.3)	

TABLE 3^b: United States Imports from Various Origins:
Commodities Exported by Chile

Area of Origin:		Dry Cargo, By Tramp					Values in US\$, nautical miles, or metric tons
		CHILE		West Coast	East Coast	Other	
		incl. copper	excl. copper	South America	South America	Origins	
Year							
<u>ELASTICITIES:</u>							
Freight charge with respect to							
Unit value	1986	.55	.58	.65	(.15)	.48	
	1978	.35	.25	(x)	.58	.75	
Distance	1986	(x)	2.35	(.88)	(x)	(-x)	
	1978	(x)	(x)	-1.59	(x)	(.28)	
Quantity	1986	(x)	(-0.6)	(-.06)	(-.07)	-.12	
	1978	-.17	-0.19	-.34	(-.09)	-.09	
<p>Note: Brackets indicate that the estimated regression coefficient is of low significance in terms of t-value: t equal or less than 1.5 but greater than 1.0. Bracketed x indicates t-value of 1.0 or less.</p>							
Adjusted R ²	1986	.64	.73	.64	.29	.37	
	1978	.84	.82	.70	.87	.56	
Number of Observations	1986	41	35	50	42	128	
	1978	24	17	31	11	172	

TABLE 4^a: United States Imports from Various Origins:
Commodities Exported by Chile

Area of Origin:		Bulk-Type Commodities, By Tramp		Values in US\$, nautical miles, or metric tons
		incl. copper	excl. copper	All Countries Sample
Year				
<u>REGRESSION MEANS</u>				
Unit value	1986	521	175	634
	1978	557	98	565
Adjusted Distance	1986	4,628	4,462	4,496
	1978	4,648	4,353	4,310
ln Quantity	1986	8.7	9.1	8.4
	1978	8.4	9.4	7.6
Freight charge	1986	27	25	30
	1978	25	10	35
<u>REGRESSION COEFFICIENTS (t-value in parentheses)</u>				
Unit value	1986	.01 (.93)	.21 (1.1)	.02 (2.6)
	1978	.03 (3.5)	.55 (3.1)	.02 (.8)
Distance	1986	.02 (2.4)	.02 (2)	.01 (1.3)
	1978	-.004 (-.7)	-.03 (-3.5)	-.01 (-1.5)
Stowage factor	1986	21.0 (1.5)	-45.3 (-.74)	23.9 (1.9)
	1978	-4.5 (-.5)	-36.3 (-1.6)	2.8 (.1)
ln Quantity	1986	1.9 (.56)	-2.4 (-.4)	-1.5 (-.5)
	1978	-1.2 (-.6)	1.04 (.47)	-13.2 (-4.6)

TABLE 4^b: United States Imports from Various Origins:
Commodities Exported by Chile

Bulk-Type Commodities, By Tramp		Values in US\$, nautical miles, or metric tons		
		CHILE incl. copper	excl. copper	All Countries Sample
Area of Origin:				
Year				
<u>ELASTICITIES:</u>				
Freight charge with respect to				
Unit value	1986	(x)	(1.48)	.51
	1978	.64	5.2	(x)
Distance	1986	3.45	4.33	(1.12)
	1978	(-x)	-14.2	(-1.23)
Quantity	1986	(+x)	(-x)	(-x)
	1978	(-x)	(+x)	-.38
<p>Note: Brackets indicate that the estimated regression coefficient is of low significance in terms of t-value: t equal or less than 1.5 but greater than 1.0. Bracketed x indicates t-value of 1.0 or less.</p>				
Adjusted R ²	1986	.35	.32	.24
	1978	.89	.55	.56
Number of Observations	1986	25	18	34
	1978	17	9	29

**TABLE 5: United States Imports from Various Origins:
20 Commodities Exported by Chile**

Annual Quantities, In Metric Tons

Area of Origin		CHILE		West Coast South America	East Coast South America	Other Origins
CARGO MODE	Year	incl. copper	excl. copper			

Dry Cargo

By liner	1986	172,536	51,262	209,449	98,841	202,883
	1978	176,879	23,809	259,506	109,817	198,213
By tramp	1986	234,915	214,545	274,191	29,561	128,941
	1978	176,820	156,824	190,684	4,777	41,855
Bulk-type, by tramp	1986	228,261	207,891			
	1978	174,292	154,296			

Refrigerated Cargo

By liner	1986	5,913	...	34,696	7,044	25,440
	1978	16,853	...	19,762	5,560	11,374
By tramp	1986	208,806	...	211,042	1,734	2,873
	1978	24,941	...	25,068	--	1,806

Symbols: ... = not applicable
-- = zero or negligible

TABLE 6: United States Imports from Various Origins:
20 Commodities Exported by Chile

Average Freight Charge Per Ton¹

US\$

Area of Origin		CHILE		West Coast	East Coast	Other
CARGO MODE	Year	incl. copper	excl. copper	South America	South America	Origins

Dry Cargo

By liner	1986	39	56	41	76	132
	1978	52	57	50	63	162
By tramp	1986	34	34	33	78	63
	1978	13	11	15	56	57
Bulk-type, by tramp	1986	33	33			
	1978	12	10			

Refrigerated Cargo

By liner	1986	270	...	331	361	217
	1978	264	...	259	295	214
By tramp	1986	228	...	229	262	102
	1978	272	...	272	--	214

Symbols: ... = not applicable
-- = zero or negligible

1/ Total freight payment (including insurance), divided by metric tonnage of cargo.

Table A: List of Commodities Included in sample of U.S. Imports, 1978 and 1986

Number	Code ¹	Description ¹	Type ²
1	0360010	Crabmeat, fresh, chilled or frozen	R
2	0360015	Crabs, fresh, frozen, prepared or preserved; oysters, except seed, not in airtight containers.	R
3	0360075	Shrimp and prawns, shell-on.	R
4	0565032	Tomato paste and sauce, including pulp.	
5	0575100	Grapes, fresh.	R
6	0579200	Pears, fresh or in brine.	R
7	0814020	Fish and whale scrap and meal, not fit for human consumption.	B
8	2517100	Wood pulp, sulphate or soda, unbleached, except screenings.	
9	2681080	Wool, over 58's, in the grease or washed.	
10	2712000	Sodium nitrate	B
11	2882141	Copper, waste and scrap, alloyed	
12	5629020	Potassium nitrate - sodium nitrate fertilizer mixtures.	B
13	6354245	Clothespins, except plastics.	
14	6359590	Fence pickets, palings, and rails, assembled, of wood; dowel rods and pins, advanced, and articles, NSPF, of wood.	
15	6411000	Paper, standard newsprint.	
16	6415440	Board, straw, press, stereotype-matrix, beer mat, shoe, wet machine, and paperboard, NSPF.	
17	6416100	Hardboard, whether or not face finished.	
18	6821220	Unwrought copper, NSPF, not alloyed.	B
19	6822109	Rods, unwrought, of unalloyed copper.	
20	6822524	Pipes, tubes, and blanks therefor, of copper, other than alloys of copper.	

1/ Code and Description as in U.S. Import Statistics.

2/ R - refrigerated transport; B - 'bulkable' commodities, known to be moving in bulk as well as break-bulk or parcels.

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