

THE STRUCTURE OF SHIPPING COSTS BETWEEN TASMANIA  
AND THE MAINLAND

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**ABSTRACT:** *Critics of the Tasmanian Freight Equalisation Scheme have pointed out that the structure of subsidy rates does not adequately reflect the sharp decline in unit costs with distance. The effect is to over-subsidise cargoes on the longer routes relative to those on the shorter routes. Stubbs (1983), for example, argues that the scheme does not offer shipping companies sufficient inducement to improve efficiency.*

*The authors aim to contribute to the debate by investigating the cost structure of existing services. This work will extend to consider the possible benefits that would result if the number of ships serving the trade were to be reduced and if more efficient practices were pursued. It is concluded that the benefits are potentially considerable, but that it is unlikely that they would be realised unless competitive behaviour is promoted in the trade.*

THE REAL ISSUE WITH IFES - EFFICIENCY OF SHIPPING SERVICES

This paper is concerned with the efficiency of coastal shipping services, particularly in regard to the movement of general cargo between Tasmania and other states.

The history of coastal shipping in Australia has been one of steady decline. Shipping's lack of competitiveness with land transport modes has been attributed to its poor level of service, particularly to its unreliability and to its high cost.<sup>(1)</sup> Consignors of freight between states on the mainland generally have a choice between using sea transport, or one of the land transport modes, rail or road. Invariably, land transport is chosen. Amos, for example, estimated that, excluding iron and steel and Tasmanian trades, coastal shipping accounts for less than 2 per cent of total inter-regional non-bulk trade.<sup>(2)</sup>

In the case of Tasmania, of course, land transport is not an alternative, and most cargoes are captive to sea transport. This has often been cited as a priori evidence that Tasmania suffers a "transport disadvantage" relative to other states. Indeed, this has been given recognition by the Commonwealth Government by instituting the Tasmanian Freight Equalisation Scheme (IFES). Payments under the scheme total around 30 million dollars per annum.

Since its inception, IFES has attracted criticism from a number of quarters. Some of the critics have been motivated purely by self-interest. Others have taken objection to the scheme on the basis of fundamental principles. For example, it would appear reasonable to ask whether or not IFES has promoted an efficient shipping service.

Two recent contributions which have addressed the efficiency question have been the Bureau of Transport Economics BTE (1981) and Stubbs (1983). Briefly the argument has been put that the current structure of IFES rates has had a bias towards longer routes. The effect has been to offer an unwarranted inducement to expand the fleet of ships servicing Tasmania. Furthermore, Stubbs argued that the scheme inhibits any incentive on the part of the shipping companies to improve their efficiency.<sup>(3)</sup>

The authors believe that these questions should be the key ones in any discussion about IFES. If the aim of the exercise is to reduce transport cost disability, then it is proper that the main focus should be on the efficiency of shipping services. The aim of this paper is to contribute to the debate by presenting information about the structure of shipping costs in the trade, and by examining the relationship between costs and distance.

Furthermore, the suggestion that the number of ships servicing Tasmania could be reduced raises important questions for policy makers. In particular, our estimates suggest that the adoption of "best shipping and cargo handling practices" could lead to reductions in cost exceeding current IFES payments.

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1. Several recent contributions documenting this fact are Rimmer (1979), Perkins (1981) and Stubbs (1983).
  2. Amos (1981, page 8.
  3. See Stubbs (1983), page 154.

THE NATURE OF TASMANIA'S TRANSPORT DISADVANTAGE

During the early 1970's, a number of reports were published which examined the nature of Tasmania's transport disadvantage.<sup>(1)</sup> The outcome was the appointment of J.F. Nimmo in 1973 to head a wide-ranging Commission of Inquiry to examine all aspects of transport between Tasmania and the mainland.

The Nimmo Commission confirmed the view that Tasmanian industry was confronted with relatively high freight rates. Notwithstanding this, many Tasmanian firms producing for export on the mainland were found to be more concerned about the unreliability of shipping services.<sup>(2)</sup>

Of the recommendations made in the Nimmo Report, the one which has received most prominence was that of providing freight equalisation assistance. However, the other recommendations raised some significant issues which are, perhaps, still worthy of consideration. For example, some of the major points raised were:

- ° that Australian National Line (ANL) examine the merits of a pure Ro-Ro service;<sup>(3)</sup>
- ° that the Tasmanian Government be requested to consider setting up a central port authority to co-ordinate future port development, and
- ° that operators of government-owned services be required to charge economic freight rates.

In recommending freight equalisation assistance, the aim was to offer "financial compensation to relieve (them) of excess transport charges ...".<sup>(4)</sup> However, other major aims set for the scheme were:

- ° to stimulate the use and development of Tasmania's resources, and
- ° to promote a more efficient transport system.

The method of calculating rates of assistance involved the specification of certain routes on the mainland as being comparable to specific rates between Tasmania and the mainland. For example, Northern Tasmania to Victoria was compared with Melbourne to Adelaide. Southern Tasmania to Victoria was compared with Sydney to Brisbane. Although distance was an important criterion for selection of rates for comparison, other factors such as volume of cargo and general conditions in the market for transport services were taken into account.

Having selected the routes, comparisons were made between the freight rates confronting shippers of similar commodities on equivalent routes. The Commonwealth Government subsequently introduced IFES in July 1976 for goods consigned from Tasmania for sale or use on the mainland.

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1. See, for example P.G. Pak-Poy and Associates (1970), Senate Standing Committee (1971) and Bureau of Transport Economics (1973).
  2. See Nimmo (1976)
  3. Roll on and Roll off, a method of cargo handling in which the cargo unit is moved into (and out of) the vessel on wheels.
  4. Nimmo (1976), page 153.

## BASS STRAIT SHIPPING COSTS

### DEVELOPMENTS SINCE NIMMO

Since its introduction, IFES has been extended to cover southbound consignments of materials and equipment with Australian content for use by Tasmanian manufacturing and primary industries. Furthermore, routes have been revised to take account of changes in relative costs over time.

One practical difficulty confronting the BIE in making its contributions to these revisions was that the Nimmo Commission did not reveal the details of its method. In particular, it did not say how it decided upon the particular sets of Tasmanian and mainland comparative routes which set the assistance rates. By continuing to use the so-called "Nimmo method", inconsistencies have been produced. For example, recalculated southbound rates in 1979 for shipments out of Melbourne give Northern Tasmania cargoes a greater subsidy than for those going to Hobart.<sup>(1)</sup> The reason for this lies in the different rates of change in transport costs on various comparative routes.

This, of course, raises some valid questions about the reasonableness of continuing to employ the "Nimmo method". However, an even more important consideration has to do with the general structure of assistance rates which IFES produces. Generally, the subsidy rates increase with distance. Both the BIE (1981) and Stubbs (1983) have questioned the appropriateness of this. Normally, it would be expected that shipping costs would decline significantly with distance, line haul costs being only a small proportion of total costs. Even though this also tends to be the case for land transport modes, particularly rail transport, the accepted viewpoint is that sea transport becomes more (cost) competitive as distance increases. Thus, all other things being equal, it should be expected that Tasmania's transport disadvantage declines with distance.

The BIE did present some data which appeared to support this view. Sea freight rates were obtained from freight schedules, and freight forwarders' rates for mainland intercapital movements were obtained from the records of contracts let by the Commonwealth Government, both pertaining to December 1978. These rates have been plotted according to distance in Figure 1.

The noticeable feature of this graph is that both sea rates and freight forwarding rates fall sharply with distance. The latter represents both road and rail rates because forwarders make extensive use of both modes. The forwarders' rates are presented as forward haul and back haul to distinguish between the very different levels of rates in each case. Nevertheless, the structure of rates follows the hypothesized direction, rates decline with distance. It should also be noted that the sea rates do not include pick-up and delivery costs. However, since they are published rates, it would be expected that actual contract rates would be lower. Thus, it is difficult to draw direct comparisons from the graph about actual rate differences.<sup>(2)</sup>

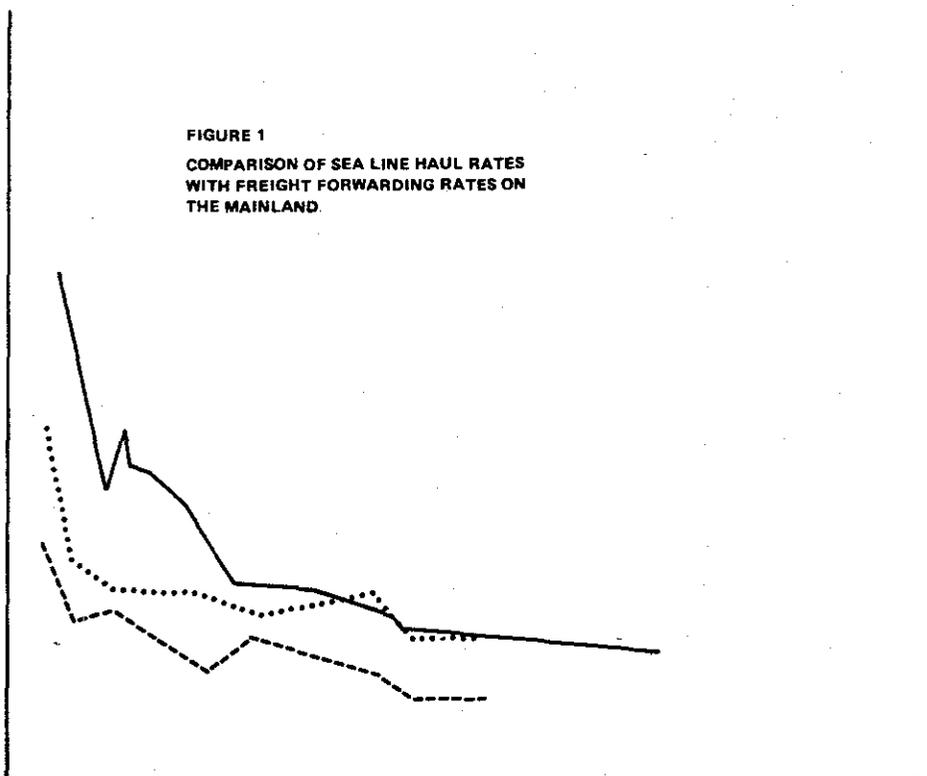
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1. See BIE (1981), page 17.
  2. Indeed, there are many factors other than distance which affect freight rates, and this simple comparison should be used to illustrate the relative structural differences in the most general of terms.

FIGURE 1

COMPARISON OF SEA LINE HAUL RATES  
WITH FREIGHT FORWARDING RATES ON  
THE MAINLAND.

CENTS PER  
TONNE PER  
KILOMETRE

9.0  
8.0  
7.0  
6.0  
5.0  
4.0  
3.0  
2.0  
1.0



— Sea Line Haul Rates  
..... Freight Forwarders Rates  
Forward Haul  
- - - - - Freight Forwarders Rates  
Back Haul

Source: BTE (1983) Pages 50-51

THE NEED TO FOCUS ON COSTS

As revealing as this comparison of freight rates might be of the actual disadvantage faced by Tasmanian industry, it does raise some reservations about the desirability of structuring subsidy rates on this basis. These stem from a concern that the market freight rates do not accurately reflect the true costs involved, and the associated concern that it is important to relate rates to costs to ensure an efficient allocation of resources within the transport sector.<sup>(1)</sup>

In the freight forwarding industry, it is likely that competitive pressures lead to a rate structure closely reflecting the cost structure facing the firms involved. Studies of the industry have testified to its competitive nature.<sup>(2)</sup> However, services are purchased from road hauliers and from railway authorities. A frequent criticism of the former group is that they do not pay for the road services that they use, and the deficits of the railways are deemed by many to constitute unfair competition from a subsidized government service. In general, it is accepted that both land transport modes are being subsidized, with consequent misallocation of resources between road and rail and between land transport and sea transport.<sup>(3)</sup>

In the case of sea transport, competition from land transport between the mainland capitals acts as a counter to any monopoly power, and to some extent the same is true between Tasmania and the more distant mainland capitals. However, there is some evidence of the exercise of monopoly power in Bass Strait. Stubbs, for example, suggested that favourable comparisons of service frequency and transit time with other trades reflected the "near monopoly of sea transport in the trade".<sup>(4)</sup> Furthermore, Stubbs cited freight rates applicable in the Tasmanian and non-Tasmanian trades which were consistent with "an element of monopoly pricing or, perhaps, generous cost-plus pricing on the Bass Strait service".<sup>(5)</sup>

The BIE also noted an element of monopoly pricing in the relativity of rates on the northbound and southbound legs of shipping services. Available statistics indicate that Tasmania is a net exporter to other states; that is, there is a greater volume of trade in the northbound direction. If competitive pressures existed, it would be expected that northbound rates would be higher than southbound rates. Yet, from scheduled rates, it appears that the opposite is the case.<sup>(6)</sup>

Doubts are thus raised that freight rates on Bass Strait shipping services do not necessarily bear a close resemblance to the costs involved. On the one hand, this suggests that, if an aim of IFES is to promote efficiency, then an examination of disadvantage must start with costs, not rates.

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1. For discussions of the principles involved in ensuring an efficient allocation of resources, see Kolsen (1968), Taplin (1980) and Stubbs (1983).
  2. See, for example, BIE (1980).
  3. See Stubbs (1983), page 147.
  4. See Stubbs (1983), page 139.
  5. Stubbs (1983), page 139.
  6. BIE (1981), pages 47 - 48.

On the other hand, if it is acknowledged that a degree of monopoly power is vested in the hands of the shipping operators, there can be no guarantee that any subsidy paid to shippers will not eventually be captured by the operators.<sup>(1)</sup>

Thus, an analysis of shipping costs will now be presented. On its own, this is of limited use and consideration needs to be given to the true cost structures of land transport modes.<sup>(2)</sup> Hopefully, some light might be shed on these areas in the current enquiry by the Commonwealth Government, the National Road Freight Industry Enquiry. Before proceeding to discuss shipping costs, though, it is perhaps worthwhile discussing current services.

#### SHIPPING SERVICES BETWEEN TASMANIA AND THE MAINLAND

A detailed list of operators and ships is included as Appendix 1. In the general cargo trade there are two major operators between Tasmania and the mainland:

- The Australian National Line (ANL);
- The Union Steamship Company of Australia Pty. Ltd. (USS Co).

Both these lines service Melbourne and Sydney with the USS Co operating from Hobart, and ANL operating from three northern Tasmanian ports.

Both lines provide arrangements for cargo to be onforwarded to and from Queensland ports, either by rail or road from Sydney in the case of the USS Co, or by sea in the case of ANL, whose vessel continues northwards to service Brisbane, Townsville, Cairns, and (by feeder service from Brisbane) Darwin.

Subsidiary general cargo operators in Bass Strait include the Transport Department of Tasmania with the "STRAITSMAN" between Stanley, King Island and Melbourne, and Tas Marine Services operating in "ROGER ROUGIER" between Devonport and Welshpool.

Other companies service Tasmania in the bulk or specialised trades and these include BHP, whose vessels mainly carry manganese ore and steel to Bell Bay and ship out ferro-manganese from Lemco; EZ Industries operating the "ZINCMaster" which moves zinc concentrates to Risdon and backloads zinc; this vessel is a combined bulk/Ro-Ro sulphuric acid vessel totally dedicated to the movement of EZ products. Goliath Cement Company operates a small ship called "GOLIATH" which is dedicated to the carriage of cement between Devonport and mainland ports.

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1. This raises the possibility that the ultimate recipient of any subsidy to shippers might not be the Tasmanian industries which initially receive payments. Indeed, any of the actors involved with market power could, at least theoretically, extract some or all of the subsidy. The power of maritime unions, for example, could be directed towards this end.
  2. A useful reference based on U.S.A. data is Friedlander and Spady (1981), especially Appendices B and C.

## BASS SIRAI SHIPPING COSIS

### CARGO HANDLING METHODS AND TERMINAL OPERATIONS

Both ANL and USS Co employ the same basic cargo handling methods, and conduct their cargo handling operations at dedicated terminals under their own direct control.

The system embodies the use of heavy duty forklift trucks both in the terminal and aboard the vessel for the loading and stowing of cargo packed in ISO containers<sup>(1)</sup> and/or non-ISO units such as flats and staked pairs. The use of non-ISO cargo equipment was brought about by the limited deck heights in the ANL vessels, and those which USS Co was employing in the trade until October 1983. The deck heights were insufficient to permit the double stacking of ISO units, and the adoption of the non-ISO staked pair was designed to maximise the utilisation of vehicle deck space. All the vessels have a limited capacity on the crane and weather deck for the carriage of ISO containers which are handled by shore crane (ANL) or ship's crane (USS Co) as the case may be. Some cargo is carried packed in highway vehicles, but the freight rate structure discourages this mode of transport since the line haul carriers believe that the space between the ship's deck and vehicles's chassis should be paid for.

The cargo handling system obliges shippers and freight forwarders to pack their cargo into units which comply with the carrier's specification and are capable of being handled by forklift trucks. Since the advent of containerisation, the practice of imposing the carrier's requirements on the shipper has been common in general cargo shipping. It does however, contrast quite dramatically with the comparable philosophy prevailing in the bulk shipping trades, where the most successful carriers are those which can design and operate the vessels best suited to accommodate the characteristics of a particular commodity or commodities.

A further consequence of the cargo handling system is the need for heavy duty forklift trucks to be available at all points along the transport chain. Cargo packed in accordance with the carrier's requirements must, at various stages be transferred to or from road and/or rail vehicles.

It should also be noted that the need to operate heavy duty forklift trucks, and their consequential axle loadings, necessitates the construction of heavy duty paving in the terminals and of appropriate deck and scantling strengths in the vessels.

It is interesting to note, furthermore, that the cargo handling system employed by ANL and USS Co appears to be unique to the Australasian environment, which suggests that its cost efficiency might not be considered adequate by international standards.

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1. International Standards Organisation dimensions (6.1m x 2.44m x 2.59m).

SHIPPING SERVICE COSTS

Since neither ANL nor USS Co publishes any detailed costing information, the authors have found it necessary to estimate costs independently. This has been done in three stages. Firstly, costs which do not vary with distance sailed are examined; these include so-called fixed costs - depreciation and finance; and vessel operating costs such as crew wages, stores, insurance and repairs and maintenance<sup>(1)</sup>. The interpretation here is that these costs would be incurred independently of a vessel's employment.

The second area of costs comprises those that vary directly with voyage length and hence distance steamed, such as fuel costs.

The third area of costs encompasses those that vary directly with the number of voyages, and hence port calls, as well as volumes of cargo carried.

The authors have based their calculations on their own data resources and professional experience, and are confident that both the structure and level of costs reported below are reasonably accurate. Results are reported in Tables 1 to 4.

Detailed assumptions are given in Appendix 2. Costs have been compiled in order to compare the costs of performing the same transport task in terms of volume with the same vessel making four crossings per week between Melbourne and Hobart (485 nautical miles) or six crossings per week between Melbourne and Northern Tasmania (240 nautical miles).

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1. These fixed costs are unavoidable during ownership of the vessel, whereas vessel operating costs could be substantially avoided by laying up the vessel.

BASS STRAIT SHIPPING COSTS

TABLE 1

COSIS INSENSITIVE TO VESSEL EMPLOYMENT

Vessel Cost Component	\$'000 per annum	
Capital & Interest	2,580	
Depreciation	940	
<u>Total fixed costs (a)</u>		3,520
Crew Wages & Leave (b)	1,853	
Payroll tax	92	
Superannuation	135	
Other crew costs	300	
Victualling	100	
Stores (deck & engine)	200	
Insurance (hull & machiner, P & I)	400	
Repairs/maintenance/docking	500	
Shore administration	200	
<u>Total operating costs</u>		<u>3,780</u>
		7,300

Notes: (a) Assumes capital cost \$15 million amortized over 8½ years on existing OECD scales i.e. 80% of capital cost of 8.5% p.a. with the residual 20% of capital cost at 15% p.a.

(b) Assumes an Australian crew of 32, which approximates an average crew on the Australian coast, under award conditions as at October 1983.

TABLE 2

COSIS SENSITIVE TO VOYAGE LENGTH

At Sea	\$'000 per annum	
Component	Hobart	N. Tasmania
Heavy fuel oil consumption (a)	1,811	1,340
Marine diesel oil consumption (b)	158	117
<u>Total fuel consumption at sea</u>	<u>1,969</u>	<u>1,457</u>

Notes: (a) Assumes HFO consumption at sea 40 tonnes per 24 hrs.  
 (b) Assumes MDO consumption at sea 2 tonnes per 24 hr.

TABLE 3COSIS SENSITIVE TO NUMBER OF PORT CALLS, CARGO HANDLED, ETC.

In Port Component	\$'000 per annum	
	Hobart	N. Tasmania
Port costs (pilotage, towage, etc. (a))	627	941
Terminal/Stevedoring costs (b)	13,230	13,230
Wharfage costs (c)	3,749	3,749
Fuel costs (d)	82	82
Total costs in port	17,688	18,002

- Notes: (a) Assumes port costs \$3,200 per port call.  
 (b) Assumes \$150 per move x 1,800 unit/moves week.  
 (c) Details provided in Appendix 2.  
 (d) Assumes fuel consumption in port 2 tonnes MDO per day.

TABLE 4SUMMARY OF SHIPPING SERVICE COSIS

Cost Component	\$'000 per annum	
	Hobart	N. Tasmania
Fixed costs	3,520	3,520
Vessel operating costs	3,780	3,780
Fuel consumption at sea	1,969	1,457
Costs in port	17,688	18,000
Total costs	26,957	26,759

The most important conclusion to be drawn from these costings is the overwhelming preponderance (about 80%) of fixed, or in port, costs which go to comprise the total. Furthermore, cargo handling costs, together with wharfage, account for more than 60% of total service costs.

These costings suggest that the really important issue to be addressed is that of cost efficiency in port and cargo handling systems, which forms the subject of the following section.

BESI PRACTICES

Experience overseas strongly suggests that for short sea ferry services involving sea distances of less than 500 nautical miles the preferred operating technique and cargo handling system is the pure Ro-Ro or trailer ship concept under which cargo is loaded, transported, and discharged on highway vehicles. In northern Europe and Scandinavia, for example, numerous ferry routes and services have proliferated during the last 25 years, no doubt stimulated by the development and expansion of the EEC. On many of these routes the carriage of cargo is combined with the carriage of passengers and passengers' vehicles, so that a typical ferry of this type may load a mixture of :-

- semi-trailers;
- panechnicons;
- ISO containers mounted on chassis;
- passenger vehicles;
- caravans;
- motor cycles etc..

In many cases, too, the freight vehicles are carried with their prime movers or tractors and drivers, who are accommodated as passengers..

Helsinki - Stockholm Ferry Route

A good example of the combined carriage of passengers, vehicles and freight over a short sea ferry route is that between Helsinki and Stockholm. The distance of 237 nautical miles and sea time of 14 hours per crossing are directly comparable with Bass Strait. In contrast to Bass Strait, however, two directly competing ferry services operate between Helsinki and Stockholm: Silja Line and Viking Line, each operate daily overnight services in each direction employing very well appointed vessels designed to attract passenger and freight traffic. Competition on this route is extremely fierce with each operator sailing its vessel at the same time from berths on opposite sides of the harbour, and it is therefore reasonable to assume that freight rates, as well as passenger fares, are pitched at the lowest levels consistent with the profit motive..

A sample of freight charges obtained during June 1983 is included in Appendix 6 together with the comparable freight charges between Melbourne and northern Tasmanian ports. The startling discrepancies which are revealed by this comparison merit examination in some depth, since apart from the competitive aspect already mentioned there must clearly be other factors to be taken into consideration..

A principal operating cost differential between ships of other flags and Australian flag vessels is to be found in the costs of manning.. Australian seafarers enjoy award wages and conditions which are considerably more generous than those prevailing in other developed and developing nations. Furthermore the multiplicity of the unions involved in the manning of Australian flag vessels has tended to inhibit the reduction in manning scales which has been an important competitive feature in the industry internationally. The net result of these discrepancies in the area of manning has led the authors to conclude that, in general terms, the cost differential between an Australian crew and an average OECD flag crew is at least \$1 million per annum..

Other vessel operating cost components which tend to be higher in Australia than other countries, include victualling, Protection and Indemnity insurance (particularly in relation to worker's compensation), repairs and maintenance, and administration. Table 5, which documents these cost differentials, has been based on the experience gained by the authors.

TABLE 5  
VESSEL OPERATING COST DIFFERENTIALS

(\$'000 p.a.)

Component	<u>Australian Flag</u>	<u>OECD Flag</u>	<u>Differential</u>
Manning	1,980 <sup>(a)</sup>	807 <sup>(b)</sup>	1,173
Victualling	91	65	26
Stores	200	200	Nil
Insurance (H & M)	200	200	Nil
Insurance (P & I)	85	30	55
Repairs & Maintenance	650	450	200
Administration & Misc.	300	200	100
TOTALS	3,506	1,952	1,554

Notes: (a) Based on theoretical 29 man crew (not yet attained).  
(b) Based on 26 man crew.

It is necessary, however, to look beyond vessel operating costs in seeking explanations for the apparently extraordinarily high costs of shipping general cargo across Bass Strait. In this context the breakdown of costs by percentage revealed that almost 50% of the total costs were represented by cargo handling expenses, and it is in this area that the answer is most likely to be found. Independent research undertaken by the authors within the last twelve months<sup>(1)</sup> led to the indicative conclusion that the pure Ro-Ro or trailer-ship cargo handling system, if applied in the Bass Strait trade, could reduce cargo handling costs by as much as 40% by reason of:

- ° reduced manning requirements;
- ° reduced requirements for mechanical equipment;
- ° less capital intensive terminal infrastructure.

If the reductions of this order of magnitude were attainable, it is readily apparent that the total linehaul cost across Bass Strait could be reduced by 20% - a potential savings which can only be described as extremely significant.

It is important to note, however, that IFES does not concern itself only with the linehaul costs across Bass Strait but rather with the total transportation costs from pick up at point of origin to delivery at point of destination. Consequently, the theoretical cost savings derivable from a trailer-ship system across Bass Strait extend beyond

1. Visit to Scandinavia/Northern Europe May 1983 by one of the authors.

the terminals at ports of loading and discharge.

A good example of this is that of a well known food manufacturer whose point of production is located some 300 kilometres north of Melbourne and who distributes to the Tasmanian market from a central warehouse in Launceston. The product is packed in cartons which are palletized and strapped into pallet units before being loaded onto the freight forwarder's semi-trailer at the factory for road transport to Melbourne. Under the existing cargo handling system, the highway trailer must be unloaded at the freight forwarder's depot in Melbourne and the pallet units re-stowed onto an ANL flat, which in turn is lashed and covered by a tarpaulin before being placed aboard another truck and conveyed from the freight forwarder's depot into the ANL terminal. On arrival at the terminal, the flat is removed from the freight forwarder's truck by the terminal forklift truck and placed in the appropriate stack to await loading into the vessel, a procedure which is undertaken by forklift truck operating between the terminal stack and vehicle deck of the ferry. Following the vessel's arrival at Bell Bay, a terminal forklift transports the flat from the vehicle deck to the terminal stack whereafter it is placed onto the freight forwarder's truck and transported by road to the distribution depot in Launceston. Then the pallet units are removed from the flat and the empty flat is carried by the freight forwarder's truck to its next destination - probably the freight forwarder's own depot.

If a trailer-ship system were operating across Bass Strait there would appear to be no reason why the freight forwarder's highway trailer which conveys the consignment from point of manufacturer should not be driven into the terminal at Melbourne, detached from the prime mover and parked in the terminal, taken aboard the vessel by terminal tractor, removed from the vessel at Bell Bay by terminal tractor, picked up by another prime mover at Bell Bay terminal and transported directly to the distribution depot at Launceston. Under such a scenario the pallet units would be handled by small capacity forklift trucks only twice during the entire transport chain and the whole movement would be a true door-to-door service. Furthermore, the savings in lift-on lift-off charges alone (at \$10.00 per lift) would amount to \$50.00 per unit. In the particular example selected, the savings would be even greater because the carrying capacity of a 12 metre highway trailer is at least double the cubic capacity of an ISO 6.1 m. container.

It is worth noting that the Nimmo Report (1976) recommended that ANL examine the merits of a pure Ro-Ro or trailer-ship service for comparison with its existing cargo handling systems. We are not aware whether such an examination was undertaken by ANL but we have been unable to discover any public record of such. It is arguable furthermore, that the linehaul carrier is not in the best position to undertake a dispassionate assessment of this nature, since it is not necessarily concerned with events and cost factors which lie beyond its own terminal gates. A linehaul carrier such as ANL tends to view the trailer-ship concept with misgivings, derived from the belief that revenue earning space aboard the vessel is thereby sacrificed. It is also the case that the vessels being operated by ANL/USS Co in Bass Strait are not suitable for the carriage of more than a limited number of highway trailers, and ANL/USS Co have already made their investments in terminal infrastructures and heavy duty forklift trucks to service their chosen cargo handling systems.

One of the more curious features of the freighting of seaborne traffic between Tasmania and mainland Australia is that, notwithstanding significant subsidy payments made by the Commonwealth under the TFES arrangements and to ANL by way of deficit funding for the operation of the "EMPRESS OF AUSTRALIA", there appears to be no mechanism to bring about the control or restraint of freight rates. This state of affairs is in marked contrast to that prevailing in Australia's overseas shipping trades where, in respect of liner shipping services for export cargoes, Part 10 of the Trade Practices Act 1974 as amended legislates specifically about the setting of freight rates and conditions of carriage. The shipper body designated by the Minister for Transport, the Australian Shippers' Council, is partially funded by grants from the Commonwealth and plays an influential role in the commercial and contractual relationships between Australian exporters and overseas linehaul carriers.

In the case of Australian coastal shipping, however, so far as we have been able to determine the only area of control or discipline in respect of the setting of freight rates has been the authority of the Minister for Transport in terms of the Australian Shipping Commission Act to approve or to disapprove of coastal freight rates charged by ANL. Furthermore, no restraints of any kind were placed upon private enterprise shipowners such as USS Co. It is understood, moreover, that recent amendments to the Australian Shipping Commission Act having the stated objective, inter alia, of placing ANL on a more commercial and profit-oriented footing, will enable the Line to charge whatever coastal freight rates it chooses, without any specific reference to the Minister for Transport.

It is noteworthy, too, that Tasmanian shippers, although organised and affiliated with the Australian Shippers' Council insofar as overseas shipping is concerned, appear to have no corporate entity to represent them in respect of coastal shipping matters. This state of affairs suggests that Tasmanian shippers might benefit from the introduction of domestic shipping legislation similar in concept to the Trade Practices Act 1974.

A further factor affecting the costs of shipping general cargo between Tasmania and mainland Australia is the proliferation of ports in Tasmania, particularly in the northern part of the state where no fewer than four ports share the available traffic between Victoria and Northern Tasmania. That each of the four port authorities should be entirely independent of the others and have only the most tenuous threads of responsibility towards the State Government, (although defended politically in the name of decentralisation), would appear to lead almost unavoidably to duplication and over-investment in port facilities. Some evidence in support of this contention is that wharfage charges in Northern Tasmania are significantly higher than comparable prices at major mainland ports such as Melbourne and Sydney.

In the case of the USS Co "SEAWAY" service between Hobart, Melbourne and Sydney it appears reasonable to deduce that since the introduction of TFES in 1976 USS Co has found it expedient to relate its rate structure directly to that of ANL out of the North. So far as we can ascertain USS Co has invariably followed ANL in the announcement and implementation of freight rate increases. Until very recently (October 1983) USS Co had been operating since 1975 two sister vessels "SEAWAY PRINCE" and "SEAWAY PRINCESS" equipped with gas turbine main propulsion machinery.

These vessels, which were originally designed before the 1973 oil crisis, consume about 6 tonnes per day in port and 60 tonnes per day at sea of distillate - the most expensive grade of marine fuel. By way of comparison, the ANL "TRADER" class of ferries which were originally designed in the early 1960's and are propelled by medium speed diesels burning heavy fuel oil (which is about half the price of distillate), consume about half the quantity of the USS Co gas turbine vessels. It would appear to be a remarkable indictment of the freight rate structure between Tasmania and mainland Australia that such extraordinarily inefficient vessels should have been able to survive for so long in the trade.

#### CONCLUSIONS

In spite of Tasmania's considerable preoccupation with shipping costs between the Island State and the mainland, it appears that very little substantive research has been carried out into the underlying causes of the high costs of general cargo freight services in the trade.

IFES has now been operating for seven years and, amongst other consequences, appears to have had the effect of stifling public debate about the efficiency of shipping services. This suggests that IFES has effectively obscured from public view the crucial issues at stake.

At the same time, the two major shipping operators, ANL and USS Co, have found it possible, and presumably profitable, to continue operating with vessels which, by today's standards, must be considered to be inefficient in terms of design, manning, work practices and fuel consumption.

The area of cargo handling systems is clearly the single most crucial factor in determining the overall efficiency of general cargo shipping services between Tasmania and the mainland. Preliminary research into this area indicates that significant cost savings, both direct and consequential, could be achieved by the adoption of the pure Ro-Ro trailer-ship concept.

The evidence appears conclusive that IFES has failed to stimulate any worthwhile initiatives directed towards improving the cost efficiency of shipping services between Tasmania and the mainland. Indeed, it is arguable that the reverse has been the case, and that IFES, by comforting shippers, freight forwarders, and linehaul carriers, has deflected the attentions of all of them from the key issue of cost efficiency.

It is interesting to speculate what alternative to IFES might at one and the same time promote cost efficiency in transportation and provide appropriate compensation to disadvantaged Tasmanian shippers and consignees. A possible solution to the problem might be some kind of closed Conference operated within the disciplines of a legislative framework similar in concept to that governing Australia's overseas liner trades.

From this vantage point in time it is worthwhile, and perhaps salutary, to look again at the final appendix to the Nimmo Report of 1976, which is attached as Appendix 7 to this paper.

APPENDIX 1GENERAL CARGO VESSELS AND OPERATORS - TASMANIA/MAINLAND AUSTRALIA

VESSEL	CAPACITY		OPERATOR	VOYAGES Per Year	ROUTE
	TEU	Tonnes			
Empress of Australia	10	200	ANL (a)	150	Melb/D'port
Brisbane Trader	120	2,500	ANL	150	Melb/N.Tas
Sydney Trader	100	2,500	ANL	150	Melb/N.Tas
Straitsman	31	750	IDI (b)	64	Melb/Stanley
Roger Rougier	28	600	IMS (c)	100	Welshpool/D'port
Melbourne Trader	338	5,400	ANL	25	N.Tas/NSW/Qld
Bass Trader	384	6,000	ANL	25	N.Tas/NSW/Qld
Seaway Sydney	338	5,400	USS Co (d)	75	Hob/Melb/Syd
Seaway Hobart	338	5,400	USS Co	75	Hob/Syd/Melb

Notes:

- (a) The Australian National Line (Australian Shipping Commission)
- (b) Transport Department Tasmania (Tasmanian Transport Commission)
- (c) Tasmanian Marine Services Pty. Ltd.
- (d) The Union Steam-Ship Co. of Australia Pty. Ltd.

BASS STRAIT SHIPPING COSIS

APPENDIX 2

ASSUMPTIONS USED IN COSIS' COMPILATION

Vessel Characteristics

Dwt	7300 tonnes
Speed	18 Knots (Average 17.5)
Consumption	Sea - 40 tonnes per day - Heavy Fuel Oil 2 tonnes per day - Marine Diesel Oil
	Port - 2 tonnes per day - Marine Diesel Oil
Capacity	340 IEU

Port Costs \$3,200 per port call

Stevedoring \$150 per unit handled

Cargo Volumes 450 units inwards per week  
450 units outward per week\*

\* This is regardless of the number of port calls and is assumed to be shipped whether the ship makes two calls at Hobart or three calls at Northern Tasmania.

Schedules 2 calls per week to Hobart  
3 calls per week to N. Tasmania

Distance Melbourne/Hobart - 485 nautical miles  
Melbourne/N. Tasmania - 240 nautical miles

Port Stays Hobart - 12 hours  
N. Tasmania - 10 hours

Operating Year 49 weeks (3 week break at Christmas etc.)

IOIAL VOYAGE COSIS

(\$'000 per annum)

	Hobart	N. Tasmania
<u>Port Costs, Pilotage, Iowage etc.</u>		
HOB/MELB 4 x \$3,200 x 49	627	-
N. TAS/MELB 6 x \$3,200 x 49	-	941
<u>Stevedoring, Levies, etc.</u>		
Tasmania - 450 x 2 x \$150 x 49	6,615	6,615
Melbourne - 450 x 2 x \$150 x 49	6,615	6,615
<u>Wharfage</u>		
Tasmania - Inwards 450 x \$60 x 49	1,323	1,323
" Outwards 450 x \$30 x 49	662	662
Melbourne - Inwards 450 x \$45 x 49	992	992
Outwards 450 x \$35 x 49	772	772
<u>Sub-total</u>	17,606	17,920
<u>Bunkers - Heavy Fuel Oil</u>		
Hobart - 4.62 x 40 x \$200 x 49	1,811	-
N. Tasmania - 3.42 x 40 x \$200 x 49	-	1,340
<u>Bunkers - Marine Diesel Oil</u>		
HOB/N. IAS - 7.0 x 2 x \$350 x 49	240	240
<u>IOIAL VOYAGE COSIS</u>	19,657	19,500

APPENDIX 3BREAKDOWN OF COSIS BY PERCENTAGE

<u>Vessel Costs</u>	<u>Hobart</u>	<u>N. Tasmania</u>
Crew wages and leave	6.87	6.90
Payroll tax	0.34	0.34
Superannuation	0.50	0.50
Miscellaneous	<u>1.11</u> 8.82	<u>1.12</u> 8.86
Victualling	0.37	0.37
Stores	0.74	0.75
Insurance	1.48	1.49
Repairs and maintenance	1.85	1.87
Administration	<u>0.74</u> 5.18	<u>0.75</u> 5.23
<u>Finance &amp; Administration</u>		
Capital and interest	9.57	9.63
Depreciation	<u>3.49</u> 13.06	<u>3.51</u> 13.14
<u>Voyage Costs</u>		
Port costs, pilotage etc.	2.33	3.51
Stevedoring, levies etc.	49.08	49.37
Wharfage	<u>13.91</u> 65.32	<u>13.99</u> 66.87
<u>Bunkers</u>		
Heavy fuel oil	6.72	5.00
Marine diesel oil	<u>0.89</u> 7.62	<u>0.90</u> 5.90
<u>Totals</u>	<u>100.00%</u>	<u>100.00%</u>

BASS STRAIT SHIPPING COSTS

APPENDIX 4

SCHEDULES

	<u>Days</u>	<u>Hours</u>
<u>Melbourne - Hobart</u>		
<u>Sea Time</u>		
Melbourne - Hobart	1	4
Hobart - Melbourne	<u>1</u>	<u>4</u>
	<u>2</u>	<u>8</u>
x 2 round voyages	4	16
<u>Port Stay</u> 4 x 12 hours	2	00
<u>Spare time</u>	<u>0</u>	<u>08</u>
TOTAL	<u>7</u>	<u>00</u>
<u>Melbourne/North Tasmania</u>		
<u>Sea Time</u>		
Melbourne - North Tasmania	0	14
North Tasmania - Melbourne	<u>0</u>	<u>14</u>
	1	04
	<u>3</u>	<u>12</u>
x 3 round voyages	3	12
<u>Port Stay</u>		
6 ports x 10 hours	2	12
<u>Spare time</u>	<u>1</u>	<u>00</u>
TOTAL	<u>7</u>	<u>00</u>

APPENDIX 5

VESSEL'S CAPACITY AND CARGO HANDLING RATES

Melbourne - Hobart

With 2 voyages per week lifting a total of 450 IEU this equates to 225 IEU per voyage of 450 units to be handled each trip.

Allowing 12 hours port time the required handling rate is 37 units per hour.

Vessel utilisation factor is  $\frac{225}{350} = 64.30\%$

Melbourne - Northern Tasmania

With 3 voyages per week lifting a total of 450 IEU this equates to 150 IEU per voyage or 300 units to be handled each trip.

Allowing 10 hours port time the required handling rate is 30 units per hour.

Vessel utilisation factor is  $\frac{150}{350} = 42.80\%$

APPENDIX 6COMPARISON OF FREIGHT CHARGES

IIEM	Helsinki/ Stockholm	Melbourne/ N. Tasmania
	\$	\$
Caravan (up to 6.8m length)	149.00	290.60 *
Motor cycle	6.50	33.00 *
Motor car (up to 5.4m length)	24.65	188.60 *
Lorry 15m length	412.20	2,326.87
Bus (up to 10 passengers) per lane metre	2.90	
" " per sq. metre		61.95
Bus (over 10 passengers) per lane metre	24.65	61.95

\* rates apply to accompanied vehicles only and include free return within 12 months provided that the passenger purchases a return ticket at the time of initial booking.

APPENDIX 7

The following is an extract (Appendix XIV) from Nimmo (1976):

ECONOMIC FREIGHT RATES

Advice Received by The Commission in a Frank Discussion with its Canadian Advisers:

(Note: It is customary in Canada to refer to Economic Freight Rates as Compensatory Freight Rates.)

"Compensatory freight rates are significant from the point of view of economics, and in regulating intermodal competition."

"There is universal agreement that the compensatory freight rate must at least meet the long-term variable cost."

"Transportation by water is well away the cheapest way of handling goods."

"The first function of pricing is to allocate economic resources. It is the task of rationalising essentially scarce resources among limited objectives."

"In the railroad business the long-term variable cost is somewhere between 70 and 80 per cent of the full cost. Taken as a whole the rate structure must yield sufficient to meet total costs."

"Taken as a whole the enterprise must bear its total cost or it just won't make it in the long run."

"Compensatory freight rates must recover all operating costs, including depreciation and administrative costs and the servicing of fixed debt."

"If you are foolish enough as a carrier, public or private, to go into the transport business and supply equipment before you know you are going to make your replacement costs under market conditions, you should get a new manager because that is not very intelligent from an economic or social standpoint. If, over and above that, there are burning public and social interests, and reasons, why you want to encourage the movement of whatever it is, that a new problem that has nothing to do with the carrier."

"If you want people to locate in Tasmania, I would certainly not offer a broadscale subsidy for traffic moving to and from Tasmania. We, in Canada, have had some bitter experience in this sort of field, and it plain does not work."

"In peacetime, universal experience has been that intervening in the supply and demand relationships of the marketplace, particularly in a period of sharply rising prices when intervention tends to be politically popular, really confounds the problem."

/"Because it....

BASS SIRAIL SHIPPING COSIS

"Because it looks expedient at the time it seems to sugar-coat the pill. Politicians say we are going to hold down this rate and we will give you the subsidy in lieu of the rate increase you ought to get. Of course, this is immediately interpreted as a benefit to the carrier. It is not indeed, and if you look at it, it is not intended to be that. By this time it is terribly confused as to who the beneficiaries are. A great many of them just plain do not need it, and the ones that complain most bitterly about the impact of freight rates are the ones who have just raised their prices 10 or 15 per cent."

"It is a delusion that by offering a countervailing subsidy you dodge the problem. You only postpone it. There is a tendency to keep on pyramiding the subsidies, and once you have opened the possibility that you can do this thing, why don't we have more? But, eventually, there comes a time when something has got to give, and at that time the decision to do it is more painful than ever."

"Based on our bitter experience I would suggest let the price move in response to cost pressures. Obviously it is important that they be justifiable, and the measure of this is, on the one hand, that the operation is efficient and, on the other, that they are not earning unconscionable profits."

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