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Economics Policy Analysis

M&A

Organisational Development Human Resource Management

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Dr Neil Byron Presiding Commissioner Inquiry into International Liner Cargo Shipping Productivity Commission LB2 Collins St East Melbourne VIC 8003

Dear Dr Byron

#### Inquiry into International Liner Cargo Shipping

Please find enclosed a submission to above inquiry prepared by Meyrick & Associates Pty Ltd. We hope that it provide useful input to the inquiry.

This submission was commissioned and funded by Liner Shipping Services Ltd (LSS), and we understand that it is referred to in the LSS submission. My personal views on the desirability of retaining Part X are reasonably well-known in the Australian liner shipping industry, and it is of course unlikely that LSS would funded the preparation of the submission if it had not anticipated that our submission would be broadly supportive of the position favoured by member lines. A reading of our submission will make it clear that this in fact the case.

We would, however, like to make two things clear:

- The views expressed in the submission are the sincerely held views of the authors, and result from many years reflection on the dynamics of liner shipping industry and on the economic literature regarding it. The commission from LSS has provided us with an opportunity to refine, update and articulate these views. It has not materially changed them
- Although the structure of the submission was discussed with LSS, and LSS commented on a draft of it, LSS has not approved or endorsed it. The submission should therefore be taken to reflect the views of the authors only, not those of LSS.

Yours faithfully

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# **MEYRICK & ASSOCIATES PTY LTD**

# **Economics of Liner Shipping Conferences**

A critical review of the literature and its implications for Australian policy

Commissioned by Liner Shipping Services as a submission to the Productivity Commission Inquiry into International Liner Cargo Shipping (A review of Part X of the Trade Practices Act).



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# **EXECUTIVE SUMMARY**

This paper reviews some of the economic issues that need to be considered in determining the regulatory environment of Australia's overseas liner trades.

An introductory chapter places the regulatory regime that is currently in force in Australia in an international context. The intrinsically international nature of liner shipping implies that governments other than Australia's will have an interest in and influence on the shape of shipping services serving the Australian trades. This will be particularly so in the case of imports to Australia, the regulatory regime for the carriage of which is customarily determined in the country of cargo origin.

It is apparent from this review that, in all countries in which foreign carriers are free to participate in the carriage of liner cargo, carriers are free to form conferences. In those countries which have an interventionist competition policy, various means have been adopted to secure a standing exemption for shipping consortia and conferences from any provisions of that policy that would preclude conference formation.

Over the last decade, this fundamental and universal policy stance has been reviewed and reaffirmed in a number of important jurisdictions, including the United States, Canada, the European Union, and of course Australia itself.

The paper suggests that this widespread acceptance of shipping conferences is the result of neither the political influence of conferences nor the eloquence of conference advocates. Rather, it sterns from inherent characteristics of the industry itself, which are such that the co-ordination and rationalisation of liner shipping services through conferences can yield real benefits to both shippers and the national economy. To give substance to this point, Section 2 of the report is devoted to detailing the range and extent of the economies of scale that exist in liner shipping.

It is, however, not sufficient that the technical conditions of production are such that these economies can be achieved. There is a second and equally important question that must be addressed: are the conditions that prevail in the liner shipping market such that we can be reasonably confident that they will be achieved, and that the potential benefits will actually flow to shippers?

Section 3 is therefore devoted to the competitive structure of liner shipping. In this section, we undertake an appraisal of the forces that serve to discipline the market behaviour of conferences. We examine the increasing sophistication and diversity of competition that has led to a widespread decline in conference influence. In addition, we look at the importance of the threat of new entry, and addresses the crucial question of the contestability of liner shipping markets. After reviewing both *a piori* considerations and empirical evidence, we concludes that the liner shipping market, though not perfectly contestable, is sufficiently contestable to ensure that the threat of entry impose an effective discipline on conference pricing. The chapter concludes that actual and potential



competition in the liner shipping market is sufficient to preclude the effective development and exercise of monopoly power by shipping conferences.

Section 4 is devoted to a review of some of the models of conference behaviour that have been promoted in the literature. It argues that, while some have more merit than others, all are seriously flawed in one way or another. Many are premised on unrealistic assumptions about the extent of conference market power; others are internally contradictory. Moreover, many of the negative aspects of conference behaviour that have been predicted by conceptual models simply do not accord with observed reality. In particular, there is no evidence of excessive profitability, and the contention that conferences tend to encourage over-provision of capacity is both inherently implausible and contrary to the bulk of empirical evidence, at least as far as closed conferences are concerned.

Intelligent policy formulation is made more difficult by this absence of a fully adequate model of conference behaviour. An adequate theory must bring together at least three key elements: the primacy of long-run profitability as the key objective, and the importance of conflicts between short-run and long-run profitability; the fact that conferences operated as a highly but imperfectly contestable markets; the likelihood, resulting from the cost characteristics of the industry, that market forces alone will not lead to a set of efficient and stable prices for liner services. Each of these elements is taken up by one or other of the authors reviewed in the chapter, but no single theory combines them into a coherent whole that provides an explanation of conference behaviour that is consistent with observed facts.

The most promising theoretical approach derives from game theory and the notion of the empty core: although the application of this approach to liner shipping is still incompletely developed, it promises to provide real insides into why liner shipping markets function the way they do, and what the appropriate regulatory response should be.

Section 5 deals with conference profitability and pricing. It examines the evidence available on the level of profits in liner shipping, and concludes that they are chronically depressed. It also contains a brief discussion of two specific aspects of conference behaviour that have attracted the attention of the Prices Surveillance Authority — price discrimination and Pan Australian rates.

The first five sections collectively indicate that an examination of the specific conditions that prevail in the liner shipping industry do not provide any basis for the belief that Australian society would gain from the abolition of Part X of the Trade Practices Act. Section 6, on the other hand, looks at the general case for interventionist competition policy, in order to assess where there is a sufficiently strong presumptive case to justify overriding the industry specific arguments. The conclusion is that there is not. The concluding chapter presents our judgement that there is no prospect of economic gain, and a significant likelihood of economic loss, through removal of the current Part X exemptions.





# 1. INTRODUCTION

# 1.1 Conferences – always contentious

The existence and activities of shipping conferences have always been controversial, and the object of government scrutiny. As far back as 1907 - thirty years after the formation of the first conference (in the UK-India trade) - the British Government (partly as a result of pressure from Australian interests) established a Royal Commission into Shipping Rings, charged with assessing the role of shipping conferences and alleged discriminatory practices and excessive freight rates (Deakin and Seward, 1973).

That Commission, though critical of certain specific conference practices, recommended in favour of the conference system's continuation (Cassidy, 1981). In doing so, it set the pattern for many investigations in many countries. The latest of these being the protracted review of the 1984 Shipping Act in the United States, which began with the review of the 1984 Shipping Act by the Congressional Committee on Shipping and culminated in the passage of the *Ocean Shipping Reform Act 1998*. As with so many previous reviews, the outcome of this process was significant change to the form and processes of regulation, but the retention of the fundamental principle of antitrust immunity for liner shipping conferences. (Bascombe, 1998)

# 1.2 The International Environment

In forming a sound judgement on what regulatory framework is appropriate for a particular industry, reviewing the situation that prevails in other countries is always useful. However, in the case of liner shipping, there is an additional reason for paying particular attention to the regulatory regimes that exist elsewhere:

Liner Shipping is an industry which perhaps more than any other is intrinsically multinational in its economic structure and in its operations. Any nation which seeks to regulate its liner shipping must have regard not only to the industry, but also to the policy framework, legislation and regulations operating in those countries with which it trades and those which share in the provision of its liner services' (Rowland, 1986)

Both the 1986 Review of Australia's Overseas Liner Shipping Legislation and the 1993 Review of Part X (Brazil, 1993) undertook a review of the maritime legislation in force in most of Australia's major trading partners. In the 1986 review, legislation governing shipping operations in New Zealand, USA, Canada, a number of Western European countries, Japan, the ASEAN countries and Papua New Guinea was examined. The Brazil committee examined regulation in the European Union, USA, New Zealand, Canada, Japan, Taiwan Korea and Singapore.

In both cases, the reviewing bodies discovered a range of attitudes towards matters such as cargo reservation and the promotion of national shipping, and the requirements for public disclosure of conference information.

However, there was complete uniformity on one issue: in each country, shipping lines had the right to organise themselves into conferences without having to seek a case-by-



case authorisation for each agreement. Indeed, to the best of my knowledge this is universal: all countries that allow foreign carriers to take part in the carriage of their international liner cargoes also allow the operation of conferences in those trades.

This is not to say that there was uniformity in the nature of the legislation that governs conference operation. Just as there were wide differences in attitudes and emphasis with regard to specific aspects of liner shipping, so there were significant differences between regulatory regimes. These ranged from detailed oversight provisions of the US Shipping Act, through regimes such as that of Australia which set out general rules for conference behaviour but allow much greater scope for commercial processes, to the 'hands off' regime of Singapore. But all had in common an underlying acceptance of the reality of conference operation, and desirability of continuing to permit conferences to operate.

The Brazil Committee also examined current international trends in liner shipping regulation, and made the judgement that 'the special situation of conferences will continue to be recognised internationally and that it highly unlikely that there will be any changes in that regard in the foreseeable future' (Brazil, 1993, p47). Despite intense activity in both the European Union and the United States over the last five years, the predictions of Brazil appear to have been borne out.

In the USA, as we have already noted, the basic concept of anti-trust immunity has been preserved under the *Ocean Shipping Reform Act*. It has been argued that the provisions of the new Act will reduce the ability of conferences to maintain common rate structures, and this is probably true. However, in understanding why this is the case, one must bear in mind the particular characteristics of the *Shipping Act 1984* and its predecessors. In particular, it is important to note that the USA, in contrast to most other jurisdictions, has used the regulatory regime to inhibit the ability of carriers from privately negotiating discounted rates with shippers, and has levied large penalties on those that have done so:

An agency of the US government, the Federal Maritime Commission (hereafter FMC) polices conference pricing agreements at no cost to the cartel. The participants in a conference agreement must collectively file their freight rates with the FMC, and those rates are open to public inspection. Any secretive discounting on those rates is considered 'rebating' and a carrier involved in rebating is subject to a stiff fine by the FMC. The FMC devotes a significant part of its resources to investigating alleged rebating activity. (Clyde and Reitzes, 1995).

The effect of several provisions of the new legislation – in particular, permitting for the first time confidential service contracts between carriers and shippers - of the new legislation is to reduce significantly this particular policing role of the FMC. However, this change will simply bring the US regulatory regime somewhat closer to that of other jurisdictions, including the European Union and Australia, in which regulatory bodies do not become involved in such enforcement. It does not reduce the scope of conference antitrust immunity.

EU policy with respect to conference operation has been the subject of active debate within the community itself. This debate has in part been fuelled as much by an



internal power struggle within the various executive organs of the Commission than a dispute on fundamental principle. In practice, what has occurred is a transfer of power to the Competition Directorate of the Community. The principal concrete events of the last five years have been:

- a new regulation (870/95) providing block exemption for consortia under specified conditions (Clough, 1995);
- adoption of a clear position that joint pricing of inland haulage legs by shipping lines was not covered under the block exemption for shipping conferences (Regulation 4056/86) (Carlsberg, 1997);
- a protracted dispute between the Competition Directorate and shipping lines involved in agreements in the Trans-Atlantic trade over whether the scope and nature of these agreements is covered by 4056/86. This resulted in the levying of heavy fines on the lines by the European Commission (Fossey, 1998).

In general, it is reasonable to conclude that EU policy over the last five years has taken a more restrictive view of the valid limits of conference operation than was previously the case. But the fines levied on the Trans-Atlantic Conference Agreement, and the exclusion of multi-model rate-setting, are essentially efforts to clarify the limits of application of the block exemption of shipping conferences from certain aspects of competition legislation that is conferred by Regulation 4056/86. They do not represent an amendment to or rescission of that exemption.

Although in practice they may (it is hard to find a definitive judgement on this) make the development of consortia agreements more difficult, in formal terms the 1995 consortium regulations actually represent an extension of the block exemptions for This paradox arises because, until the passage of the consortium liner shipping. regulation, lines had assumed that Regulation 4056/86 covered consortium activity. However, when it formally considered this issue, the Commission came to the view that consortium arrangements were not covered by the conference block exemptions. If no further action had been taken, consortia would subsequently have been exposed to the full range of competition legislation. However, the Commission then proposed the enactment of an additional block exemption to cover consortium agreements that 'have as an object to promote or establish co-operation in the joint operation of maritime transport services between liner shipping companies for the purposes of rationalising their operations by means of technical, operational and/or commercial arrangements'. The block exemption for consortia is subject to range of conditions, and specifically excludes price-fixing activities at the consortium level (Tomlinson, 1996). Consortium members may, however, in their capacity as members of a conference covered by Regulation 4056/86, be party to common-rating agreements.

The magnitude of the container flows to and from the EU and the USA clearly make their policies of particular importance in determining the overall flavour of international regulation of liner shipping. But it should be noted that reviews in New Zealand, Canada and Japan, amongst other countries, have also resulted in the retention of specific exemptions for liner shipping from certain aspects of competition policy. The pattern is clear. Despite the persistence of concerns about the possible abuse of market power, the judgement that is reflected in international practice is that, on



balance, it is desirable to allow shipping lines to collaborate on a range of matters, including pricing, that would, without specific exemption, expose them to prosecution under competition law. The scope of the exemptions, the conditions attached to them, and the obligations imposed on lines in return for them vary from jurisdiction to jurisdiction. In all jurisdictions, however, the exemption is implemented as a standing condition embodied in statutes or regulations: in no case is it necessary to apply to the competition regulator on a case-by-case basis.

# 1.3 The Case of Australia

Australian practice is consistent with the international norm. In Australia's case, provision for conference operation takes the form of specific provisions in the Trade Practices Act (Part X) which exempt shipping conferences from compliance with certain other provisions of the Act, and impose upon them certain obligations that attend upon that exemption. The provisions from which conferences are exempted are Section 45 and 47 of the Act, which expressly prohibit collusive rate-setting and certain forms of contractual agreement between suppliers and their customers.

Since the Trade Practices Act came into force in 1966, there have been three major reviews of regulation of liner shipping services to and from Australia - one carried out internally by the Department of Transport in 1977 (Department of Transport, 1978); one in 1985 carried out by a Task Force comprised of representatives of ship owners, shippers, unions, government and academia (Department of Transport, 1986); and one in 1993 conducted by a three-person expert panel (Brazil, 1993). Although in each case, revisions to liner shipping policy were recommended, the fundamental policy stance — that, because of their role in facilitating trade, the formation and operation of conferences should be supported subject to legislative protection of shipper interests survived both reviews.

It is hard to believe that this virtually universal acceptance of one form or another of conference operation is purely a result of the eloquence of conference advocates or the political influence of ship owner organisations. An alternative and more persuasive explanation is that there is a credible case that conference operations confer real benefits that outweigh any monopolistic dangers that stem from such a policy. That line of thought has, in the Australian case, perhaps been most succinctly and persuasively argued by Taplin:

'in an unregulated liner shipping trade, the operators will normally form a type of cartel, called a shipping conference. Membership will be closed, but not impenetrably. Naturally, the purpose is to establish some degree of monopoly power and so increase freight rates: like all businesses, the goal is to make money. However, the means of achieving this aim results in genuine benefits to shippers. The conference rationalises its sailings to achieve satisfactory frequency with reliable service. If reliable sailings twice a week meet shippers' needs, a conference can achieve scale economies by operating the largest vessels consistent with this frequency and the volume of freight offering' (Taplin, 1982).

Taplin's focus here is purely on the short-run. His assessment acquires added force if we move our focus from the short-run to long-run profitability: we should do this,



since one of the hallmarks of conference operation is the longevity of the services provided.

If long-run profitability is the goal, then conferences will have a vested interest in encouraging trade, and in pursuing pricing and service policies that contribute to the growth and stability of the market they serve. These policies, adopted by conference operators in pursuit of their own interests, will incidentally provide significant benefits to shippers through service and price stability, comprehensive port coverage, and pricing refinements such as promotional and hardship rates.

This view seems to be consistent with the views of the majority of Australian shippers and shipper organisations. Although complete unanimity in this area is hardly to be expected, the overview of shipper submissions in the Brazil report shows a clear majority of the users of liner shipping believed that the current regime actually delivers the services that shippers require of them. Brazil concluded that:

- a) The stated objectives of Part X are being substantially achieved in terms of adequacy, frequency and reliability, freight rates have generally dropped in real terms, and subject to limited exceptions there is stable access to export markets in all States.
- b) The exceptions are not directly caused by Part X, and Part X may indeed be of assistance in resolving them. (Brazil, 1993).

The view taken in this submission is that Brazil's judgement was correct, and continues to be so. In the following sections, we endeavour to spell out in some detail the reasons for this belief.



# 2. THE COST STRUCTURE OF LINER SHIPPING

# 2.1 Economies of Ship Size

That there are very substantial economics of scale in ship size is universally acknowledged. The analysis of economic issues prepared by the BTCE for the Brazil review notes that 'greater ship size engender cost savings due to ship economies of scale'. (These may of course be offset in the provision of a specific service by increased shore-based costs resulting from lower sailing frequencies). The overwhelming majority of academic and industry studies of which we aware either assume or demonstrate that such economics exist. It is, nevertheless, worthwhile reviewing briefly the source and extent of these economies.

Economies of scale exist in each of the three major components of ship costs - in capital costs, in crew costs, and in fuel costs.

Capital costs: In capital costs, economics of scale are driven primarily by the physical fact that, as the size of a vessel increases, the ratio of the volume enclosed by the hull to the surface area — and hence the quantity of steel required - declines. They are, however, significant scale effects in other capital components, including the cost of engines, crew accommodation and navigational equipment.

Estimates of just how capital costs decline with ship size are surprisingly hard to come by, but the physical relationship referred to would suggest that the elasticity of capital costs with respect to ship should be in the order of 0.67. This is, in fact, the value used by Jansson and Schneerson in their 1985 study.

Data presented by Gilman (1983) suggests that economics of scale arising from capital cost savings may be a little higher than this. Gilman provides estimates of 'typical' cost per TEU-mile for container ships 164/TEU-mile) ranging from 600-TEU (£0. to 3000-TEU (£0.078/TEU-mile). That is, a fivefold increase in vessel size leads to a reduction in unit capital costs of around 55%. The implied (arc) elasticity of capital cost with respect to vessel size is 0.5514. On the other hand, the estimates of typical newbuilding costs for various vessel sizes made by Drewry Shipping Consultants indicate scale economics somewhat lower than the Jansson-Schneerson estimates - at least for vessels constructed in the late 1980's. (Drewry, 1990). On balance, the Jansson-Schneerson estimate and its antecedents from naval architecture appear to provide reasonable general guidance.



Crew Costs There is very little systematic variation of crew numbers with crew size on containerships. Figure 1 shows the relationship of crew numbers and vessel size, based on a random sample of 60 vessels taken from *Containerisation Yearbook*. There is, if anything, a slight decline in crew numbers as vessel size increases — this is, however, largely due to the fact that larger vessels are, on average, newer, and incorporate labour-saving technologies and rationalised manning agreements.

The constancy of crew- numbers with vessel size implies a substantial decline in crew costs per TEU as vessel size increases.



*Figure 1: Relationship between Crew number and Ship Size* Source: Containerisation International Yearbook, 1998

Fuel Costs

Fuel consumption does tend to rise with vessel size but, as with capital costs, less than proportionately. Jansson and Schneerson (1985) adopt an elasticity of fuel cost with respect to fuel costs of 0.72.

These numbers suggest that, for every 10% increase in vessel size, unit costs should fall by in the order of 3 to 4%.

Building up a picture of shipping costs from the analysis of individual components is one way of deriving an estimate of the extent of economies of scale. Another is to analyse data from the container ship charter market. Figure 2 shows data for over 50 container ship charters during the month of February 1996. The strong relationship between cost per unit of capacity and vessel size is immediately apparent. A formal regression analysis performed on this data suggested that the charter rate per TEU fell by 0.42% for every 1% increase in vessel size. ( $\vec{R}$ =0.82).





Figure 2: Relationship between vessel operating costs and vessel size

Source: Containerisation International, various issues

The charter rates reflect economies of scale in capital, crew and other vessel operating costs, but not scale economies resulting from reduced fuel costs per unit carried. However, *Containerisation International* also published fuel consumption figures for the vessels chartered. Using this data, it is possible to estimate the extent of scale economics arising from this source. This analysis suggests a scale effect substantially smaller than that posited by Jansson and Schneerson: an increase in vessel size of 10%, on average, increases fuel consumption by around 9%. Fuel cost per TEU carried would, on this appraisal, fall by around 1% for every 10% increase in vessel size.

Combining these two effects, analysis of the *Containerisation International* data indicates that unit costs should fall by in the order of 3% for every 10% increase in vessel size. This is a little lower than the Jansson and Schneerson estimates, but not vastly different from them. Given that their estimates were synthesised from considerations of naval architecture, while ours are based on an analysis of market charter rates, the two estimates are remarkably close. We therefore believe we can be quite confident that scale effects are real and significant, and a value in the range 0.30 to 0.40 provides a reasonable estimate of the elasticity of ships' costs with respect to vessel size.

# 2.2 Economies of Fleet Size

While there is widespread agreement about the existence of economics of scale at the level of the individual vessel, this is not so in the case of economies of fleet size.

It is clear that the somewhat surprising claim of Cassidy (1981) that there is a 'general lack of economies of scale in liner operation' refers to economies of this sort: the citation from Laing (1975) used to support his contention makes this clear. Zerby and



Conlon (1983), while they acknowledge that there are significant economies of scale at the level of the individual ship believe that there are none in fleet size. Sayers (1986) asserts that

'there are no significant organisational scale economies in liner shipping. This is because the only cost items which change with the number of ships are administration, land and agency costs, and these items only comprise a small proportion of total costs'

Sayers cites Stromme Svenson (1978) as finding that 'organisational scale economies are 'exhausted after the deployment of three to four ships in any particular trade'.

Deakin and Seward (1973) appear to take a somewhat different view, arguing that, under some circumstances, 'In the case of large container consortia, scale economies are likely to arise from organisational sources, as distinct from scale economies due to ship size which will also be present in this case'

It seems to us that the view that there are few or no economies of scale in fleet operations is becoming increasingly untenable. There are some 'in principle' reasons for this belief. Firstly, there is a dawning awareness in the industrial organisation literature that economists are inherently prone to underestimate the importance of transaction costs in determining the optimum firm size and scope of operation. Secondly, large firms or consortia controlling many vessels have greater flexibility in redeploying vessels between trades in response to fluctuations in capacity. Thirdly, large firms have greater access to network economics, arising from the simultaneous operation of a number of interlocking routes.

But by far the most persuasive evidence comes from the behaviour of shipping lines themselves. The period since the last review of Part X has seen an unprecedented increase in concentration in the liner shipping industry. Figure 3 shows that, in 1983, the top 20 container shipping lines controlled approximately 41% of the total world container shipping fleet. This increased very slowly over the next nine years, reaching 42% in 1992. Since that time, however, there has been a rapid increase in the share of the top firms, reaching 53% by the end of 1998.

It is possible to divide this period into three phases. The growth of the top 20 carriers' share from 1993 to 1996 was driven primarily by the internal growth of leading carriers; the hiatus that followed corresponds to the period of alliance-building, during which many of the top carriers sought increased economies through the formation of strategic alliances with like-minded companies; the recent spurt shows the effect of a wave of mergers and acquisitions in the industry.





Figure 3: Top 20 carriers share of total liner shipping capacity

Source: Containerisation International, various issues.

It is unlikely that this trend has yet run its course. In a recent paper, John Crichton (1999), associate editor of the leading industry journal, suggested that the top 20 carriers could control as much as 80% of global container capacity. While this percentage is of course highly speculative, few with any knowledge of the dynamics of the industry would argue with the view that there are more mergers and acquisitions to come.

There may, of course, be a number of motives driving this movement towards carrier consolidation, but there can be no doubt that the pursuit of economies of scale, both financial and real, is one of the most powerful. To take just one recent example — the merger of CP ships and Mexican line TMM to form Americana Ships — in a recent interview the ceo of the newly merged organisation cited the following anticipated benefits:

'By taking the combined volumes of Americana Ships, we expect to get better deals from marine operators, terminals and logistics providers', said Halliwell. In addition, \$14 million will be saved from internal overheads and organisational changes, including moving to one international information system. On total, Americana Ships has identified \$112 million of initial savings being removed from the bottom line.



The final area of improvement for this new company is within its own organisation. It intends to integrate all backroom services for the four brands of Lykes Lines, TMM, TMG and Tecomar, while the four companies themselves will retain completely separate sales and customer service teams. With all backroom services fully integrated, Americana Ships expects to 'get the maximum synergies between the services'. As Haliwell stated, 'it is possible that Lykes has some empties at a terminal which TMM may need more urgently.' (Davison, 1999)

To provide some perspective: the anticipated cost savings amount to approximately 10% of Americana ships combined operating revenue of \$1.1 billion.

The Americana Ships example is interesting for two reasons. Firstly, it is a merger of lines operating in the same trade lane, so the motivation for the merger is not complicated by the desire to establish a 'global network'. (In fact, Haliwell explicitly eschews this aspiration). Secondly, it specifically identifies several sources of economies of scale in fleet (or firm) size:

- increased purchasing power
- savings in information technology expenditure
- rationalisation of internal overheads, including premises and administrative staff
- reduced container re-positioning costs.



Figure 4: Firm Level Scale Economies in Liner Shipping



In a recent article in *Containerisation International* magazine, respected industry analysts Roland Berger & Partners assessed the extent cost advantage that a large liner shipping company enjoyed over a medium-sized operator. The outcome of this assessment is summarised inFigure 4.

It is likely that the IT Costs and container repositioning, in particular, have been inadequately recognised in earlier academic research. There can be no doubt the development, implementation and management of IT systems has emerged as an important differentiating factor in liner shipping, and one in which the leading shipping operators believe there are very important economies of scale (see, for instance, Boyes, 1998).

# 2.3 Economies of Scope

The term was originally adopted in the context of a multi-product manufacturing firm, in which the firm's various outputs are physically distinguishable. Economics of scope exist when it is cheaper for a single firm to produce given quantities of two or more products than it would be to produce each of them separately. In liner shipping, we will use the term economies of scope to mean economies that arise from providing services to several clearly distinguishable submarkets. This is conceptually distinct from economies of scale, at either the vessel or the fleet level, which could be gained by serving a higher volume of traffic in a single submarket. However, in liner shipping, economics of scope are often inter-linked with economies of scale, and it is not always easy in practice to distinguish between the two.<sup>1</sup>

## 2.3.1 Within the trade lane

There are two obvious and important examples in economies of scope in liner shipping at the trade lane level. One is the case of the deployment of a vessel capable of carrying two or more physically distinguishable cargo types on the same voyage. Conbulkers such as those that were deployed by ABC Containerline provided an obvious example, but cellular container ships withreefer capacity also fall into this category.

An even more widespread example, however, is the inclusion of multiple ports of call on a single voyage. The assumption that each container port serves a different submarket is, nowadays, a little simplistic, but remains a reasonable approximation for many Australasian trades. It is usual for a line to serve a number of submarkets on a single voyage, since it is cheaper to do this than it is to provide separate services for each submarket. The European conference service, for instance, may serve both coasts of Australia and both islands of New Zealand in a single voyage.

It is worth noting that, while part of the reason for serving several submarkets on a single voyage is that combining submarkets allows the exploitation of economics of scale in vessel size, this is not the whole story. Even if there were no economics of scale at this level, economics of scope would still arise because the cost of traversing

<sup>&</sup>lt;sup>1</sup> This difficulty also exists in analysis of the airline industry. See Productivity Commission (1998),



the intercontinental legs of the journey could be spread over a greater quantity of cargo.

### 2.3.2 At the network level

Economies of scope may also exist at the network level. We are not aware of a great deal of academic work of economies of scope in maritime networks: more work appears to have been done in the aviation sector. The liner shipping industry shares many underlying economic characteristics with scheduled airline services, and the evolving company strategies in both industries also show many similarities.

The traditional wisdom in the aviation sector has been that economies of network size are not significant in the aviation sector (BTCE, 1996). However, some more recent work does seem to be moving towards an acceptance that it is possible that network economies can lead to reductions in operating cost. (Our and Zhang, 1987).

It is difficult to reconcile the widespread development of hub-and-spoke systems in both aviation and liner shipping with the view that there are no economies of scope at the network level. The development of transhipment hubs has been one of the most prominent significant developments in liner shipping over the last fifteen years. A hub-and-spoke system is only a sensible strategy for an operator (or consortium, or alliance, or conference) that operates a reasonably extensive network of service. Clearly, there would be no point in such operators developing a hub-and-spoke system unless the system offered some advantages in terms of service quality, cost reduction, or both. The development of hub-and-spoke systems would therefore appear to be fairly strong *prima facie* evidence that economies of network size do exist.

The Productivity Commission (1998) suggested the following mechanism may be at work in the international aviation industry:

Economies associated with traffic density can be significant and may help explain the development of hub and spoke systems in many markets. Economies of traffic density occur when increasing the amount of traffic on an existing route leads to lower unit costs. Unit costs decrease when the size of the aircraft used increases, the number of seats filled on an aircraft approaches capacity and fixed indirect costs are spread over more passengers and freight. These unit costs include route-specific costs such as ticketing, sales, promotion and terminal lease or ownership costs. (p52)

Very similar considerations apply in liner shipping, where hubbing on key transhipment nodes allows the use of 6000TEU + vessels on the main East-West services between Europe and Asia, and between Asia and North America.

# 2.4 Economies of Service Co-ordination

The economies discussed in the previous sections initially flow to the producer. (although, under competitive conditions, they will be passed on to the user). Economies of service co-ordination, however, provide benefits that flow direct to the user. For any given fleet of vessels operating in a trade, the effective delay faced by a



shipper in sending his cargo can be reduced if the entire fleet is under the control of a single operator.

There are two levels at which this proposition is true. Firstly, even if there are no contractual arrangements and the shipper simply takes advantage of the first ship in port: in this case, the gains follow directly from the mathematical properties of queuing systems - replacing randomly spaced sailings with regular sailings will halve the average wait time (Taha, 1980). Secondly, and more obviously, where contractual arrangements are in force, and a shipper can only use the sailings to which his supplier has access, rationalisation under a single operator will provide the minimum delays compatible with the total number of ships deployed.

The more vessels that are deployed under the control of a single operator, therefore, the higher the quality of service that can be offered at the same price<sup>2</sup>.

# 2.5 Summary

These four sources of economies all point in the same direction - the natural development of concentration in the liner shipping industry. The liner shipping industry does not, and almost certainly never will, remotely resemble the neo-classical ideal of a perfectly competitive industry. This ideal envisages a very large number of very small competitors, each of whom has a negligible market share and no ability to influence either the level or the structure of prices charged - a structure that is simply impractical in the case of liner shipping.

In liner shipping, a concentrated structure is virtually inevitable. There is nothing sensible that we can do about this: as Sletmo and Williams (1981) have pointed out, the cost structure of the industry suggests that it would be very foolish indeed to try to mould the liner shipping industry into an approximation of the 'perfectly competitive' model. What we can do, however, is influence the form that this concentration takes, and the manner in which it operates.

There are at least two credible ways in which the abolition of Part X might change the form of co-operation in ways that are prejudicial to shipper interests:

• conferences may 'go underground'. The most likely way for this to occur is that shipping lines will conduct their discussion and formalise their agreement with regard to the outbound Australian trades in other jurisdictions. It is unrealistic to believe that extra-territorial application of Australian competition law in jurisdictions could effectively prevent this in jurisdiction in which the conference

 $<sup>^2</sup>$  That these service improvements to shippers are in fact valued highly is evident from an informal observation of the behaviour of both shippers and carriers. However, should more formal evidence be required, it can be found it the attitudinal research document in studies such as those of Brooks(1985) or D'Este and Meyrick (1992)



behaviour was perfectly legal. Under this scenario, shippers would effectively lose the protection offered to them by Part X; or

• the inability to determine rates and other service parameters collectively will intensify the incentive for lines to formally merge their operations in a single corporate entity. This would eliminate the intra-conference tension that, we argue in the next section, provides an important element of the competitive framework under current arrangements.



# 3. COMPETITIVE STRUCTURE OF LINER SHIPPING

The ability of conferences to exercise effective market power will be determined by three factors; the extent and nature of actual competition; the intensity of the threat from potential competitors; and the ability of conferences to negotiate and enforce binding agreements on pricing and capacity.

# 3.1 Competition in the Market

# 3.1.1 Global

In purely quantitative terms, the competition faced by conferences increased markedly between the mid-1970's and the early 1990's, but appears to have stabilised since that time around the new lower levels, and in some cases firmed slightly. It has been estimated that by the mid-1990's, conferences of various sorts accounted for around 60% of the total liner shipping capacity on the major global routes (Stopford, 1997).

The Far East Freight Conference has historically been by far the largest and most powerful closed conference in the world, and operations within this conference provide the key component of the business of many traditional conference operators. At the end of the 1970's, the conference share of the Europe-Far East trade was estimated at around 85% (LMA, 1989). In 1990, the conference provided merely 57% of the capacity on the route (CI, 1990). According to one recent report, the FEFC now accounts for around 60% of the current Europe to Asia container traffic (Fossey, CI, 1999).

A broadly similar picture emerges in the two East-West trades involving the US. The conference share of capacity in the trans-Atlantic trade had declined by 1990 to 48.7% (Drewry, 1992). A series of controversial attempts to re-configure the conference and extend its coverage led to an increase in this share during the mid-1990's, and the 1998 conference share of carryings 63% (Davison, 1998). However, a spate of resignations in the wake of the EU judgement referred to in Chapter 2 and the passage of the US Ocean Shipping Reform Act is expected to lead to a marked decline in this share. In the trans-Pacific trade in 1990, the conference provided 56.7% of capacity in the Eastbound direction, although its share of the westbound trade, at 68.9%, was substantially higher (Drewry, 1992).

It is true, of course, that the market share of conferences on these major routes has no direct influence on either their market share or their market power in the Australian market. What is does indicate, however, is that the decline in share 'that has occurred in recent times in the Australian trades is unlikely to be a transient phenomenon induced by local trading conditions rather, it is part of a global process reflecting a fundamental structural change in liner shipping, and is unlikely to be reversed in the foreseeable future.



3.1.2 The Australian Trades



Figure 5: Movements in conference share of major Australian trades, 1984-1983

Source: Based on Appendix H of Brazil (1993)

Movements in the conference share of the Australian trades have followed a similar pattern to movements in the conference share of the main East-West trades. The history of each trade is different, and shares can be quite volatile as major lines join or leave a conference. However, Figure 5, which shows the average conference share across six major Australian trades between 1984 and 1993, indicates a fairly consistent decline over that period from 74% to 55% over that period. We have not undertaken a detailed quantitative analysis of subsequent movements in conference shares of the Australian trades. However, a review of ship capacity data and discussions with Liner Shipping Services (LSS, 1999) suggest that the conference share has remained at around this figure (55%): if members of discussion agreements who are not parties to a contractual conference agreement are included, this figure rises to around 70%.

In summary, in all of the major trades serving Australia, and on most international deep sea routes, conferences continue to carry a very substantial percentage of the total volume. But the extent to which they dominate the environment in which they operate has clearly declined, and this decline has played an important part in eroding the ability of conferences to exercise effective control over the setting of rates and conditions. Most if not all shippers have a number of non-conference alternatives available to them. One of the reasons for the willingness of shippers to make use of alternatives is that the maturing of containerisation has seen a blurring of the distinction between conference and non-conference operators.



# 3.2 The Changing Nature of Competition

### 3.2.1 Increasingly Sophisticated Outsiders

The mere existence of non-conference shipping lines operating in the same trade lanes may not in itself be sufficient to apply a great deal of competitive pressure to conference operators. The competing lines must be seen by the shippers in the trade as a credible alternative to the conference operation. More formally, if non-conference operators are to constrain the pricing behaviour of conferences, we must have reason to believe that the cross-price elasticity of the demand between conference and nonconference services are high.

Historically, non-conference operators have been seen as qualitatively distinct from conference operators:

[Traditionally] the typical model was of a dominant conference service and with a long-term commitment to the trade, with a small contingent of opportunistic outsider lines attracting a comparatively small market share by offering an inferior service at discounted prices.. This model is no longer applicable (Turner and Meyrick, 1991).

Two things have changed — and in our view irreversibly changed.

### a) The emergence of the independent megacarriers

Firstly, the non-conference lines have grown in stature. The most spectacular example of independent line growth is Evergreen Lines, the world's second largest container shipping line, which has established an enviable reputation for the quality in the delivery of port-to-port shipping services. But the list of worlds top twenty container lines includes eight other lines (Cosco, Hanjin, Hyundai, UASC, Yangming, Zim Israel, and MSC) that have developed and in general continue to operate internationally as non-conference operators (Fossey, 1998a). All of these lines with the exception of UASC now have a presence in the Australian trades, although not always outside the conference framework.

No doubt, few conference operators would readily concede that non-conference lines provide a service equal in quality to that provided by a conference. And this case could be supported by pointing to the fact that higher value cargoes still tend to favour conference operators. But, however this may be, it is clear that independent operators can no longer be regarded as lightweight fly-by-nights, but must be regarded as lines of established reputation and financial and operational substance, providing shippers with a genuine alternative to those operators who have grown up with the conference system.

## b) Softening the Edges

The traditional distinction between conference and non-conference operators has also been blurred by the tendency of some carriers to move fairly swiftly in and out of conference arrangements, or to operate — by choice — within the conference in some trades and outside it in others.



In the Australian trades, many lines that have historically between committed conference participants operate outside the conference structure to provide transhipment services to North America, the Middle East and Europe over Asian ports. Other long time conference members — or instance, CGM in the Europe trade — have decided to operate entirely independently. At the same time, lines that once operated as independents — for instance, Contship — have become committed conference supporters.

In essence, the decision on conference membership has become one of tactics rather than fundamental corporate strategy.

3.2.2 Transhipment and Intermodal Services

In 1998, Singapore's container throughput outstripped that of Hong Kong, making Singapore the world's largest container port. This has been achieved though a remarkable sustained growth that saw the port's throughput increase eightfold period (from 1.7m to 15.1m TEU) between 1985 and 1998. What is important in this context, however, is that this rapid growth had little to do with the (admittedly impressive) growth of Singapore's economy. Although Singapore is notoriously coy about disclosing the details of its transhipment business, trade estimate now suggest that up to 80% of this total is comprised of transhipment movements. Moreover:

What has happened is Singapore is merely the most striking evidence of a global phenomenon. The development of sophisticated transhipment and intermodal alternatives has added a new dimension to the competitive environment, and radically reshaped the way in which liner shipping markets interact. (Turner & Meyrick, 1991).

In the Australia-US East Coast trade, for instance, conference carriers face competition from Neptune Orient Line, which provides an all-water service from New York with transhipment over Singapore, and from Maersk Line, which offers transhipment over Kaohsiung. Cosco and OOCL also offer transhipment services.

Transhipment options are also available to Asian destinations, with APL/NOL, Evergreen, and Hanjin, for instance, serving Japan and a variety of East Asian ports over Singapore. In the European trades, both MISC and Hanjin are reported to be attracting considerable traffic on services that tranship over Singapore, while OOCL provides a transhipment alternative over the Taiwanese port of Kaohsiung.

There is also at least one local instance of fundamental restructuring of an established service around the transhipment concept. In February of this year, independent line Cosco announced a comprehensive restructuring of its Australia and New Zealand services. This will see all Australian export cargoes bound for Japan relayed over Brisbane, while all New Zealand cargo to and from China (including Hong Kong) will be relayed over Sydney (LLAW, 1999)

Historically, it is true that most shippers have shown a clear preference for direct shipment of the cargoes even when all quantifiable service aspects are identical (D'Este, 1992). Some of this sentiment persists: marketing managers for Cosco admit their main concern in the service revisions outlined in the previous paragraph relates to



'persuading shippers to accept transhipment in Brisbane'. However, although it remains the case that transhipment alternatives still play only a secondary role in those trades where a high-quality direct service exists, there has been a very substantial shift in shipper attitude in recent years, as transhipment ports have become increasingly sophisticated and cargo care procedures more advanced. There is no doubt that transhipment operators now give many shippers – including shippers of refrigerated cargoes — a genuine alternative that could and would be used if the freight rates charged or quality of service provided by direct services failed to meet their requirements.

### 3.2.3 State-supported lines

A further dimension of competition is provided by the presence in the market of Statesupported lines.

As a general rule, the greater the diversity of competitors in an industry, the more intense is the competitive pressure likely to be. Firms with similar cultures and similar histories are more likely to arrive at a *modus vivendi* than firms with disparate backgrounds and business strategies.

State-supported lines, which are likely to pursue different objectives and whose performance is likely to be judged by different criteria than commercial lines, provide an extreme example of competitive diversity. Such lines have a long history of participation in the Australian trades, with the policies pursued over the last few years by Cosco providing the latest manifestation of their willingness and ability to expand rapidly.

#### 3.2.4 Alternative Modes

In addition to the increasing range of container liner shipping options, conferences face varying degrees of competition from neo-bulk operations, tramp shipping, and to a lesser extent air freight operators. Specialist refrigerated services, such as those operated by Cool Carriers, now control a significant share of certain important market segments. International air services, which is reported to be growing at 8.8% per annum, also competes for the high value cargoes that are the traditional stronghold of conference services.

#### 3.2.5 Freight Forwarders and NVOCC's

The operation of freight forwarders and NVOCC (non-vessel operating common carriers) also places competitive pressure on liner shipping operators. Although they do not operate ships themselves, these ocean transportation intermediaries (OTI's) directly compete with shipping companies in the provision of value-added logistics services that form an increasingly important component of a liner shipping company's revenue, and which are the principal means by which shipping companies differentiate their product. (A shipper using the services of an OTI may not even be aware who owns the vessels on which its cargo travels). At the same time, ocean transport intermediaries can have the ability to muster very large volumes of cargo, and are notoriously ready to switch their business from carrier to carrier. The result is a constant downwards pressure on rates that impacts not only on those shipments



actually controlled by OTI's, but also on all cargo that might — unless lines respond appropriately — begin to use them.

### 3.2.6 Intra-conference competition

There has always been competition between conference members, but traditionally this competition has focused on quality of service, with prices determined at the conference level. Within a closed conference, the scope for economically meaningful competition is – in principle at least - circumscribed by the conference agreement. In principle, this is still the case. However, in practice, conference pricing discipline has weakened very substantially in recent times, and conference rates now serve increasingly as indicators or benchmarks rather than mandated prices.

Industry characteristics such as the existence of indivisibilities in supply, the fact that lines must sell their available space immediately or not at all, and the importance of long term relationships in an industry in which massive investments are required combine to intensify intra-conference rivalry and protect shippers from opportunistic exploitation.

# 3.3 **Pressure from Potential Competitors**

The development of contestability theory in the 1970's and early 1980's brought about a significant change of emphasis in our understanding of the circumstances in which concentration in an industry is likely to lead to adverse economic outcomes. Contestability theory provided the intellectual foundations for the deregulation of the United States domestic aviation system, and it has subsequently become virtually *de rigeur* to refer to it in any assessment of an industry's competitive environment.

As we shall see later in this section, contestability has, quite appropriately, attracted a lot of attention from economists writing about liner shipping markets. However, because, 'contestable', like 'competitive', is used in subtly different ways by different writers<sup>3</sup>, it is worth spending a few moments reviewing the concept before looking in more details at what various analysts have had to say about the contestability of liner shipping.

# 3.4 The Nature of Contestability

#### 3.4.1 Pure Contestability

The term 'contestability' first saw the light of day — or at least was first formally christened — in a paper by Elizabeth Bailey (1981). A comprehensive and definitive

<sup>&</sup>lt;sup>3</sup> In some instances, particular in the bureaucratic literature, contestability seems to have been used almost as a synonym for competition. For instance, the Prices Surveillance Authority sees lists closed conference agreements as 'factors which reduce contestability' since they set prices and reduce competition in the trade'. (PSA,1992, p30). But by definition such agreements necessarily apply only to current operators, not to potential entrants, and have no obvious relevance to either the likelihood or the form of new entry. There is no obvious reason why common rating by incumbent firms should make <u>entry</u> more difficult. Moreover, since conference agreements will tend to make changing prices in response to new entry slower and more difficult they may actually make the liner shipping market more closely approach the purely contestable model (see next section, in particular Davies' analysis of contestability).



statement of the theory was published the next year by Baumol, Panzar and Willig (1982), in a book to which Bailey contributed the foreword.

Baumol et al. (1992) define a perfectly contestable market as one which has two key properties:

(i) Potential entrants can, without restriction, serve the same market demands and use the same productive techniques as those available to the incumbent firms.

The full implications of this condition are not immediately obvious from its formulation. The 'without restriction' means not only that there are there no formal regulatory or other restrictions to entry, but also new firms can enter and leave the industry without incurring any costs in the process. The 'serve the same market demands' condition means that there are no institutional, contractual, informational or attitudinal barriers to a new entrant competing for any segment of an incumbent firm's business. The 'same productive techniques' provision appears, in the detailed analysis, to imply that the new entrant can produce any set of services/products at the same cost as an incumbent firm.

(ii) The potential entrants evaluate the profitability of entry at the incumbent firm's pre- entry prices. That is, in working out whether or not it is worthwhile entering the industry, new entrants assume that their entry will have no impact on the pricing behaviour of the incumbent firms.<sup>4</sup>

In addition to these two explicitly formulated conditions, Baumol et al. implicitly borrow a number of standard assumptions that apply to the perfectly competitive market: perfect information, profit maximising firms, and the absence of government intervention.

The key result of the Baumol et al. analysis is that, if the conditions of perfect contestability are fulfilled, then the desirable economic results similar to those that would occur in a perfectly competitive market will occur in markets where there are only a few producers — or indeed only a single producer.

3.4.2 Contestability in Practice

It should be clear from the preceding outline that the perfectly contestable market is an ideal that is unlikely to be encountered in practice. Indeed, some prominent authors have argued that it is so unrealistic as to be essentially useless from the point of view of policy formulations<sup>5</sup>. But, in general, perfect contestability appears to have been accepted as a useful concept in the same sense that perfect competition is. It is an

<sup>&</sup>lt;sup>4</sup> This conditions has parallels in early work in oligopoly theory, and is commonly referred to as the 'Bertrand-Nash pricing assumption'. For the sake of brevity — and because 1 can think of no alternative — we will adopt this, unfortunately, esoteric label to refer to it elsewhere in this paper.

<sup>&</sup>lt;sup>5</sup> For an example that is admittedly fairly extreme, but comes from a very eminent economist, see Shepherd (1984)



extreme case, unlikely to be encountered in practice, but it has the advantage that its consequences for economic welfare can be formally analysed using the methods of mathematical economics.

To make the notion of contestability relevant to policy requires the not unreasonable additional leap of faith that these consequences will be more or less the same when a reasonable approximation to the contestability conditions apply.

If we are prepared to make that leap, then the key question becomes: do the conditions that prevail in the international liner shipping industry constitute a 'reasonable approximation' to contestable conditions? In answering this question, there is obviously a degree of subjective judgement involved, and this has given rise to a wide divergence of views. Just how wide is illustrated by two contributions made to the debate in the context of the 1986 Liner Shipping Review.

3.4.3 Two Views

#### a) Davies

Davies (1985, 1986a, 1986b and 1990) is possibly the leading proponent of the view that liner shipping markets are inherently contestable.

#### The A priori Case

Davies identifies three salient features of a contestable market: entrants and incumbents must be subject to the same regulations, and have access to a common technology at a common cost; there must be no sunk costs; and the pricing practices of the market must be such as to prevent responsive pricing by incumbents<sup>6</sup>.

With regard to the first of these, he argues that, since the world's shipyards and the second-hand vessels are equally open to all, equal access to the techniques of production are open to all. Furthermore, although some countries do practice flag discrimination and cargo reservation, the large majority of the world's liner cargoes are open to unfettered commercial competition.

Moreover, since the main items of capital equipment required to operate in liner trades are highly mobile, readily available on lease, increasingly standardised, and readily resaleable, there are likely to be very few sunk costs associated with entry.

Finally, he points out the inability to rapidly vary their rates to meet outsider competition is frequently cited by conference lines as a major competitive disadvantage and 'the proximate cause of the entry-induced instability on the trans-Pacific trade'. Additionally, by employing the common practice of negotiating contracts *in advance* 

 $<sup>^{6}</sup>$  The first two points are aspects of the first of the Baumol et al conditions; Davies third condition meets the second of their premises. Davies (1986a).



of physical entry into a trade, a newcomer can sell his services against the background of the pre-entry price structure.

On this basis, Davies argues there is a *prima facie* case for the belief that liner shipping market is not only reasonably contestable, but also 'closely matches the requirements of the extreme, ideal, perfectly contestable market.'

In our view, Davies significantly overstates his case. On the point of access to productive technology, his argument is generally sound as far as it goes. But he focuses exclusively on the hardware — ships and containers — of liner service provision and disregards the software — information technology, logistics management systems. This is a significant omission.

A parallel point applies to his assessment of the cost of exit and entry. It may be generally true that, if participation in a trade proves unprofitable, an owner can redeploy his ships elsewhere or charter them out. But the costs of the vessels are not the only costs involved in establishing a liner trade. There are also costs involved in researching and cultivating a market, and these are not recoverable on exit.

Finally, one can accept that conference arrangements tend to make prices 'stickier' than they would otherwise be; and one can also accept the possibility of a line negotiating key contracts in advance of entry. But this still falls significantly short of the strong assumption required by contestability theory that potential entrants base their decision to enter on the assumption that incumbents' price structures will not be affected by the fact of their entry. In practice, incumbent operators frequently bewail the fact that they have no practical option but to respond to the rate offered by a significant new entrant, even when this means sustaining actual losses over a period.<sup>7</sup> To assume that a line contemplating entering a trade would ignore the likelihood of such responsive pricing appears to us unrealistic.

Given these qualifications, Davies' claim that liner shipping stands out as an industry in which the conditions of perfect contestability are approximated is extravagant. But the fact that his arguments are pushed beyond the point of plausibility should not blind us to the fact that they are basically sound. If Davies fails to make a convincing *prima facie* case for a near perfect contestability in the liner shipping industry, he does make a persuasive one for liner shipping being reasonably contestable.

#### Empirical Evidence

To provide empirical support for his position, Davies analysed the entry and exit record for the Canadian liner trades. He found a high rate of entry in many trades, with the number of new services established over a three-year period amounting to 41% of the original number. Although new services tended to be on a smaller scale than established ones, they were still large enough, individually and collectively, to

<sup>&</sup>lt;sup>7</sup> See, for instance, the lament of line executives about the hit-and-run incursion of MSC into the South east Asia – Australia trade in Crichton (1999b). We do not intend to imply that incumbent lines will necessarily match each and every rate offered by a new entrant. But perfect contestability assumes that the new entrant assumes there will be no price response over the relevant period even if the new entrant wins significant market share from the incumbent operator



have a significant impact on most trades. He therefore concluded that 'the empirical manifestations implied by these conditions [the requirements of contestability] were confirmed in the Canadian liner trades'.

However, Davies himself points out that the relationship between frequent entry and contestability is ambiguous. In a perfectly contestable market under conditions of static demand, one would in fact not expect to see frequent entry: the threat of entry would be so effective a discipline that all incumbent firms would operate at maximum efficiency and charge the lowest prices consistent with their continued existence. There would therefore be no incentive to enter. Moreover, as Zerby (1985) has pointed out, many new entrants over the period considered by Davies 'have resulted from the desire of developing countries to control the ocean carriage of the international trade which they generate, and were not in response to opportunities of commercial profit'.

What can reasonably be claimed for Davies' data is that it strongly suggests that the barriers to entry in the industry are not a significant determinant of industry structure, and that there exists a substantial pool of potential entrants.

### b) Sayers

Sayers (1986) uses a very similar formulation of the three key conditions for contestability to Davies, but in each case reaches a radically different conclusion on whether these conditions exist.

### Technological Equivalence

Sayers observes that non-conference operators in the Australian trades generally operate smaller ships and offer an inferior frequency of service, and argues that 'this suggests that they were unable to take advantage of the economies of plant size to the same extent as the incumbent conference operator' (p42). In many though not all trades, to provide a service equivalent to that provided by a conference large scale entry would be required. Since this would, in turn, require that a market share be captured in order to make the service viable, 'the risk associated with technologically equivalent entry is an effective barrier'. In practice, therefore, the 'access to equivalent technology' condition is not satisfied.

This argument tends to confuse several issues. The 'access to the same technology' condition for contestability is separable from, and should be separated from, considerations of how difficult it may or may not be for a new entrant to win a large share of the market. It is concerned solely with factors and techniques of production: considerations of demand are irrelevant, as are observations on the relative scale of operations of existing conference and non-conference operators. There is nothing in Sayers' argument that suggests a new entrant intending to establish an operation of the same scale and quality as that of an established conference would face significantly higher costs in doing so. If it would not, then this first contestability condition is met.

#### Free Entry and Exit

With regard to free entry and exit, Sayers agrees with Davies that 'sunk costs can be almost entirely avoided', and appears also to accept that the institutional and regulatory



barriers are insignificant. But, pointing out that entry may provoke a price war with incumbent operators, and, arguing that new entrants are likely to have a higher cost structure, Sayers alleges that new entrants are likely to face a period of initial losses induced by the retaliatory pricing on the part of incumbent lines. These losses represent 'a potential entry cost', and invalidate the free exit and entry requirement.

Once again, there appears to be some confusion of issues here. The lack of sunk costs is enough to establish that this second contestability condition is met. The possibility that a new entrant would face retaliatory pricing and consequent losses is a real and important one, and may well deter a company from entering the trade. But it is not a barrier to entry in the technical sense required by the contestability conditions, which requires that potential entrants face costs greater than those incurred by a firm now incumbent in the industry (Baumol, 1980, p5). It is, rather, a violation of the third condition of contestability — the Bertrand-Nash pricing assumption.

#### The Bertrand-Nash Pricing Assumption

Finally, Sayers argues that, for a variety of reasons, shippers are generally slow to change their shipping away from incumbent operators, partly because of contractual commitments but also because of a natural reluctance to experiment with new and untried services. On the other hand, conferences have demonstrated a willingness and ability to implement special rates to combat price-cutting by existing outsiders. Sayers argues that this response would take place far more rapidly than customer switching, so that the 'passive pricing' condition necessary for contestability is not met.

There is some substance to this argument. Despite the ameliorative measures and constraints identified by Davies, the likelihood that a new entrant who will have a significant impact on the market share of incumbent operators would not induce some price reaction is remote.<sup>8</sup> So is the likelihood that a line considering entry would expect no reaction from established operators.

## Empirical Evidence

Like Davies, Sayers attempts to support his view with empirical data on entries and exits. Noting a decline in conference rates between 1978 and 1985, Sayers suggests that, since 'conference operators are still in operation and providing similar levels of services', this implies excess profit-taking in the earlier period. This he suggests, should, if the market is contestable, have led to a number of opportunistic entries while rates were at their height, followed by a number of voluntary exits as they fell. Examining actual exits since 1980, Sayers suggests that all have been 'non-voluntary', and that there is no evidence of 'hit and run' entry that might be expected in a contestable environment.

<sup>&</sup>lt;sup>8</sup> The number of independent action' filings under the US Shipping Act provides some indirect support for this contention.



Quite apart from the general ambiguity about the relationship between the number of actual entries and the contestability of the market, Sayers' interpretation of his data is extremely contentious. To argue that the decline in rates of the 1978-1985 period necessarily implied excess profits and therefore an incentive to enter at the start of the period is simplistic. Most obviously, the lack of a comparison of prices with costs makes the inference tendentious. Secondly, freight rates in the Australian trades are not uncorrelated with rates in other trades around the world, so that it is at least possible that high prices in the Australian trade coincided with high opportunity costs of redeploying vessels from other trades.

But Sayers' interpretation of his exit data is even more questionable. He argues that there have been no instances of opportunistic profit taking in the Australian trades, since all exits have been for non-voluntary reasons. But, in 15 of the 16 cases identified, these 'non-voluntary' reasons were liquidation; acquisition by other operators; or 'lacked sufficient cargo'. It is difficult to see why any of these should be deemed to be incompatible with the notion of opportunistic entry followed by withdrawal from a trade as the transient profit opportunity vanishes.

### c) An appraisal

The positions expressed by Davies and Sayers represent the extremes of what is, in fact, a continuous spectrum of opinion on the question of contestability.

Zerby (1985b; 1988) tends towards the Davies end of the spectrum, arguing that 'the [liner shipping] market seems to meet the requirements for highly contestable markets. But he stops short of proposing liner shipping as a paradigmatic case of near perfect contestability, acknowledging, for instance, that 'No entry or exit is costless in practice. Some costs are incurred, if only in marketing and advertising' and that ' the degree of contestability varies between trades'.

Trace (1985) is more cautious, reaching the tentative conclusion that the 'Australian outwards liner trades have in general proved contestable over the last decade' but suggesting that 'contestability owes much to thedepressed state of shipping markets'.

In general, however, the weight of informed opinion appears to be that Australia's liner trade has been, at least in the recent past, reasonably though not perfectly contestable (Harvey, 1995). The discussion above suggests that, once the arguments are properly disentangled, even Sayers does not take serious issue with the fact that the first two necessary conditions for a contestable market — access to equivalent technology and free entry — are reasonably approximated in the liner shipping industry.

The third condition — the Bertrand-Nash pricing assumption — is less closely approximated, though the need for conferences to agree internally on a pricing response suggests that pricing responses may be slower and more uncertain than in many other industries.

Devising a satisfactory empirical test of contestability is difficult: the entry/exit counting approaches are imperfect for the reasons discussed earlier. But while the absence of entry does not necessarily prove that a market is not contestable, one could



argue with some justification that the frequent entry provides a strong indication that the market is contestable.

Most of the major Australian trades have seen large-scale direct service entry over the last decade or so:

- In the Europe trade, MSC, which did not enter the Australian trades until 1990, now provides more capacity than any other line except for P&O Nedlloyd.
- MSC has entered East and North Asia trades, which Maersk/Sea-Land has also entered, and China Shipping Container Line has also entered. In the mean time, Bridge Line has come and gone from the trade;
- In the SE Asian trade, Evergreen, PIL, OOCL, RCL, Hanjin, and Maersk are amongst those who have entered as vessel operators.

Significant departures include POL, Baltic Shipping Co, JSP, Hyundai and ANL (Europe); Bridge Line, EAC and Southern Cross Line (North East Asia); and Cosco in the SE Asian trade. The trans-Tasman trade has been completely re-arranged, with dedicated carriers being supplanted on the main corridors by cross-traders. Somewhat paradoxically, the most stable major trade has been that to North America, in which USA legislation requires that conference membership should be open to all.

But it is the increased prominence and acceptability of transhipment operations that has most radically increased contestability in the Australian trades, and which will continue to do so for the foreseeable future. Through a combination of consortium arrangements and transhipment, lines such as Evergreen, Hanjin, and APL can now offer fixed day weekly services with competitive transit times to Asia, Europe, and the United States, but dedicate only one or two relatively small and cheap vessels in the Australian trades.

# 3.5 Summary

Perhaps the first thing that should be said about the market power of conferences is that, whatever it may now be, it certainly is not what it used to be. One of the most striking and ubiquitous features of the shipping market over the last two decades has been the erosion of the dominant role that conferences once played in the liner trades.

While it may have been argued in the past — and some of the evidence for and against this proposition will be considered in the next chapter — that conferences dominance of their markets allowed them to exercise substantial market power, there is little evidence to suggest that they can do so today.

Conference operators, both in the Australian trades and globally, suffered erosion of their market share during the 1970's and 1980's. At the same time, a wave of new and more sophisticated independent lines flourished, and competition from certain other transport options — notably specialised refrigerated shipping and air transport — has flourished. Most significantly of all, containerisation itself has added a new dimension to the competitive matrix by making transhipment a viable competitor to direct shipment.



All of these factors have increased the number of potential, as well as the number of actual, competitors faced by conferences.

Nevertheless liner shipping is clearly not perfectly contestable. The main reservation is concerned with the plausibility of 'complete' entry. We have not identified any example of a conference operation being *suddenly and totally* supplanted by another line or group of lines, and we do not believe that entry and exit on this scale could be effected without substantial cost. But this is a requirement of a perfectly contestable market.

On the other hand, it is fairly firmly established that individual submarkets, or collections of submarkets, are highly contestable. Moreover, the variety of potential competitors — neo-bulk specialists, air freight, multi-trade services, transhipment operations — makes it very difficult for a conference to be sure which submarkets will in fact be contested in the near future. It is also theoretically possible - and in our view quite likely in practice — that, while the conference market *as a whole* may not be vulnerable to simultaneous entry — there is no individual submarket which is safe from large-scale entry.

Under these conditions, the fact that 'complete' entry is implausible is of little practical importance. The liner shipping market provides an example of 'workable contestability'. Since there are no regulatory barriers to entry and a newcomer to the trade would incur limited sunk costs, entry at a low to medium level is a constant threat. At the same time, given the variety of possible competing service alternatives, the conference can have no certainty as to where the next threat to its markets will come from. These two factors together render the market sufficiently contestable to impose an effective discipline on conference behaviour.


# 4. MODELS OF CONFERENCE BEHAVIOUR

There have been many attempts to provide a formal economic analysis of conference pricing behaviour, with widely varying assumptions, results, and policy conclusions (for an extended review of these, see Davies (1985b)).

## 4.1 Classical Monopoly Models

The simplest market power model to apply to conference operations is the classical monopoly model. In this model, the conference operates as a coherent entity, and prices in such a way that marginal revenue is equal to marginal cost. This results in maximum profits for conference members, tight control of capacity, and suppressed demand for liner shipping services.

This model is clearly untenable, since, given the known low elasticity of demand for liner shipping<sup>9</sup>, it would imply that conferences would make very high rates of profit. This is incompatible with the observed fact that rates of profit are characteristically low, both historically and at the present time.

This leaves us with two logical options - either to abandon the presumption of effective monopoly power, or to propose some subsidiary hypothesis, which explains the inability *of* conferences to effectively use it.

The principle of Occam's razor would suggest that the first of these was the wiser course, but it is the second that has been most widely followed.

## 4.2 The Organisational Slack Thesis

It has frequently been suggested that the reasons conferences fail to make supernormal profits is that they are inefficient, and the potential economic rents are consumed by inefficiencies in production.

Two types of inefficiency are possible:

- conferences may produce the wrong quantity or quality of service (in technical terms, they operate at the wrong point on the production frontier);
- conferences may consume more resources than they need to produce what they do produce (that is, they operate inside the production frontier);

The various arguments that have been advanced in support of the contention that inefficiencies of the first type occur are often complex and subtle, and will be given detailed attention shortly.

Arguments in favour of the second are more immediately accessible, and can be disposed of quite quickly. The basic idea, which is at least as old as the writings of

 <sup>&</sup>lt;sup>9</sup> Jansson and Schneerson (1985) suggest that the 'freight rate elasticity of shipping demand' in the absence of competition would vary between -0.02 and -0.2. *Liner Shipping Econoinics* (Loxidon: Chapnian and Hall, 1985), 99



Adam Smith, gained prominence in the modern literature largely through the work of Liebenstein (1966). Liebenstein coined the term 'X-efficiency' to describe technical efficiency in production, and opposed this to the allocative efficiencies with which economists - including those investigating the effects of monopoly power - had traditionally been concerned. His basic thesis is that firms that enjoy market power can be X-inefficient and still survive, and that it is by this route, not through excessive profit taking, that the real social losses from monopoly occur.

This notion has considerable intuitive appeal in certain circumstances — most notably in the case of a franchised monopoly protected from competition by government regulation but subject to government scrutiny. In such a case, attempts to earn excess profits would be self-defeating, since high profits would almost inevitably prompt the imposition of price controls or even the removal of the exclusive franchise.

The idea has less force, but retains some credibility, in the case of any concentrated industry in which the dominant firms realise normal or supernormal profits. It is at least plausible to argue, in such cases, that profitability could be even higher if the firms were technically efficient, but that the differing interests of management, workers and owners in a modern firm make actual profit maximising unlikely<sup>10</sup>.

But a necessary condition for its special applicability to concentrated industries is that normal or super-normal levels of profit can be earned in the industry without performing efficiently. If — as we will see is the case in the liner shipping industry — it is chronically difficult to earn even a normal return on capital, then efficient performance becomes a question of survival. In this case, the pressure on operators to achieve maximum internal efficiencies is of precisely the same form and intensity as that which exists in perfectly competitive markets.

It is important to note that this deduction is not contingent on any conclusion that we reach about the causes of low profitability. In particular, it does not depend on the extent of actual competition in the industry, nor does it depend on the strength of the threat of entry. The conclusion would stand even in the case of an actual monopolist perfectly protected from competition, provided that the demand conditions were such that it was extremely difficult for it to earn even a normal rate of profit.

The organisational slack hypothesis - which has in any case always lacked empirical foundation - can therefore be safely dismissed.

# 4.3 'Open Cartel' Models

Devanney (1973) is generally credited with the first full formal application of this thesis to liner shipping. The central notion is that conferences initially attempt to act as a textbook collusive oligopoly, restricting capacity to below optimum and setting rates

 $<sup>^{10}</sup>$  This idea - which has become known as the principal-agent problem, has attracted considerable attention in recent years. It is founded in the work of authors such as Simon (1952), and Cyert and March (1964). See also Stiglitz (1989).



well above average costs. However, unable to compete on price, lines compete by adding capacity - in particular through increased frequency - and the result is overtonnaging:

The shipping lines have only two choices: to reduce the tonnage on the route or to agree to set rates monopolistically. They choose the latter, and set rates that are profitable even with the current oversupply

The result, according to this model, is a 'ratchet' effect, with the new rates then encouraging further over capacity and yet higher rates in the next round.

The Patinkin-Cassidy model, which is presented in Harvey (1993), although it differs in some details, is also an 'open cartel model'. A number of other authors, including Jansson and Schneerson (1985b), have adopted variants of the Devanney model, and a more recent formulation by Fox (1994) derives fairly similar results after substituting the more general concept of 'quality' for capacity.

Open cartel models have been influential in forming public and official attitudes. There are a number of points that should be made about these analyses. In doing so we will focus on the Devanney and Patinkin-Cassidy models (in the version presented by Harvey), but similar considerations apply to the other variants.

### 4.3.1 Instability

Firstly, Devanney does not appear to come to terms with the fact that the process he describes is an inherently unstable one. As an earlier author remarked in a less formal discussion of the same process:

Fortunately, this process could not go on absolutely indefinitely, for if it resulted in a very serious inefficiency, a new concern could cut prices, work to capacity, and operate at so much less expense per unit that it could make a profit'. (Marx, 1969).

It need not, of course, be a 'new concern' that behaves in this way: it could be a defecting conference member. As Evans (1982) points out,

The [Devanney] analysis in its conclusion fails to recognise the tensions building up within the conference membership with increasing capacity, (relatively) decreasing cargoes and increasing rates causing each line to strive to maintain its share **of** the cake and to ensure that the share has 'currants in it'. Under these conditions, the stability of the conference tends to weaken and the conference breaks up, with open (cut-throat) competition prevailing until the surplus capacity is 'shaken out' after which the conference becomes established once again' (p87)

The Patinkin-Cassidy model presented by Harvey if vulnerable to similar criticism. Evans' argument is also relevant to the Patinkin-Cassidy model, which, like Devanney's, assumes that both pricing discipline and adherence to negotiated shares can be maintained in the face of persistent excess capacity.



In this model, the conference continues to expand capacity until the potential economic rent is dissipated. However, some of this capacity is laid up, and those vessels that are in service operate at below full capacity.

Suppose that the excess capacity arises because lines already within the conference increase the number (or size) of vessels that they deploy. Harvey's presentation of the model implies that in equilibrium some vessels would be permanently laid up. Since it would be self-contradictory for the model to suggest that individual lines decide simultaneously to put on additional capacity and to withdraw it, we must assume that the decision on how much capacity to lay up is a collective one, made by the conference as a whole. Similarly, the conference must collectively decide the 'quota' assigned to each vessel. In other words, the conference exercises effective control over how the capacity owned by its members is disposed, and is able to frame binding agreements that ensure that those lines laying up vessels are content to do so, and that those that continue to operate vessels do not over-carry. But if the conference were capable of negotiating and enforcing these agreements, it is difficult to understand why this agreement should not also include the sale or chartering out of surplus vessels, and the sharing of the consequent cost savings, since this clearly contribute to the profitability of all members. The conference would then return to a position of tight capacity and high profitability.

On the other hand, if the additional capacity that is attracted by the supposed excess profits comes from new entrants, who are later accepted into the conference, it is not at all clear why this entry should stop when the cartel exhausts its rents through wasteful over-investment. It is, after all, the *opportunity* to make profits that is the true enticement to entry, not the profits actually made by existing lines. And the opportunity described by Marx would clearly still exist. Only if membership of the conference and acceptance of its allocation rules were compulsory would the incentive to enter disappear at this point.

If this lower cost entry did occur, then conference carryings would be diluted still further, and the conference lines would operate at a loss. This would force a reduction in costs, which, under the assumptions of the model, could be brought about only through a reduction in capacity. This process would continue until both conference and outsiders were operating at high capacity.

### 4.3.2 Inconsistency

Davies (1985b) has some more fundamental criticisms of the Devanney thesis. He argues that the Devanney hypothesis requires the simultaneous acceptance of three 'irreconcilable views:

- (i) Conferences are monopolies;
- (*ii*) *Liner shipping companies are profit maximisers;*
- *(iii)* The demand for liner services is inelastic.

Davies criticism is very similar to that which we made earlier with respect to a classical monopoly model of conference behaviour. He points out that, in theory, a profit



maximising monopolist will necessarily raise prices to the point where the elasticity of demand exceeds unity. Otherwise, increasing prices still further would simultaneously increase revenue and, output would fall, reduce costs. Since there is universal acceptance that the demand for liner service is inelastic, one of the first two propositions must be abandoned.

Once again, this criticism applies also to the Patinkin-Cassidy model. In the paper in which he presents the model, Harvey (1993) estimates the elasticity of demand for international freight transport at between -0.027 and -0.053 for exports, and -0.032 and -0.043 for imports, and concludes that, despite possible competition from air freight and tramp shipping for certain market segments, 'for liner cargoes as a whole, it can be concluded with reasonable safety that the demand for liner shipping services is quite inelastic' (p21).

It could of course be argued that we are talking of the demand for conference services, not the demand for liner services, and that above the point at which independent entry becomes feasible, this demand is elastic. Davies, however, argues that attempts to save the hypothesis by introducing the notion of a kinked demand curve in this way - as has been done by Roberts (1978) in the US — are unsuccessful, since they imply the possibility of new entry at price levels above the 'kink'. They consequently invalidate the assumption that conferences can raise rates with impunity, and undermine the basis of the 'cartel' models of conference behaviour.<sup>11</sup>

### 4.3.3 Difference between Conferences

It is often overlooked that the Devanney model was devised in the context of the trade between the United States Atlantic Coast and South America . The environment of these trades is and has been determined by successive US Shipping Acts (1916 & 1984)<sup>12</sup>, in which the regulatory authorities permit conference operation and collective rate-making but insist that conference membership must be open to all. The so-called 'open conferences' that result from this unique regulatory environment are very different organisations from the 'closed conferences' that have been the norm in virtually all other trades, including all of the (non- US) Australian trades.

Devanney (1993) himself suggested that:

A conference which practices control over scheduling is likely to be more efficient than one that does not; one that practices cargo pooling still more efficient; and one that practices revenue pooling more efficient yet.

Many commentators would agree with Sletmo and Williams that the US regulatory system of accepting conferences but requiring them to be open (and consequently

<sup>&</sup>lt;sup>11</sup> In any case, the analytical usefulness of a kinked demand curve as a pricing theory is open to serious question. Davies addresses this issue briefly (*1985b*, *p* 26), and a full discussion can be found in some of the better standard texts. See, for instance, Koutsoyiannis (1979), who concludes that this model does not explain the price and output decisions of the firms. It does not define the level at which prices will be set to maximise profits. ..it is not a theory of pricing, but rather a tool for explaining why the price, once determined in one way or another, will tend to remain fixed' (p232).

<sup>&</sup>lt;sup>12</sup> The Ocean Shipping Reform Act 1998, in so far as affects conferences, amends the 1984 Act and will not alter either the ability of conferences to jointly set rates or the requirement that they be open.



making it impossible for conferences to control the capacity provided by members) is more likely to lead to excess capacity than are 'closed conferences. 'Closed conferences' have historically exercised tight controls on the capacity that members can deploy in a trade. Moreover, features such as the existence of operational groupings or consortia within the conference, cross-chartering of space, and various pooling arrangements reduce or eliminate both the ability of conference lines to expand capacity unilaterally and the incentive for them to do so.

## 4.3.4 Lack of Empirical Support

The final, and most important, criticism of the 'excess capacity' hypothesis is that is seems to be in conflict with the facts - at least as far as closed conferences are concerned.

All Members		British Members Only				
Year	% of space	% of space	Percentage utilised of total space of all			
	utilised on	utilised on	vessels			
	loaded vessels	loaded				
		vessels				
			Both	Outward	Homeward	
			Directions			
1958	91.1	92.6	86.5	78.8	93.9	
1961	89.5	88.9	86.3	79.0	93.0	
1965	94.3	92.6	88.8	81.1	93.0	
1968	95.4	95.3	92.5	90.6	94.7	

Table 1: Load Factors In The UK/Continent Australia And Australia-Europe Conferences - 1958-1963

Source: Deakin and Seward, Shipping Conferences, Table 8.4

Deakin and Seward (1973) performed a rigorous analysis of capacity utilisation of the Europe -Australia trades at a time when the trade was overwhelmingly under the control of a closed conference. Their findings are summarised in Table 1. These figures, which cover a decade of varying trading conditions, offer scant support for the 'open cartel' thesis. Deakin and Seward conclude that 'the degree of utilisation of loaded vessels is high by any standards and reflects considerable organisation and 'rationalisation' by the conference concerned and by individual member lines.' (p165).

This does not appear to be an isolated case. Sletmo and Williams (1981) report that, over a 'recent' twelve year period, the India/Pakistan/Bangladesh Conference 'consistently achieved vessel utilisation rates above 90% in its westbound services and that only occasionally have utilisation rates dropped slightly below this in eastbound traffic (p306).

More generally, one would expect that, if conference operation did in fact lead to excess capacity, the undeniable decline of conference influence over the last fifteen years would have led to a reduction in overtonnaging. There is no evidence that this has been the case, and in fact most observers are of the view that the last decade has witnessed one of the most sustained periods of over-supply in the history of the industry.



It is also worth observing the results of an empirical analysis by Fox (who, as we noted above, is one of the most recent proponents of the 'open cartel' model) of the impact of the US Shipping Act of 1984. The regulatory regime in the United States has historically been extremely heavy handed, especially with regard to rates, and the regulatory agencies have actually enforced adherence to the conference tariff:

An agency of the US Government, the Federal Maritime Commission (hereafter FMC), polices conference agreements at no cost to the cartel. The participants in a conference agreement must collectively file their freight rates with the FMC, and those rates are open to public inspection. Any secretive discounting on those rates is considered 'rebating' and a carrier involved in rebating is subject to a stiff fine by the FMC. (Clyde and Reitzes, 1995).

As noted above, the US regime also mandates open conferences. These two conditions, taken together, provide ideal conditions for the behaviour described by the 'open cartel' models. The 1984 Shipping Act required that all conferences provide member carriers with the right of independent action at not more than 10 days notice, and by so doing, according to Fox, 'essentially legalizes "secret" price cutting and renders it public, which significantly diminishes the chance of successful oligopolistic co-ordination within the conference' (1995, p538). This should, under the 'open cartel' model assumption, lead to a reduction in over-capacity. However, Fox's analysis of data in seven trades (including the US-Australia trades) fails to detect any significant change in over-tonnaging, even in those (few) trades in which independent action was widespread. Neither is there any statistically significant change in other 'quality' indicators, such as transit time.<sup>13</sup>

The association of conference activity with over-capacity is one of two key elements of the 'open cartel' hypothesis: the other is the ability of conferences to maintain high rates in the presence of over-capacity. Once again, the evidence seems to be against them. After a review of five major liner trades, Gilman (1983) concluded that:

the recent history of some major container markets clearly indicates a mode of operation which is at variance with formal models of closed and open conference operation ... A major point is that conferences, even the open ones, do not maintain rates in the face of over-capacity, and rate cutting has been fierce and sustained on a number of major routes in the last few years. (p183).

Not much appears to have changed since Gilman made this judgement. It is virtually impossible to open a trade journal without reading a lament that freight rates have fallen to uneconomic levels in one trade or another. And, as the evidence presented in the previous section suggests, there seems to be a factual basis for these lamentations.

<sup>&</sup>lt;sup>13</sup> Fox suggests that independent action could influence conference power in two conflicting ways: it could induce some lines to join the conference, increasing its share and strengthening it; and it could undermine pricing discipline. However, her own results show that conference market share 'fluctuates over time in no particular pattern', so there is no evidence of the first of these effects. Somewhat surprisingly, she does not explore the implications of this in her conclusions, simply observing that 'the opportunity for price competition has not resulted in a decrease in non-price competition'.



In a recent editorial, the editor of Containerisation International magazine remarked that:

CI has been tracking prices in the three east/west trades (trans-Pacific, trans-Atlantic and Asia/Europe) through its quarterly Freight Rates indicators for several years now and rates in all of these markets have declined over the last two years. In some sectors, such as Asia/US and Asia/Europe, the falls have been dramatic, in others less so'

## concluding that

ocean carrier pricing has rarely been precise or disciplined, despite the existence of rate fixing cartels. (Boyes, 1998b)

## 4.3.5 Summary

The 'open cartel' hypothesis is interesting in that it does highlight a possible source of strain in internal conference discipline. But 'open cartel' models have, as was pointed out by Davies, a serious internal inconsistency. Moreover, they fail to recognise either the natural limits to the type of behaviour they predict, or the possibility of intelligent anticipation of a future crisis on the part of conference members. Neither do they recognise the discipline that arises from actual or potential competition.

Taking these criticisms into account, it is not surprising that 'open cartel' predictions are not borne out by actual market behaviour. Neither the notion that conferences themselves create excess capacity, nor the idea that conferences can maintain freight rates in the face of persistent over capacity, find general support in observations of the real world.

This is not to argue that excess capacity in liner trades is a rarity. It is not. But it arises because of features endemic to the industry: it arises despite the activities of conferences, not because of them. Historically, closed conferences have been able to counteract this tendency in some trades, but as conference power has declined over the last twenty years fewer and fewer conference have been able to do so.

It is also true that conferences would like to maintain rates under conditions of oversupply. All major trades have seen a number of 'rate restoration' attempts - but most have failed to stick. This is in part due to contestability of the industry, and in part due to inability of conferences – whatever their aspirations and intentions – to enforce rate discipline. Recent history suggest that rate restoration will be successful only where:

- demand begins to outstrip supply in a trade; and
- the rates to which the lines aspire are commensurate with the cost of providing the service.

That is, under the same conditions that would, in a perfectly competitive industry, lead to price rises.



## 4.4 Maximising Revenue - An Alternative Goal

In the preceding section, we noted (following Davies) that one of the key problems faced by those attempting to model conference behaviour along 'classical' lines is that of reconciling the observed low profitability of operators pursuing profit-maximisation in the face of inelastic demand. We have discussed two attempts at reconciliation 'organisational slack' thesis and the 'open cartel' thesis (exemplified by the Devanney model), and found them both wanting on theoretical and empirical grounds.

An attempt of a somewhat different kind was made by Trevor Heaver (1973). Heaver's approach was to dispense with the neo-classical assumption of profit-maximisation and assume that goal pursued by conference operators was different - maximisation of sales revenue<sup>14</sup>. Heaver argues that revenue-maximisation is more compatible than profit maximising with both the stated objectives of conferences - usually

'to promote commerce for the common good of shippers and carriers' and the observed behaviour of carriers (particularly rate discrimination, and comparative rate stability). Alternatively, conferences may be forced to adopt a revenue-maximising approach by 'the combined forces of community interest, extra conference competition and the imperfections of the conference system' (p26)

Heaver's approach is refreshing in that it provides an attempt to come to grips with some of the practical realities and constraints of conference operation, but it is rather loosely formulated and no attempt is made to spell out the full implications of the revenue-maximisation hypothesis in the liner shipping context. Heaver seems to switch frequently between the concept of maximising share of market volume and that of maximising revenue, without clearly specifying the distinction between the two. There is also the unresolved problem - already discussed in connection with the organisational slack thesis - of reconciling any form of 'satisficing' behaviour with regard to profitability, with rates of profitability that fall well below a normally acceptable rate of return on capital.

Moreover, as Koutsoyiannis (1979) points out, sales maximisation - like profit maximisation - is incompatible with elasticities of demand of less than unity. Thus the Heaver model suffers from the same basic problem as the profit-maximising model so long as conferences are regarded as monopolies in substantial control of the shipping market - and it appears that Heaver does regard them in this way<sup>15</sup>.

Attractive as some features of it are, then, the Heaver model does not provide either an adequate or an internally consistent description of conference behaviour.

<sup>&</sup>lt;sup>14</sup> This alternative objective was first proposed by William Baumol (of contestability fame). It is adopted by Baumol as the likely outcome of the principal-agent problem referred to in Section x.x. Baumol argues that, while the interests of the firm's owners are best served by maximising profits, those of its managers are best served by maximising revenue - provided that they meet some minimum profitability target at the same time. An extensive treatment of the concept is given in Koutsoyiannis (1 979), Chapter 1 5.

<sup>&</sup>lt;sup>15</sup> Heaver explicitly refers to the shipping conference as 'a cartel with a significant degree of monopoly power'. (p18).



# 4.5 Average Cost Pricing

An alternative model of conference behaviour emanates from UWIST, and is particularly associated with the name of Bernard Gardner.

Originally formalised as part of a study commissioned by CENSA (UWIST, 1978) the Gardner model takes as its starting point the 'normal cost pricing theory' of Andrews. Andrews was one of a number of applied economists who, during this period, attempted to frame a theory of the firm on an inductive basis - by observing the actual behaviour of decision-makers and attempting to infer general rules from it - rather than using the traditional purely deductive procedure of making a set of behavioural assumptions teasing out the logical consequences of them<sup>16</sup>

The original Gardner model, however, in fact owes little to normal cost theory apart from exemption from any obligation to demonstrate that the behaviour ascribed to shipping lines maximises anything.

The model suffers from a fundamental indeterminacy. It maintains that different commodities will make a different contribution to overheads, but suggests that 'the freight charged for the carriage of any commodity will be determined by the price at which a potential competitor would be willing to carry that commodity in the long run'.(p128). The problem is, of course, that precisely the same could be said of the competitor line. In the absence of a unique cost basis, what each party would charge is dependent on an unverifiable hypothesis about what every other party would charge.

This may in fact be very close to the truth. But it will not yield the clear determinate solution that Gardner<sup>17</sup> and his colleagues imply it will.

Miklius and Wu (1983) make a number of other criticisms of this model, including its approach to dealing with variations in trade level, its rather unorthodox definition of long run costs, and its rather cavalier dismissal of the difficulties of computing average costs in a multi-product industry. They conclude that:

the model is confusing because the terms used differ from conventional usage but are not defined, and it is not specified with sufficient rigour to derive testable implications. The model therefore, does not provide either a satisfactory explanation of conference behaviour, or supply a basis for further research (p15).

By and large, this is fair criticism. But Gardner's analysis, flawed as it is, drew attention to some significant aspects of liner shipping that are crucial to an understanding of conference behaviour but which had been largely neglected by other writers. Not the

<sup>&</sup>lt;sup>16</sup> P. W. S. Andrews principal contribution was contained in his *Manufacturing Business* (Macmillan, 1938). Koutsoyiannis (1979), Chapters 11 & 12, contains a typically incisive presentation and critique.

<sup>&</sup>lt;sup>17</sup> In a later article, Gardner shows some awareness that indeterminacies of this sort underlie the model, in arguing normal cost pricing theory cannot be reconciled with a static marginalist approach because of the indeterminancy of the long-run demand curve facing the firm. This indeterminacy arises because of uncertainty about the behaviour of competitors. But he does not appear to realise that precisely the same concerns render his pricing model indeterminate. See Gardner (1986).



least important of these were the importance of potential competition and the necessity of regarding the liner shipping operator as a multi-product firm.

Gardner also stresses the long-run nature of the profit-maximisation objective of liner shipping (and for that matter most other) companies. This is important because there may be substantial inter-temporal dependence of pricing decisions. The prices charged in any one year will influence the pattern and level of demand in future years for a whole range of reasons: because excessive prices will encourage entry, because customers who defect when prices are raised may not necessarily return if they are dropped again, because 'incentive rates' may assist an exporter to gain a foothold in a new market, and so on.

This has important implications. Whereas under the neo-classical framework, long-run profit maximisation implies maximising profits in each and every period, opportunistic exploitation of short-run excess demand would, given inter-temporal dependence, often — in our view usually — have a deleterious effect on long-run profitability.

The problem is to decide what the *objective* of long run profit maximisation means for the strategy of price and output determination. Setting marginal revenue equal to marginal costs will not do, since, given inter-temporal independence, marginal revenue is unknown and unknowable.

Despite the shortcomings we have previously discussed, the most obviously appealing approach is to look, as Gardner did, to normal cost pricing theory. This has the advantage of offering consistency with both the level of knowledge of the market environment that ship owners can be expected to have and with observed pricing practices.

# 4.6 The BTCE Analysis

The survey of conceptual models outlined in the previous sections does not pretend to be exhaustive. What we have tried to do is to present a fair sampling of the alternative approaches that have been adopted, and explain why, in each case, the model proposed is less than adequate as a representation of how liner shipping markets actually function. Many offer some insight in certain aspects of conference behaviour, but none appears adequate to provide a satisfactory explanation of how the liner shipping system actually works.

It is interesting to compare this conclusion with that reached by Harvey (1993) of the BTCE, who undertook a detailed review of three models of conference behaviour:

- price discriminating monopolist;
- highly contestable market; and
- open cartel.

Harvey's judgement that 'the real world situation in Australia liner trades is best explained by a dynamic interacting of all elements of all three models' implies that that he found, as we do, none of the models is entirely adequate. Moreover, we agree that



many models can nevertheless provide some useful insights into aspects of the liner shipping trades. There are, however, several points on which Harvey's view differs significantly from ours.

#### 4.6.1 Price discrimination and contestability

Harvey claims that the 'contestable market view' may be consistent with price discrimination, but only in thin trades; and that it is not consistent with the charging of prices below long run marginal cost. This judgement to appears to be based in part on the view that economies of scale in liner shipping are fairly rapidly exhausted. This is somewhat difficult to reconcile with his assessment of economies of ship size and economies of trade density, and seems to be strongly influenced by a belief that organisational economies are unimportant. Harvey follows a number of other authors (Jansson (1974), Fergusson et al (1961) and Cassidy (1982)) in dismissing the idea of important organisational economies of scale. We have shown earlier that this is difficult to reconcile with the corporate behaviour of shipping lines and available analyses of shipping line cost structures. In general, we believe decreasing costs pertain in most liner shipping markets, and certainly in the relatively thin Australian trades. The level of long run marginal costs are likely to be lower, and the scope for socially beneficial price discrimination broader, than Harvey's analysis suggests.

But the real issue is more fundamental. The analytical approach relies heavily on the concept of the long run marginal cost (LRMC). From perspective of capacity provision, this is reasonably clearly defined. Given economies of ship size, it would be reasonable to approximate the LRMC as increase in cost required to acquire and operate slightly larger vessels, divided by the increase in capacity (plus of course any variable costs associated with the handling of a unit of cargo). One would expect that a rational shipowner — conference or otherwise — would increase capacity only if the expected average revenue per slot exceeded this value.

When we try to interpret this in terms of freight rates things become much more complicated. If each freight rate classification moved in equal volumes on each leg of the journey, was not subject to any seasonal variations in carriage, required the same level of predictability of space availability, and was subject to a similar extent to non-systematic fluctuations in volumes, then we would — if no special equipment was required, cargo care costs and sales costs were also identical — be justified in believing that any freight rate below LRMC implies a loss of social welfare, and would be unsustainable in a contestable markets.

In reality, things are far more complicated. One of the complications is addressed by Harvey in his discussion of front and back-haul rates.

He points out that:

except in highly unbalanced trades, freight rates cannot be determined by considering costs alone. Separable costs provide lower limits and demand factors then determine how far rates can be raised above these. In a competitive market, the rates would be in the long run at the level where the total cost is just covered



In the extreme but by no means unusual case in which a line needs to reposition containers to meet demand on another leg, the separable costs of carrying an additional unit of cargo can be almost zero: even the handling costs would in any event need to be met. Moreover, it is far from uncommon, especially in North-South trades (including the Australian trades), for container imbalances to be a structural feature of the trade, and for formal tariff rates for certain commodities to take this into account.

Seasonal factors can also be important. Given the requirement to adhere to fixed sailing schedules, liner shipping operators have very limited scope to vary capacity in the short term. We then have a version of the peak-pricing problem that has been extensively explored in the economic literature. In essence, solutions to the peak pricing problem recommend that the bulk or all of cost of additional capacity should be borne by those cargoes travelling in the peak, while off-peak users should cover at least separable costs. This too can lead to formal tariff rates that are lower than long run marginal cost.

In either of the above cases — both of which are common in liner shipping — we need to draw a distinction between the long run cost of providing the marginal slot and the long run cost of carrying a particular cargo. Economic efficiency — and the sustainability of the pricing structure in a perfectly contestable environment — requires that the total revenue gained from all users of the marginal slot over the life of the vessel should equal the long run marginal cost of providing it. But, in the real world of unbalanced flows and cargoes with different seasonal patterns, neither efficiency nor sustainability — even in perfectly contestable markets — require that the freight rate for any particular commodity bear any relationship to it.

A useful analogy can perhaps be drawn with airline operations, which share a number of features with liner shipping. Yield management, which is a central feature of the commercial management of most airlines, is about price discrimination. Passengers on the same flight routinely pay vastly different airfares, and it is most unlikely that the relationship to long run marginal cost is even a consideration in most pricing and fare class quota allocation decisions. The well-managed airline will no doubt seek to ensure that, over the long term, the revenue it derives from a marginal increase in capacity will meet the full cost of that increase. But this cost has little direct relevance to the decision on what price will be charged for a particular class at a particular time on a specific route.

### 4.6.2 Excess capacity and the 'open cartel' model

Another point on which we differ is on the usefulness of the open cartel model, which Harvey appears to regard with considerable favour: only the open cartel model is compatible with low profitability, price discrimination and the carriage of unremunerative cargoes'.

For the reasons discussed in the previous section, we do not see that there is any contradiction between a contestable market model of liner shipping behaviour and any of the three phenomena remarked by Harvey. Moreover, for the reasons set out in detail in Section 'Open Cartel' Models, the 'open cartel' model is fundamentally deficient on both conceptual and empirical grounds. Most importantly, it is fundamentally dependent upon a presumed ability of conferences to maintain prices



well above efficient cost level in the presence of excess capacity. As we will see Section Conference Profitability, the recent history of freight rates in many trades in which conferences continue to play a significant role — including a number of Australian trades — offers scant support for this hypothesis.

Much of the attraction of the open cartel model appears to stem from the fact that it predicts the likelihood of excess capacity, and excess capacity is, as we noted in Section 'Open Cartel' Models, common in the liner shipping business. But the association of this problem with conferences is problematic, and indeed the weight of historical evidence — at least outside of the US trades — seems to be in the reverse direction.

It does not appear to us to be necessary to resort to 'open cartels' in order to understand why excess capacity is endemic in liner shipping. We have already discussed the fact that trade imbalances are characteristics: wherever this is the case, there will be a chronic surplus of capacity in one of the two trade directions.

We have also noted that liner shipping operators cannot adjust capacity continuously. The liner shipping market has experienced fairly robust growth over a long period. In our judgement, Gardner's contention that the most lines focus on long run rather than short-run profits is valid (Gardner, 1986). Maximising long run profits is more rational as a general principle of behaviour and more consistent with the observed realities of conference activity. It also has the appeal of being compatible with the stated objectives (being in a trade for the long haul) and longevity of conferences. This further increases the incentive to provide a degree of spare capacity. In the long run, the commercial penalty for short-shipment of cargo can, for instance, be far greater than the immediate loss of revenue (Jansson, 1974). The loss of goodwill may imperil a very substantial future revenue stream. In addition, the long-run profit maximiser will in general be permanently on the lookout for new trade opportunities, and will ensure that it is capable of responding to potential new customers. It will therefore tend to provide vessels of sufficient capacity to cope with the volumes that it hopes to secure by the end of the period for which the ships are committed.

For both of these reasons, the perceived commercial penalty for introducing vessels that are too small is higher than the risk of introducing vessels that are too large. Given imperfect knowledge of what the actual trade outcomes will be will bias shipowners decisions and create a tendency to carry reserve capacity.

The considerations outlined above do not make any assumptions about industry structure, and would apply even if the liner shipping sector consisted of a large number of small competing firms acting without regard for each others action. However, we know that this is not generally the case in liner shipping. Typically, the number of major players in any given trade line is limited, and participants are acutely aware of what their competitors are doing.

This creates a further force encouraging the development of excess capacity and one that is most clearly illustrated in the ordering of post-Panamax ships in the mid-1990's. Technically, the first post-Panamax vessels were actually introduced by American President Lines in 1988, but this decision had little impact on the trade. However, in 1994 and 1995, a handful of major lines, including NYK, Maersk, P&OCL and APL



placed orders for post-Panamax vessels that had significantly larger slot-capacity than the largest Panamax vessels. Within months, the trickle of orders became a flood, and within two years almost all major global operators had acquired or placed orders for post-Panamax vessels (Drewry, 1996). The result was an increase in containership capacity that massively outstripped trade growth.

It is understandable that many trade commentators write off this behaviour as irrational, lemming-like 'me too-ism' on the part of liner operators. But it is probably safer to assume that there is a rational basis for the lines' action. Such a basis it outlined, in a non-rigorous fashion, in the following paragraphs.

Consider the situation of a trade in which supply and demand are initially in equilibrium, no excess profits are made, but in which each line operates at a suboptimal scale. (These characteristics will be familiar from the textbook expositions of equilibria under monopolistic competition- see, for instance, Nicholson (1998)). Each line has an incentive to acquire larger vessels and seek sufficient market share to fill them. Once the trend to acquire bigger vessels with lower unit costs is established, individual lines are placed in a position very similar to that of the prisoner in the celebrated 'prisoner's dilemma' game, even if they know there is already excess capacity (Hargreaves Heap and Varoufalis, 1995). The leader lines — those that upgrade to larger vessels — will have a potential cost advantage. Provided they can fill their vessels, they will be able to offer lower rates than those that choose not to upgrade. By doing so, they can actually win additional cargo away from the followers - those that do not upgrade. The excess capacity will therefore be concentrated in the follower lines, which will make substantial losses. Anticipating this, the followers could simply give up without a struggle, and leave the business to those who first introduce larger vessels. Alternatively, they could fight back. Lines that are in the business for the long haul, and have substantial investment in agency networks and other non-vessel costs, are likely to take the latter course. There are two ways in which they might do this. One is simply to compete on price, cutting their rates below cost. It is not difficult to show that in the short run, and if the followers could be confident that the leader would not respond, this would be the loss-minimising strategy. But it is probable the followers anticipate that the leaders, finding they are not achieving the market share they need, would also cut their rates. In this case, it would be suicidal for the follower, which has a higher cost structure, to respond by cutting rates.

The other approach is to emulate the leaders and acquire larger vessels. This will of course lead to surplus capacity, additional aggregate industry costs, and probably to losses, at least in the short term. From the point of view of overall economic efficiency, this solution may be inferior to the starting port. But it may well be preferable, from the point of view of the individual line, to either withdrawing from the trade or quixotically attempting to compete on price against lines with a lower underlying cost structure.

In the longer run, we would expect the market to shake down, with some lines departing to bring supply into line with demand. However, particularly if the opportunities for redeployment of vessels are limited, this may take a considerable time. And there it no guarantee that the new equilibrium, once reached, will be stable.



If several suppliers continue to exist and trade continues to grow, movement to a new vessel size plateau will become attractive: with the excess capacity from the last spate or orders not yet eliminated, there are already reports of lines looking at designs for 8000 TEU+ vessels.

This cycle is not induced by conference action. In principle at least, conferences can actually put a brake on this activity by brokering agreements not to undertake premature agreements of capacity, or to confine expansion to a subset of lines by sharing the benefits through pooling and slot exchange agreements. This appears to have actually happened in the cases examined in Section Lack of Empirical Support, though the ability of many modern conferences to manage such agreements is rather doubtful. Nor does this mechanism require the enticement of realised excess profits. Behaviour is driven by the stick of being unable to earn even normal profits rather than the carrot of excess profits. Again, this is far more consistent with the low levels of profitability that **preceded** the post-Panamax boom than the 'open cartel' hypothesis.

The post-Panamax boom provides the neatest recent exemplification of the working out of the 'prisoner's dilemma' game in liner shipping. This cycle is a commonplace to those who observe how the industry actually behaves, rather than speculate on how it ought to behave. The dynamics of the recent round of re-equipping in the Australia-South East Asia trades are, in all fundamentals identical.

In fact, although no fully articulated model has as yet been presented in the literature, game theory promises to provide a far more useful framework for understanding what really happens in liner shipping markets than conventional comparative statics models.

# 4.7 Game Theory and the Theory of the Core

## 4.7.1 The Theory of the Core

In Section Price discrimination and contestability, when discussing the issue of pricing below long run marginal cost, we argued that that, given the economies of scope and scale, combined with issues such as front and back-haulage rates and the peak load pricing, there is no unique cost basis for establishing the appropriate price for any particular service offered. Similarly, with interdependence of pricing decisions, both between firms and between periods for a single firm, there is no unique demand curve that can be used as a basis for establishing appropriate prices. This leaves us powerless to proceed further with the conventional neo-classical analytical apparatus. Over and above the specific difficulties that we discussed with respect to each individual model, there is a general difficulty that the fundamental analytical approach may be inappropriate.

Game theory provides an alternative approach to understanding the behaviour of liner shipping markets that explicitly accounts for at least some of these inter-dependencies. If entry to individual sub-markets is free, the theory of the core, derived from game theory, could be of some importance in determining bounds to the set of feasible price strategies. Talley (1989), working in a somewhat different context, defines core allocations of common costs as allocations that satisfy three conditions:



Condition of Individual Rationality	A shipment's cost allocation must be no greater than the corresponding cost to be incurred by the firm in providing a service exclusively for that shipment				
Condition of Group Rationality	The sum of the cost allocations must be equal to the common cost of the trip				
Condition of Coalition Rationality	The sum of the cost allocations assigned to a subgroup of shipments. must be no greater than the cost that the subgroup would incur exclusively.				

Baumol et al. (1982) recognised the affinity between the idea of the 'core' that emerged from game theory and the concept of 'sustainable prices' - that is, prices that can be maintained indefinitely in contestable markets. For technical reasons, however, they did not attempt to integrate the two formally. Given the contestability assumption of equal access to the technology of supply, the 'core' solutions to the cost allocation problem should define the set of prices that would be available to a conference in a contestable market. With any other prices, there would be a profit opportunity available to a potential entrant, who choosing to serve only a subset of trades, could do so profitably while keeping prices beneath conference rates.<sup>18</sup>

One of the most important differences between conventional micro-economic analysis and core theory approaches to the analysis of liner shipping markets is that there is no guarantee that there will be any set of prices that satisfies these conditions. The core may be empty. Under these conditions prices may be inherently indeterminate.

### 4.7.2 Core theory and liner shipping

The idea of indeterminate prices has of course a long history in liner shipping, although the vocabulary in which this has been expressed has historically been rather different: earlier writers has referred to 'cut-throat' or 'destructive competition'. (Marx, 1969). Economists, relying on neo-classical analytical methods that presume the existence of an equilibrium, have tended to look down their noses at such arguments, and regarded evidence of below cost pricing as either tactical pricing to deter entry or turbulence experienced during the transition from one point of equilibrium to another.

However, as the application of game theory to problems of market structure (see, for instance, Telser (1988) and Bittlingmayer (1985)) has become increasingly common, there has been a recognition that the 'destructive competition' view may after all be intellectually respectable.

Sjostrom (1989) has attempted to apply the theory of the core directly to liner shipping markets - with some interesting results. One of the most important of these is that there is a strong probability that, where entry is completely free but the optimal scale

<sup>&</sup>lt;sup>18</sup> The issue of sustainable freight rate differences arising from differences in service quality is ignored here. This is an important issue, but does not affect the argument of this section and can, for the moment, be safely assumed away.



of operations is large compared to the total market, no competitive equilibrium exists. Sjostrom notes that:

An agreement among firms to fix price and output could impose equilibrium when the core is empty. I interpret such agreements as a means of imposing an equilibrium rather than a means of extracting monopoly rents. This interpretation follows from the assumption of free entry, where, as Demsetz noted, competition amongst suppliers ensures that the agreement serves to maximise consumer surplus subject to the constraint that profits be nonnegative.

Sjostrom develops a formal model in which price fixing is a response to the problem of an empty core, and compares the predictions of his model for conference behaviour to those that follow from a monopolistic cartel model of conferences. He concludes that:

I derived several testable implications of this theory and compared them with those of cartel theory. A test of the three differing implications, using data from shipping conferences, clearly rejected the cartel theory and offered support for the theory of the core. The results, although certainly not definitive, offer further evidence for the proposition that market arrangements that appear to be cartels may be attempts to solve the problem of an empty core.

Sjostrom's model is radically simplified, and his results must be regarded as tentative but they are interesting in that they are consistent with the fears of those in the trade who feel that chaos, rather than merely competition, is the alternative to rate agreements.

The conclusions at which Sjostrom arrives are supported by the work of Pirrong (1992), who points to longevity of conferences in the face of relatively free entry as evidence that price agreements represent attempts to resolve empty core problems rather than to extract excess profits or defend inefficient operations:

the ability of cartels to survive the constant pressure of entry is clearly at odds with the view that cartels are inefficient monopolisers... As long as the conference attempts to raise prices above the level that generates normal profits for the efficient set of vessels, new firms will enter profitably. Unrestricted entry implies that colluders will earn only normal profits. So why collude in the first place? Core theory answers that riddle: collusion is an efficient response to competitive chaos

### 4.7.3 Summary

The amount of work that has so far been done on the application of game theory and the concept of the core to liner shipping is limited, and model is somewhat simplistic. It could not as yet be said to comprise a fully articulated model of the behaviour of the liner shipping market. Yet even at this early stage of its development, it seems to be closer to providing predictions and interpretations that correspond to the empirical realities of the market than the more traditional approaches. It also brings the formal analysis much closer to the practical wisdom of the market place.



# 5. CONFERENCE PRICING AND PROFITABILITY

Economic issues relating to the pricing policies adopted by shipping conferences can conveniently be divided into two classes: those concerning the level of prices, and those concerning the structure of prices.

## 5.1 Conference Profitability

The level of prices obviously bears directly on the profitability of liner shipping. If conference lines in general can be shown persistently to realise excess profits, then there is a good *prima facie* case that they are exploiting their market power and maintaining prices at an undesirable high level.

This is a question that is, in principle, amenable to direct empirical resolution, although the confidentiality of much of the relevant information can make assessment difficult in practice.

## 5.1.1 A Historical Perspective

The historical evidence persistently indicates low levels of profitability in liner shipping, even during periods in which conferences undoubtedly wielded far greater evidence than they do now.

Deakin and Seward (1973) note that 'it is widely believed that the business of operating vessels under shipping conference conditions yields a relatively low rate of profit' and cite the findings of the Rochdale Committee of Inquiry into Shipping that the average profitability of UK owned and registered industry group "liners, basically cargo" was 3.1% per annum over the period 1959-1969. This compared with an 'all British companies' figure for the same period of 13.4%.

Deakin and Seward's own research results are basically consistent with this finding. Analysing the returns of all the lines involved in the Europe-Australia trade, they find an average return of 5.8% per annum on assets valued at written down historical cost (the basis of the Rochdale calculation), or 3.2% if a replacement cost approach to asset valuation was adopted. The authors note that these were the returns obtained under conditions in which the conference controlled the overwhelming majority of the trade, and internal discipline was good, and conclude that:

This part of our analysis validates the first hypothesis we set out to test: That the profitability of a large specified group of conference freight liner operations is low in relation to the profitability of other industries' (p76).

Deakin and Seward's conclusion is backed by a number of other reviews of conference profitability. Sletmo and Williams (1981) cite a Standard and Poor study that found that 'the return on equity in the liner shipping industry averaged 7 per cent as opposed to 11 per cent for all other industries' for the years from 1956 to 1962.<sup>77</sup>. Miklius and Wu (1983), following a survey of several relevant studies, conclude that 'liner firms are not earning higher than normal profile. And Trevor Heaver, after reviewing the profitability of eight of the largest liner companies over the period 1965-1980, concluded that:



in the light of previous analysis, it is not surprising that this study concludes that the rate of return earned by the shipping companies studied here has been less than adequate. There is no evidence in the analysis that conferences aid liner companies to earn above normal rates of return. (Quoted by Davies (1985b)).

More recently, *Containerisation International Yearbook 1992* reported a study by Booz-Allen and Hamilton that showed a return on assets for US carriers in 1991 of well below 2%, ranking it 20th out of the 23 industry sectors surveyed. Moreover

the same report also showed that for the ocean liner shipping industry at large the average pre-tax return on assets for the five-year period 1985-89 was only 1.47%. This compared with a still modest, but nonetheless sounder, 4.6% in 1979-82.

A similar study cited by Drewry Shipping Consultants (1992) found that:

Between 1980 and 1989 average net income expressed as a percentage of assets for ten major shipping companies (APC, Sea-Land, CGM, CMB, Delmas, Hapag-Lloyd, K-Line, Nedlloyd, NOL and Zim) only rose above 2% on three occasions.

### 5.1.2 The Current Situation

The 1990's has not been a good period for liner shipping companies. The decade began with a recession that resulted in plummeting rates and low load factors. There were some signs of recovery towards the middle of the decade, but increased volumes were rapidly swamped by new capacity as more and more lines brought on line their new post-Panamax vessels. Before this bulge in new capacity could be absorbed, the Asian crisis hit, slowing trade growth below expectations. More importantly, the crisis led to massive trade imbalances as Asian imports dried up at the same time as many Asian economies tried to export their way out of trouble.

According to UNCTAD (1998), average container freight rates to and from Europe fell, in nominal terms, by around 10% between 1991 and 1999. This European-based index does not include rates on the trans-Pacific routes (eastbound rates fell by 14.7% in 1999 alone), and those on intra-Asian routes, both of which have been hit particularly hard by recent events in Asia. The average worldwide decline in freight rates is therefore likely to be somewhat larger than the UNCTAD index suggests.

Carrier results for 1998 are not yet available for analysis. *But Containerisation International*'s analysis of operating results for 1997 (see Table 2) does not suggest that, even before the latest decline, container shipping was excessively profitable.

average GPM [gross profit margin] of 5.8% and ROI [return on investment] of 3.5% in 1997 compared with 6.6% and 6.3% in 1996 respectively (Fossey, 1998)



Reported profits, of course, are subject to the vagaries of accounting conventions, and most of the companies listed have interests that extend well beyond liner shipping. But *CI* reports that the table reveals 'just how unprofitable container liner shipping is, with many of the specialist box operator occupying the lower positions' while 'companies having a diversified portfolio of shipping interests' –especially in tankers and car carriers – fared much better).

Company	Total	Operating	Assets	GPM	RoI
	Revenue	Profit			
MISC	620	126	1266	10.040/	0.220/
	032	120	1300	19.94%	9.22%
Wilhelmsen Lines	632	101	266	15.98%	-
Atlantic Container Line	306	46	266	15.03%	17.29%
Matson Navigation Co	/13	100	931	14.03%	10.74%
Hoegh Lines	129	18		13.95%	-
Maersk Line	5176	703	5254	13.58%	13.38%
UASC	593	60		10.12%	-
CP Ships	971	96	874	9.89%	10.98%
Safmarine	702	66		9.40%	-
Hyundai Merchant Marine	2333	217	2911	9.30%	7.45%
Wan Hai Lines	673	47	472	6.98%	9.96%
CCNI	158	10	155	6.33%	6.45%
Mitsui OSK	5726	323	8824	5.64%	3.66%
Evergreen Marine Corp Ltd	1337	73	2280	5.46%	3.20%
Yangming Marine Transport Corp	952	50	1125	5.25%	4.44%
Hanjin Shipping	2022	100	3467	4.95%	2.88%
Transportacion Maritima Mexicana	914	44	1312	4.81%	3.35%
Sea-Land Services	3991	185	2576	4.64%	7.18%
Nippon Yusen Kaisha	7398	317	9980	4.28%	3.18%
Compania Sud Americana de	1055	44	728	4.17%	6.04%
Vapores					
CMB NV	1313	41	2646	3.12%	1.55%
Hapag-Lloyd	1568	48		3.06%	-
Uniglory Marine Corp	490	15	463	3.06%	3.24%
OOIL	1896	46	1872	2.43%	2.46%
P&O Nedlloyd	3366	73		2.17%	2.00%
K Line	3593	38	3951	1.06%	0.96%
CMA-CGM	1307	12	913	0.92%	1.31%
Zim Israel Navigation	1415	7	1189	0.49%	0.59%
Italia di Navigazione	1529	-75	7956	-4.91%	-0.94%
Lloyd Triestina di Navigazione	250	-17	74	-6.80%	-22.97%

 Table 2: Financial Results for a cross-section of container ship lines, 1997 (\$US million)

Source: Fossey (1998a). GPM = Gross Profit Margin; RoI = Return on Investment



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While it may be possible to quibble about the meaningfulness of individual components of the information presented in this section, market conditions reported in all major trades, information on freight rate movements, and records of interviews with shipping and shipper executives are all consistent in painting a picture of depressed rates, persistent excess capacity, and low profitability.

5.1.3 The Australian Trades

Some authors believe that, during the late 1970's in particular, shipping lines operating in the Australian trades were making super-normal profits. (Sayers (1986); Cassidy (1981b)). However this may be, there is little reason to believe that operators in the Australian trades have been faring significantly better than those elsewhere during the 1980's and 1990's.

The 1993 Task Force undertook a survey of financial result for liner shipping companies operating within conferences to and from Australia:

A total of 83 annual profitability results were reported for various years, of which 29 or about 35% were profits (3 after state subsidy) or break-even. Of these, 10 were in the east coast to North Asia trade, and 10 in the Europe trade... In only 6 out of 20 cases did the operator indicate that it was profitable in its financial year ending 1992. (Brazil, 1993, p72)

The aggregated reported outcome for all respondents was a loss of \$32.1 million.

Some caution is justified in responding to these results. They relate to unaudited results at a disaggregated level, and there is clearly some potential for lines to understate profitability if they believe it is in their interests to do so. One obvious way of doing this is to inflate those cost components on which it difficult to run an independent crosscheck, such as administration and overheads. Brazil notes the some lines did report very high levels of administrative and overhead costs. However, the Task Force concluded that 'even given this, there appeared to be no evidence of excess profits in the Australian liner trades at present.'





Things have subsequently got a lot worse for liner shipping operators. Figure 6 shows that, even in the comparatively stable European trade, export freight rates have declined in nominal terms by around 11%, while inbound rates —which provide the majority of the revenue in that trade — have declined by nearly 20%. Adjusted for inflation, this represents real price reduction of around 30% and 40% respectively. Prices in the Japan-Korea trade have fallen even more markedly. But these reductions pale by comparison with the free fall of SE Asia rates, which are now at 40% (outbound) and 31% (inbound) of their 1992 levels — in nominal terms.

# 5.2 Specific Pricing Practices

### 5.2.1 Pan-Australian Rates

Pan-Australian rating - the practice of setting a single rate for a commodity in an international trade irrespective of the Australian port of origin - has been the subject of controversy for many years. Although it can still be found in some trades — it is common, for instance, in the carriage of meat in the US trades — the use of pan-Australian rates has declined substantially over recent years. The long-standing practice of 'centralisation' of Tasmanian cargoes, for instance, has been largely abandoned. However, because the issue is controversial, and because it is explicitly raised in the Commission's issues paper, the economic logic of pan-Australian rates is discussed in this section.

In addressing this issue, it seems useful to us to maintain a distinction between those that are specific to a particular port call, and those, which are not.



## a) Non-Specific Costs

The port specific costs include all of the out-of-pocket costs associated with moving to and through a port. They also include the charges levied on the vessel by the port authority. The non-specific costs are those associated with the ownership and operation of the vessel itself.

There is no unique way of allocating the non-specific costs between ports of call. It is, of course, possible to compute a diversion cost, measuring the difference in cost between the costs of a voyage that includes a call at a particular port and one that does not. But the sum of the diversion costs for all of the individual ports on the route will generally fall far short of the total cost of serving the route. We are therefore once again faced with the problem of allocating the remaining joint costs in some sensible way.

There is no unique solution to this problem, although there are bounds to the economically sensible and commercially feasible range of solutions.

A lower bound is provided by the need for the revenue gained by the port call to equal the avoidable costs of diversion. Since ensuring that this occurs is in the commercial interests of the ship operator, it seems unlikely that this condition will be consistently violated.

An upper bound is provided by the possibility of competition from an entrant who chooses to serve only a subset of the ports covered by the conference operator. If it is possible to serve any subset of ports at prices lower than those charged by an operator or conference, and still make a profit, then in a contestable market entry will take place and the incumbent will be forced to revise its pricing policy.

Historically, Pan-Australian rating systems have fallen within the fairly broad set of pricing options that fall between these constraints. Sometimes they have not — as in the case of West Coast trades with SE Asia — and in these cases the system has broken down under commercial pressure.

As far as non-specific costs are concerned, neither Pan-Australian rates nor their passing should be lamented. Pan-Australian rates provide one possible solution, negotiated between shippers and ship owners, to a pricing problem that cannot be uniquely resolved by the operation of impersonal forces. They have the dual advantages of simplicity and appealing to a sense of fairness, and therefore are -or have been - a more attractive solution than most. If, as appears to be the case, the changing nature of competition means that they cease to be commercially viable, then they should and will go. But until that occurs, they can be charged with no crime.

Fundamentally, Pan-Australian rating for non-specific costs is a non-issue.

### b) Port Specific Costs

There is, however, some case for suggesting that port specific costs should be excluded from Pan-Australian rates. By definition, these costs can be unambiguously



attributed to the cargoes passing through a particular port, so the joint cost problem does not arise.

It is arguable<sup>19</sup> that the failure to differentiate between the costs of using different ports of loading will distort resource allocation. In addition, separation of port costs does permit movements in the costs to be more clearly monitored, since they will not be masked by the market-determined swings in the level of the ocean freight rate.

If this is a concern, then the most logical approach is to separate carrier charges into two components – an ocean freight rate, and a specific charge to cover:

- the costs incurred by the vessel in calling at and
- the costs of handling cargo in a specific port

This raises the issue of port-based imposts, such as port service additionals and terminal handling charges.

### Port Service Additionals

The first of the two costs groups are reflected in Port Services Additionals (PSA's). PSA's were introduced in Australia following a change in port pricing structures in some port that placed a far heavier emphasis than previously on ship-based charges. They were intended as a transparent mechanism for passing through the impact of these changes to shippers, and as far as we are aware have been reasonably well-accepted by shippers. As a means of reflecting the costs faced by the line in making the port call, however, they are imperfect. They reflect the change in charges at a particular port over the charges prevailing at that port in 1989<sup>20</sup>. What they do not reflect is the difference in costs between two ports.

### Terminal Handling Charges

Terminal Handling Charges, which are, in principle at least, intended to reflect the different cargo handling costs faced in different ports, are a far more controversial issue. Prior to containerisation, shippers met the cost of bringing the cargo to the ship's side, and importers paid the stevedore for sorting and stacking. As part of a package of changes that accompanied containerisation, the charging basis changed, with the shipping line meeting all the costs incurred within the container terminal, and recovering these costs through a consolidated freight rate that was 'terminal gate to terminal gate'.

Beginning in Europe in 1974 – and initially with the support of the shipper organisation – an attempt was made to amend this approach to charging, and to separate out the costs traditionally borne by the shippers from the freight rate, and to bill these separately. A detailed analysis of the costs of all of the individual components of the

<sup>&</sup>lt;sup>19</sup> Only arguable, not certain, because the self-financing requirement imposed on port authorities itself introduces resource allocation distortions. We cannot be sure that the two types of distortion do not tend to offset each other.

<sup>&</sup>lt;sup>20</sup> 1992 for Adelaide



box movement gave rise to the 'CENSA formula', which estimated that 80% of the costs of storing and handling containers related to elements of the chain formerly borne by the shipper. This formula was then used to develop terminal handling charges (THC's) that were separated out from the freight rate, and billed separately. A corresponding adjustment was then made to ocean freight rate. (Crichton, 1998))

The practice has spread well beyond the Europe trades, and THC's have now become widespread. However, the Australian Peak Shippers' Association (APSA) is vehemently opposed to their introduction in Australia, and they do not at present apply to the origin end of the Australian outward trades. They do apply (in most trades) to the destination end, and to both origin and destination ports in the import trades.

APSA is not alone in its opposition to THC's: THC's have probably been the single most contentious issue in shipper-shipowner relations during the 1990's. In general, shippers' councils have been less than happy about them: the European Shippers Council withdrew its support for the concept in 1991, and the Hong Kong Shippers Council and the Japan Shippers Council have both been particularly vocal in their opposition. In Australia, however, the negotiation requirements of Part X have made the APSA's opposition particularly effective.

In part shipper opposition can be put down to a combination of mistrust and resentment. The mistrust arises because, in many jurisdictions, shippers have not had access to information on lines' stevedoring charges, and so have been unable to make independent judgements on whether the THC's genuinely reflected lines costs or were simply an additional impost. (Crichton (1998) singles out Australia as an exception in this regard). The resentment arises from the fact that THC's have sometimes been introduced unilaterally, without prior consultation with shipper groups.

These factors do not, however, explain all of shippers' resistance. In particular, they do not adequately explain the Australian situation, since Part X guarantees both shippers' access to relevant data and shippers' right of prior negotiation. Carriers' motives in introducing THC's have not been simply to increase accountability and transparency. Much of the impetus has come from a desire, at a time when prices in many trades appeared to be in free fall, to find some way of putting a floor under at least some portion of the freight rate. THC's provide a means by which some part of the rate can be presented as determined by objective and (at least in principle) verifiable factors beyond the carriers control. As such it is presented as outside of the scope of commercial negotiations. The price of transparency is non-negotiability.

Whether this strategy is rational or not is a moot point. It is certainly true that, while freight rates in many trades have continued to fall, THC's (again, Crichton notes, with the exception of the inbound THC's levied in the Australian trades) have generally held up, or even increased. But, from an economist's point of view, it is difficult to see how simply splitting the charge into two parts will have any effect – positive or negative – on the overall outcome. We would argue that the total sum paid by shippers would be determined by the structure of the market and underlying characteristics of supply and demand. Relabelling charges does nothing to change these fundamental forces. Fixing THC's will simply lead to increased volatility in the residual, ocean freight component. Nor is it necessarily true THC's place a fixed floor under the total paid rate: we were informed recently by officers of the Port of



Singapore Authority that total rates in the Singapore to Hong Kong trade have now fallen below the level of terminal handling charges.

It is generally true that improving the quality of information will improve the efficiency of market operation. There is reason to believe that the introduction of Port Service Additionals has influenced port pricing behaviour by making the impact of changes in port tariffs clear to the end users of shipping services. THC's make the cost of stevedoring transparent, and expose upward and downward movement of these charges to a degree of scrutiny to which they would not otherwise be subject. In this sense, the use of THC's has the potential to contribute to economic efficiency. But this benefit is likely to be modest. Moreover, it will only be realised if THC's are determined at the level of the individual port, and that THC's genuinely reflect (and are seen to reflect) port costs. International experience suggests that the achievement of the second of these conditions is likely only with the backing of disclosure provision such as those provided in Part X.

5.2.2 Price Discrimination

## a) Do Conferences Discriminate?

It is a common feature of liner shipping pricing that very different freight rates can be charged for different commodities between the same two ports.

There has been considerable empirical research devoted to the question of whether these differences simply reflect differences in the cost of carriage of differing commodities, or whether they reflect price discrimination on the part of the ship owner.

Several of these studies have found a strong relationship between price and stowage factor - which has generally been taken as an indicator of the opportunity cost of vessel capacity used in transporting the commodity, and have concluded that cost factors are the most important determinants of freight rates (Zerby and Conlon (1978); Lipsey and Weiss (1976))<sup>21</sup>. However, the majority of these studies also found a correlation between the freight rate and unit value. This is conventionally interpreted as evidence of discriminating between cargoes on the basis of elasticity of demand, since there is a presumed relationship between unit value and demand elasticity. Moreover, several studies find unit value to be the primary determinant of price. (Jansson and Schneerson, 1986; Talley and Pope (1985)).

Despite the fact that virtually all of these studies have a serious methodological flaw that renders their regression results untrustworthy (see Sjostrom, 1988), it is reasonable to accept, on the basis of the available evidence, that shipping conferences do practice rate discrimination on the basis of cargo value.

## b) For and against price discrimination

Objections to price discrimination usually take one of two forms.

 $<sup>^{21}</sup>$  D. Schneerson (1976) also found a correlation between rate and stowage factor, but was unwilling to interpret this as a reflection of cost differences.



*Price discrimination could not occur in perfectly competitive markets. It is therefore prima facie evidence of monopoly power.* 

This appears to be the issue underlying the concern expressed by the PSA in its 1992 Inquiry. The PSA worries that "price discrimination suggests that sufficient market power exists to allow monopoly pricing behaviour and potentially excess profits to be maintained" (p27).

We have argued earlier, and think it is generally fairly well accepted in the literature, that liner shipping is a decreasing cost industry. This is a fact that results not from any action of conferences, but from the technological structure of production.

In a decreasing cost industry, it is not possible — without subsidy —- to follow the classic marginalist prescription of equating price to marginal revenue, since this will not generate enough revenue to cover costs. It is therefore necessary for liner shipping operators to set prices at some level above marginal cost.

If, as in liner shipping, the firm sells into completely separable markets, and there is no scope for arbitrage, it is in effect selling a range of separate products. The question that then arises is: how should the burden of obtaining the additional required revenue be spread over the various products?

One possibility is to require a uniform contribution from each unit of cargo carried. There would then be no price discrimination: but this would be a bad solution.

The analysis of Baumol and Bradford (1970) shows that it would be far better, from the point of view of society as a whole, if the contribution required from each unit of cargo was proportional to the inverse elasticity of demand for the cargo type concerned. This approach is commonly referred to as Ramsey pricing, and it is a form of price discrimination.

It also happens to be very similar to the form of discrimination which a monopolistic service provider, left to his own devices, would practice. The same basic pricing structure that would yield a monopolist maximum profits, also happens to yield the socially optimal solution to recovering the full costs of a declining cost industry. The problem with a monopolist's prices lies not with their structure, but with their level. As Nicholson (1998) notes, 'the allocation of resources under perfect price discrimination is efficient, though it does entail a large transfer of consumer surplus into monopoly profits' (p561). More generally, imperfect price discrimination will lead to an improvement in welfare provide it leads to a higher level of production than would otherwise take place at a uniform price. (Schmalensee, 1981).

The discriminatory prices charged by conferences are not Ramsey prices, for at least three reasons. Firstly, conferences are not monopolies. In setting their prices, they will respond to what they see as the *elasticity of demand for their services* by a particular commodity, not the *market elasticity of demand*. This implies that price structure will be modulated by the perceived intensity of competition for each separate market segment.



Secondly, the information needed to formulate Ramsey prices with precision is extensive and generally unavailable. Thirdly, when marginal cost and elasticities are low, Ramsey prices are extraordinarily sensitive to changes in (or errors in the measurement of) these magnitudes: as a consequence, they are extremely volatile. (Tye and Leonard, 1983).

Nevertheless, both *a priori* logic and the correlation between value and price in the empirical evidence suggest that the direction of discrimination in conference prices is towards Ramsey pricing rather than away from it. Price discrimination is therefore preferable, on economic welfare grounds, to a non-discriminatory structure. This is about as much as we can reasonably hope for in thereal world.

Concern about price discrimination *per se* is therefore misplaced. Indeed, we should be more concerned about a decreasing cost provider who failed to discriminate in his prices between those cargoes that are little affected by price levels and those that are not. The concern we should have is whether the entire panoply of prices is too high, and excessive profits are being made. But this, as we have seen, is manifestly not the case in liner shipping.

### Price discrimination is a form of cross-subsidy, and therefore distorts resource allocation.

This concern is also expressed in the report of the PSA inquiry into congestion surcharges: the PSA maintains that 'charging Pan-Australian rates is also a form of price discrimination', but elsewhere argues that 'if Pan Australian rates are maintained, greater levels of cross subsidisation will occur'.(p58)

There is a clear and important difference between price discrimination and crosssubsidy. Under discriminatory pricing, each unit sold is priced in such a way that it will cover the marginal costs of production. In the context of a multiproduct liner shipping service, this is usually approximated as the average avoidable cost of carriage. Provided the rate set for a commodity remains at or above this minimum level, the costs that need to be recovered from other shippers using the service are at or lower than the level they would be if shipment of the commodity in question ceased.

Cross-subsidy occurs when prices fall below the avoidable costs of carriage. In this case, the cost that must be recovered from other shippers actually increases because the line chooses to carry the commodity.

Cross-subsidies are generally a bad thing, because they distort resource allocation. Price discrimination of the form practised by shipping lines is generally a good thing, because it allows the exploitation of economies of scale and scope.

A practical test for cross subsidy is complicated by the question of the appropriate time horizon for assessing the avoidable cost of carriage. Generally, more costs are avoidable in the long run than are avoidable in the short run, so that the 'floor price' beneath which cross-subsidy would be deemed to occur would be higher if the long run were the appropriate time horizon. If the short run is appropriate, the floor price is likely to be little more than the costs of loading and discharging. It may even be less where the trade is imbalanced, and the line will in any case have to re-position the container.



Despite some divergence of opinion, the weight of logic and informed opinion is that short run costs are the relevant criterion. This has particular force in cases, such as liner shipping, where the product of the industry is perishable, and must be consumed immediately or go to waste.

## Price Discrimination: The Jansson and Schneerson Critique

The views and arguments presented in the preceding section are not original. They follow, with minor variations, a standard line of reasoning that occurs frequently in the relevant literature. (Sletmo and Williams (1981); Davies (1986)). But is not universally accepted. Jansson and Schneerson (1985), for instance, launch a very strong attack on price discrimination in their book *Liner Shipping Economics*. Because the argument is long and weighty, and because of the prestige of the authors, it is worth reviewing the Jansson-Schneerson argument as some length.

Jansson and Schneerson argue that price discrimination is based on a misunderstanding of the structure of liner shipping costs. They base this judgement primarily on the output of their fairly complex optimisation model.

### Economies of Scale

First, it must be said that the Jansson-Schneerson normative model of optimal ship size, which underpins much of their argument about the extent of scale economies in liner shipping, produces some particularly strange results. Their equation for optimal ship size is ultimately given as

 $S^* = \alpha_2(D_o - d) \alpha_1 \alpha_4 \mu \phi$ 

where  $\alpha_{1,\alpha_{4}}$  are model parameters

 $D_{O}$  is the bluewater haulage distance

d is the distance between ports of call at one end of the route

 $\mu$  is the ratio of cargo volume on the 'lean' leg to cargo volume on the 'fat' leg

 $\phi$  is load factor on the 'fat'leg.

The most striking feature of this equation is that the density of trade does not figure in it at all. That is, given identical geography and an identical trade balance, the same size ship would be optimal on a route of 1,000,000 TEU per year as on one of 10,000 TEU per year. Jansson and Schneerson recognise this, but simply remark that it is 'surprising' (p212). They do not make any attempt to reconcile it with either the observed reality of larger ships on denser routes, with the findings of other writers, or with common sense.

A close scrutiny of the model suggests that this unrealistic result arises ultimately from an (at first sight) innocuous if highly unrealistic assumption about port call patterns. The authors wished to make the number of port calls made on each voyage endogenous to the model, and in order to do so needed to make some simplifying assumptions. They assumed that the trade consists of a number of equal flows



between each of a set of ports,  $m_1$ , at one end of the trade, and each of another set,  $m_2$ , at the other end. Ports within each group are spaced at an equal distance apart. Each sailing then calls at only a subset of the ports at each end.

The proportion of ports served on each sailing is, as we have said, endogenous to the model. Under the given assumptions, it is this proportion which responds to increases in trade density. The prescription of the Jansson and Schneerson model is that, if trade doubles, the ideal response from ship owners would be:

- to keep the size of the vessels they deploy in the trade the same; to double the size of the fleet they deploy.
- to reduce the number of port calls on each sailing by around 30%

This will have the result of increasing the sailing frequency between each individual port pair by around 40%.

These results are so far at odds with any observable tendency in ship owner behaviour that we must conclude either that ship owners do not understand the economics of their own business or the model is fundamentally defective - or at least so unrealistic as to be useless for policy purposes. Jansson and Schneerson seem to prefer the first of these alternatives - alleging that the medium-run cost curve should be used for pricing purposes, they suggest that 'the failure of economists to point this out has led price-makers, in their bewilderment, to reach for the only firmground in sight'.

In particular, the model will obviously be fundamentally inhospitable to any pricing strategy that rests for its justification on the desirability of exploiting economies of scale. And it is not difficult to show that this inhospitability arises, at least in part, from the unrealistic assumption about port call patterns: if the additional constraint of a fixed number of port calls at each end of the route is applied, then the optimal ship size does become a function of trade density. In fact, it is not difficult to show that it increases with the square route of the volume of cargo on offer.

All of this would be academic quibbling were it not for the fact that Jansson and Schneerson's policy prescriptions on pricing are founded directly on the results of their model. To quote them directly:

'if .. diseconomies of smaller scale operations (i.e. economies of scale) apply, it may be true that the price-relevant marginal cost is as low as the current charging floor. This is not an either/or issue, which can be settled just by logic, but a matter of estimation of the cost relationship involved. Our model of the liner trade developed in the preceding chapter makes it possible to get an idea of how the total-system costs per ton are related to the total cargo volume in the trade, or 'trade density'. The relevant concept of 'scale' in this connection is the density of demand for shipping in the trade'. (p220).

But we have just seen that this model produces not only rather strange results, because of an arbitrary and unrealistic assumption; it also systematically and seriously underestimates the importance of these very scale economies. The foundations on which the Jansson and Schneerson position is laid are therefore very shaky.



## The Floor Price

There are some further difficulties with the J-S analysis. They are insistent that the appropriate magnitude for setting a price floor in liner shipping is (usually) the 'average cost of the average vessel', although they point out that this 'is not - strangely enough - generally accepted by leading economists" (p224). Even if one accepts their premise (and we do not) that a medium-run cost curve which allows for capacity adjustment is the appropriate basis, using this criterion is clearly inappropriate.

This can be demonstrated by a simple example. Suppose there is an established service using three 250-TEU vessels to provide monthly sailings. This service carries 3000 TEU per year of a single commodity in one direction, and returns in ballast. The cost of operating each vessel (including a 'normal' return on capital) is \$5m a year. All sailings are full, and the freight rate is \$5000/TEU.

The owner of the service then becomes aware of an opportunity to carry 1,000-TEU of a low value commodity on the same route, if he can rate it low enough - say at \$3800 or below. Suppose he has the option of replacing his fleet with three slightly larger (340 - TEU), slightly faster vessels at \$6m a year and maintain his present frequency. In his ignorance, he performs the following calculation: he can charge the new cargo \$3700/TEU, reduce the rate for his old customers to \$4900/TEU, and be better off himself. It seems like a good idea, so he goes ahead with the fleet expansion.

This is textbook case of a Pareto improvement - everybody wins.

Now suppose, having listened to Jansson and Schneerson, he decides to use the average cost of the marginal vessel rule. Since each vessel costs 6 million, and makes four trips a year, he must charge a minimum of 600000/(4\*340) = 44.411/TEU.

At this rate the new cargo cannot move, so he would decide against the expansion.

### Summary

The above discussion of the two pillars on which Jansson and Schneerson build their critique of price discrimination in liner shipping shows them to be fundamentally defective. The optimal cost model produces bizarre results because of an arbitrary and unrealistic assumption in its formulation; and their pricing rule is defective because it precludes an important class of changes, which would yield Pareto improvements. Under these circumstances, it is difficult to reach any other conclusion than that the policy recommendations, which flow directly from and depend on these premises, are infirm. The nature of the flaws in the analysis means this is especially so in the case of the alleged superiority of a uniform FAK-type tariff to a discriminating tariff.



# 6. A PRACTICAL APPROACH

## 6.1 Intervention and deregulation

The formulation of intelligent industry policy - for shipping as for any other industry must start from a recognition that we do not live in a perfect world, nor do we live in a world that conforms to the simplified paradigms of neo-classical economic theory.

It may be true, as neo-classical economic theory asserts, that if all industries were characterised by competition between a large number of small firms, if one could move rapidly and costlessly from one industry to another, and if everybody knew with certainty the prices that they would face in future before they made their investment decisions, then all would be for the best in the best of all possible economic worlds.

In reality, there are few industries in which there is anything even remotely resembling the atomistic competition of the neoclassical economic  $ideal^{22}$  — and liner shipping certainly never has been, is not, and never will be one of them. Many factors, not the least important of which is the existence of substantial economics of scale in many modern industries, encourage concentration of production in the hands of just a few firms. Both assets and expertise are typically specific to particular industries, and it is therefore common in practice to observe sustained differences in profitability between different sectors of the economy. Perhaps most importantly, when decisions to invest are made - or not made - there is typically great uncertainty about both the strength of future demand and the prices that will be realised at the time that investment comes into production.

Moreover, firms do not act independently of each other. Most standard texts on corporate strategy devote considerable space to the importance of understanding the strengths and weaknesses, and anticipating the behaviour of, competitors, and to discussing a whole range of both competitive and collaborative behaviours (see, for instance, Johnson and Scholes (1987)). Responding to the push and pull of market forces, firms merge with or acquire their competitors, engage in tactical and strategic pricing, form strategic alliances or vertically integrate with other companies both upstream and downstream, and do everything in their power to differentiate their product and create brand loyalty. None of these things happen in the paradigmatic 'perfectly competitive' markets, and economists are inclined to look on most of them with some wariness.

Industry participants or to those charged with formulating industry policy are of course well aware of all of this. But the key question is what, if anything, should be done about it. One possibility - and one that seems at present the dominant approach in Australia - could be referred to as the 'antitrust' option. This approach is embodied in the Trade Practices Act — most particularly in part IV. The underlying thrust of the Act is interventionist — the force of law is used to prevent industries taking the shape

<sup>&</sup>lt;sup>22</sup> We have used the term 'neo-classical economic ideal' rather than simple 'economic ideal' because it is only if one accepts several contentious premises that one can derive the conclusion the so- called 'perfect competition' will in fact produce optimal economic results, and that concentration is therefore to be discouraged. As Chris Green (1987) points out in a cogent and important article, there are least three economically respectable alternatives to the 'rnainline paradigm' of industry organisation



that they would if left purely to market forces, and to coerce market participants into behaving differently than they would if they acted purely in accordance with the pursuit of their own ends. The ACCC is, of course, capable of recognising that the general presumptions that underlie the Act may not be valid in every instance, and in many cases the Act is flexible enough to allow what is generally prohibited or discouraged to be permitted in a particular instance. But the general presumption of both the Act remains that concentration in industry is generally a bad thing, and should be allowed only if the alternative is demonstrably worse; and that it is generally necessary to regulate the pricing and contractual practices of businesses if markets are to work in the interests of consumers.

It is not hard to find a justification for this. The formal economic literature is replete with models that demonstrate how various concentrated industry structures and 'noncompetitive' practices may result in a loss of consumer welfare, and fear of the exploitation of monopoly power is deeply entrenched in public psyche. In fact, the presumption that an interventionist approach to market behaviour is desirable is so well entrenched that it may seem perverse to suggest that we should be cautious about making such an assumption. But the bureaucratic and popular dominance of this neoclassical orthodoxy should not blind us to the fact that there are other very defensible points of view. There has, for a long time, been a wide range of eminent economists, holding ideological positions as far apart as J.K. Galbraith (1963) and Joseph Schumpeter (1965), who have queried both the appropriateness and effectiveness of activist competition policy.

As with most questions of economic policy, we are in this case not dealing with issues of absolute right and wrong, but of appropriate balance. In our particular case, the primary balance to be struck is between the need to protect the community from the abuse of market power by conference ship owners, and the need to allow the industry to seek its own solutions to commercial problems without excessive bureaucratic intervention

How this balance is best achieved will depend in part on how strong the evidence is that industry concentration *generally* leads to monopolistic pricing and other abuses. If the empirical evidence shows that concentration routinely leads to pricing and output decisions that are deleterious to the consumer's well-being, then we have good reason to be cautious of conferences, which allow several lines to act in concert, since this has the intention, if not always the effect, of making the liner shipping industry behave like a concentrated industry.

# 6.2 Industry Concentration and Monopoly Profits

Most of the empirical work that has been done in this area focuses on the relationship between concentration and levels of profitability. It was generally assumed that industrial concentration made for collusion or other forms of interdependent pricing behaviour, which lead in turn to comparatively high and uniform levels of profitability in concentrated industries.

Early studies - such as the pioneering work of Bain (1951) and Caves (1964) on American industry, and Shepherd (1965) in the UK - tended fairly consistently to find evidence of a connection between industry concentration and excess profits.



However, over the past few decades, both the quality of the data used and the relative sophistication of the econometric approaches used to analyse it have improved greatly, and the support that recent empirical work has provided for the hypothesis that industry concentration leads to excess profits is surprisingly limited. The judgement of Roger Clark (1990), presented in a standard text of the conventional school of industrial economics, for instance, is that:

..results for the USA have tended to support a positive if modest relationship between profitability and concentration across industries, but that UK results have been more mixed. Recent research, however, has considered the interpretation of any positive relationship that might exist, and in particular has examined the possibility that such relationships might reflect differential efficiency of firms rather than market power effects. Some evidence in support of this has been presented, although one suspects that on a wider view both efficiency and market power effects will operate in particular markets' (p17). (Emphasis added)

Some authors (e.g. Jones, Laudadio and Percy (1977)) do find evidence to support the traditional structure-conduct-performance model, but typically the evidence is frequently not very strong and the impact of concentration on profitability limited. The findings are also highly dependent on such technical features of the analysis as the precise mathematical specification of the model tested.<sup>23</sup> Clarke, Davies and Waterson (1984) also believe that there is a significant relationship between profitability and concentration, but again the evidence is not that convincing. Their statistical analysis of 104 UK industries shows a statistically significant positive relationship between profits and concentration in 29 cases - but they also find a statistically significant *negative* relationship in 19 cases.<sup>24</sup>

Other authors are unable to detect any relationship at all. Alberts (1984), for instance, summarises his findings baldly as:

## Non-competitive structures do not result in non-competitive performance.

In 1987, Richard Schmalensee published a major and highly sophisticated analysis of US industry, in which he examined a broad spectrum of models linking industrial concentration with excess profits. After a detailed analysis of data for both 1963 and 1972, he concluded that in neither year was there any convincing evidence of a systematic causal connection between industry concentration and level of profitability. Importantly, he also found that patterns of profitability are 'sharply different .. in these two years' : since concentration levels were not, this further undercuts any case for a strong and systematic relationship between the two variables.

<sup>&</sup>lt;sup>23</sup> Jones et al, for instance, note that a similar study by Collins and Preston (1969) finds no connection between concentration and profitability in the producer goods industries, but significant correlation in the consumer goods sector. Their own results find precisely the opposite, but they suggest that the difference may be due simply to different specifications of the model (p203).

<sup>&</sup>lt;sup>24</sup> The Clarke et al. model allows the possibility of finding U-shaped relationships between profitability and concentration, and indeed they did so: in 13 cases, profitability initially declined with concentration and then began to rise: in 11 others, it first declined, then began to rise.



The fairest summary of the current state of the empirical analysis of the concentrationprofitability relationship is that the confirmation of such a relationship remains possible but that no such relationship has as yet been conclusively established. Since the earning of monopolistic profits is regarded in the neo-classical theory as both the primary evidence and the principal deleterious consequence of oligopolistic industry behaviour, this lack of a proven relationship must raise serious questions about the usefulness and appropriateness of an interventionist approach to increasing the 'competitiveness' of the market.

But that is not all. The earlier consensus that any excess profits that do exist in a concentrated industry must derive from the exploitation of market power to raise prices artificially has been challenged by a number of economists led by Harold Demsetz (1973, 1974). Demsetz's central thesis is that there is likely to be a correlation between concentration and the average level of profitability in an industry, but not because concentration enables monopoly pricing. He argues that concentration in an industry tends to arise simply because, in a competitive but not 'perfectly competitive' environment, those firms who succeed in serving their customers better will grow more rapidly. At the same time as they increase their market share, such firms will tend to increase their profits. There will therefore be a positive correlation between concentration and profitability, but it will exist because both factors tend to grow simultaneously as firms devise new and more efficient — but sometimes difficult to replicate — ways of serving their markets. One of these ways — but only one amongst many — in which this superior efficiency can be achieved is through the successful exploitation of economies of scale.

Not surprisingly, Demsetz's hypothesis was not greeted with universal acclaim, but it did, stimulate a number of empirical studies. The results are a mixed bag. Some — such as the Clarke, Davies and Waterson (1984) study —- find qualified support for the 'traditional market power explanation of profitability-concentration ratios', while others, such as the Gale and Branch's analysis (1982) found that 'scale economies are far more powerful than oligopoly power in determining profit levels'.

If Demsetz is even partly correct, then there are important implications for public policy. A policy position that artificially discourages concentration 'may have the total effect of promoting inefficiency even though it also may reduce some monopoly-caused inefficiencies'. In such a case, not only is there no adequate reason to impose an additional regulatory burden, but there is a positive danger in doing so.

In an important and cogent paper, Chris Green (1987) attempted to tease out some of the implications of these new complexities for industry policy. Green's paper includes a wide-ranging review and evaluation of recent theoretical and empirical work on industry structure, and his main conclusions are worth quoting at some length:


At the beginning of this paper, I posed the question of whether there is a tenable economic case for competition (antitrust) policy. I have attempted to answer this question by .. assessing some of the empirical evidence relating to the 'mainline' paradigm - the paradigm that has provided the main analytical support for competition policy. We have seen that the policy- relevant empirical evidence is neither definite nor without ambiguities ... but it seems to me that the economic case for competition policy is not nearly as strong as advocates of antitrust policy thought it was a decade or two ago. Part of the reason for the weakening economic case for an activist competition policy is, of course, increasing international competition - a factor that is likely to further reduce the necessity for the application of the competition laws in the years to come. But at least as important is the disintegration of theoretical and empirical support for models predicting the existence and exercise of market power, and by extension the creation of allocative or production inefficiency (p499)

The doubts that have been raised with respect to interventionist competition policy extend beyond arguments of industry structure to issues of industry conduct. Sjostrom (1993) has noted that:

Research using core theory has argued in the past decade that cartels may arise in an industry because there is no competitive equilibrium in the industry. i.e. the core of the market is empty. In addition to the work on liner shipping, there have been empirical studies of the cast iron pipe industry and the merger waves and trust movements of the late 19<sup>th</sup> century. This work bears directly on anti-trust policy towards horizontal agreements, and has cast some doubt on a per se ruling against price fixing.

A similar view is expressed by McWilliams (1990). Moreover, Sjostrom suggests that that empty core conditions may be quite a common occurrence:

An empty core arises whenever capacity, defined here as the output associated with minimum short-run avoidable cost, in the industry exceeds the quantity demanded at the price equal to that minimum average cost. ..whenever there is short run excess capacity, there is unlikely to be a competitive equilibrium.(p421)

Other aspects of interventionist competition policy have also come under challenge in the recent academic literature, again on the basis that destructive competition may not after all be a myth propagated by industry incumbents to protect their own interests. Deneckere et al. (1998) takes a fresh look at the issue of retail price maintenance (RPM), another practice that has traditionally been anathema to economists. They conclude that, under the not unusual circumstances that a highly competitive retail sector is supplied by a manufacturer with some degree of market power:

manufacturer profits and equilibrium inventories are higher under RPM than under market-clearing. Surprisingly, consumer surplus can also be higher, in which case unfettered retail competition can legitimately be called "destructive"



## 6.3 Summary and implications for liner shipping policy.

The most important single point that emerges from the above discussion is that we should be acutely aware of the complexity of the relationship between market concentration and economic efficiency. An single-minded focus on the possibility of abuse of market power may, if we are not circumspect, blind us to the danger of actually reducing economic efficiency through policies that artificially fragment industrial production, or outlaw behaviour that actually results in social gain (Demsetz, 1978; Williamson, 1980).

The proper issue for antitrust.. is not the degree to which a market descriptively diverges from perfect competition but the degree to which it diverges in either direction from that intensity of competition which takes account of the real social costs of competing (Demsetz, 1978, p375)

The intellectual case for an interventionist stance in which there is a blanket application of policies such as those implicit in the Trade Practices Act is not as strong as is often presumed. The weight of evidence suggests that the economic benefits from interventionist policy designed to increase competition are much smaller than was once assumed, and the dangers attendant on it much greater.

An intelligent competition policy must be a question of balance, and the balance that is appropriate will be determined by the internal characteristics and operating environment of the industry concerned. What the discussion of this section has made clear is that this cannot be decided on grounds of general principle.

Removal of Part X of the Trade Practices Act would place overseas liner shipping in a regulatory environment which is inherently inhospitable to conference operation. As the Prices Surveillance Authority points out, the ACCC would of course have the capacity to authorise conference agreements if it were convinced that they were in the public interest. But it is a little naive to suggest, as the PSA does, that reliance on a case by case authorisation process 'would not increase the level of uncertainty to any significant degree'.

Any realistic assessment of alternative frameworks must allow for the inevitable imperfections of the regulatory body. Competent though it may be, the ACCC will make mistakes. Subjecting overseas liner shipping to the full force of Part IV of the Trade Practices Act would inevitably increase the risk that conference agreements which do in fact provide benefits to the community as a whole will not be authorised. On the other hand, the blanket exemption of Part X inevitably (Type A risk). increases the risk that conference agreements that act against the community interest will be permitted. (Type B risk). We have to decide which of these two types of error is more likely, and which will have the graver consequences. Fortunately, in the case of liner shipping, we are not, as we are in most other industries, without evidence of what will happen if the industry is given the freedom to develop the institutions and practices that it believes are appropriate to encourage efficiency and stability in the industry. We now have a considerable history of experience with the operation of Part X. This experience indicates that the Type B risk is very small, and increasing range of competitive options in international shipping suggests that it will get smaller. The magnitude of the Type A risk is as yet unknown.



## 7. CONCLUSION

The analysis in this submission has been lengthy, and the issues with which it deals are complex: but the conclusion can be stated simply. The ability of conferences to realise economics of scope and scale confer real benefits on the shipping community, while the danger of widespread monopolistic exploitation arising from their market power have not and are unlikely to be realised.

The contribution that conferences can make to both the efficiency and stability of liner shipping services has broad international recognition. All major trading nations - other than those which effectively prohibit the participation of any foreign vessel in the carriage of their national trade - accept the existence and operation of conferences, and, where interventionist competition legislation exists, conference operation is invariably exempted from it.

Some of the reasons for this were explored in Section THE COST STRUCTURE OF LINER SHIPPING. The co-operation between shipping lines that is made possible by the formation of conferences allows the exploitation of economies of ship size; facilitates the provision of services that cater comprehensively for the trade; and permits the rationalisation of sailing schedules to provide an effective frequency of service that is higher than that which could be provided by the constituent lines operating independently.

The arguments against conference operation stem from the fear that conferences will enjoy substantial market power, and that power will, in one sense or another, be abused.

There are number of reasons for believing that such fears are exaggerated. Chief amongst these is the fact that liner shipping markets are contestable - though not perfectly so. Conference operators are continually exposed not only to competition from lines currently active in the trade but also to the possible introduction of new services.

Together, actual and potential competition provide an effective discipline on conference behaviour. There is no evidence that conference lines made excessive profits, even in the days when conferences did truly dominate the trade, and there is broad agreement that profitability at present is extremely low. It is also clear that conferences cannot maintain high freight rates in defiance of market conditions: over the past few years, freight rates have declined in real terms in almost all Australian trades, and in a number of trades there decline has been very marked indeed.

Nor is there much evidence to support the thesis that conferences dissipate potential profits through internal inefficiencies. This thesis may have some attraction in an environment in which it is possible for a firm to operate inefficiently and still make 'normal' profits. Liner shipping, however, is not like that. In the liner shipping market in general, and in the Australian trades in particular, it has for some time been difficult if not impossible to realise anything approaching a 'normal' rate of return on investment. Under these circumstances, operational efficiency is essential to continued survival.



It is true that conferences, and for that matter most non-conference lines, do adopt certain pricing practices which are commonly associated with monopoly power: in particular, the use of discriminatory pricing. But this is neither evidence of abuse of market power nor harmful to the interests of Australian shippers: on the contrary, it is a natural outcome of the cost structure of the industry, and is conducive to economic efficiency and the encouragement of trade.

In summary, both an *a priori* evaluation of the competitive dynamics of the industry and an examination of the empirical evidence on conference performance suggest that adopting a permissive approach to conference operation benefits Australian shippers through the provision of superior shipping service. Should this cease to be true, shippers have alternatives available to them, and have shown themselves quite willing to make use of these should conference fail to meet their requirements. A market test therefore exists: conferences will survive for precisely as long as shippers see some value in their survival. And this is as it should be.

It is still wise policy, of course, to protect shippers against the possibility of the abuse of any residual market power that conferences may possess, and Part X of the Trade Practices Act provides that protection. There is little reason to expect any real benefit to flow from the routine exposure of conferences to a discretionary and uncertain authorisation process under Part IV of the Act. On the other hand, there is reason to believe that significant losses could arise from doing so. As a minimum, we can expect transaction costs to increase significantly. There are other dangers, that, though less certain, could ultimately be more important: these include a reduction in lines' ability to exploit economies of scale and service integration; artificially intensifying the existing trend to mergers; increased levels of service and pricing uncertainty; and the loss of effective countervailing power if the effect of the change is simply to transfer conference decision-making off-shore. With little to gain, and the possibility of significant loss, the retention of Part X would appear prudent policy.

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