

22 November 2006

Road and Rail Freight Infrastructure Inquiry  
Productivity Commission  
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## IMPLICATIONS OF RELATIVE INFRASTRUCTURE PRICE CHANGES FOR FREIGHT ACTIVITY AND MODAL SHARES

As mentioned in a phone conversation last week, ACIL Tasman considers that some of its recent work on freight demand may be helpful to the Commission on the context of chapter 7.4 and its supporting appendix G of the draft report. We are therefore making this brief submission, and apologise for its lateness due to some confidentiality issues that have now been addressed.

### Modal share analysis

ACIL Tasman, an economic consulting firm, was part of a consortium with Ernst & Young (project manager) and Hyder (engineering consultants) that produced a study on the North-South (Brisbane-Sydney-Melbourne) rail corridor for the Commonwealth Department of Transport and Regional Services (DOTARS)<sup>1</sup>. The report is available on [www.dotars.gov.au](http://www.dotars.gov.au) and, in a faster download version, on [www.aciltasman.com.au](http://www.aciltasman.com.au). ACIL Tasman was responsible for work on current and future freight demand and on rail access charges. The company also has a background in other rail and road economics work.

The freight demand analysis for the North-South corridor study required an assessment of current levels of freight by origin-destination pair and commodity, estimates of future levels of freight, and estimates of modal share (especially road and rail) that took account of relative price and of changes in infrastructure quality (e.g. the current programme to upgrade the existing rail route, and proposals for an inland rail route).

This work required a good understanding of how freight firms and their customers actually decide what mode to use, and how they would change their decisions if there were changes in relative price or service quality. It also required a purpose-built model suited to modal share analysis.

ACIL Tasman surveyed the main freight firms in the corridor and most of the main customers, using in-depth interviews and a structured questionnaire. Firms were



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<sup>1</sup>Ernst & Young, Hyder and ACIL Tasman 2006, *North-South Rail Corridor Study*.



asked what they sent, where they sent it, and what mode(s) they used and why. They were also asked to indicate how their choice of mode would respond to postulated changes in price and service quality (especially reliability and the availability of service with suitable departure and arrival times).

The responses were generally consistent, showing considerable sensitivity to price (except for express freight) and to service quality (except for some bulk commodities where price was the overriding factor). On the relative price issue of interest to the Commission, the bulk of the freight market was sensitive to it. This price sensitive freight included manufactured products, steel, other bulk products such as paper, grain and coal.

The industry responses – or price and service-standard elasticities - were incorporated in a purpose-built logit model to analyse changes in market share in response to price and other drivers. The results of the logit model were combined with forecasts of overall freight growth to produce estimates of rail and road freight growth. More detail is available in the published report, chapters 3 and 4.

Because of the nature of our assignment, we were able to assess a richer variety of freight types, origin-destination pairs and modal choice factors than in the more aggregated work undertaken by the Commission. We were also able to develop a model especially suited to the modal share question, rather than relying on higher level general equilibrium modelling (ACIL Tasman has such a model, Tasman Global, but did not use it as the logit model was better adapted to the task).

ACIL Tasman has developed an updated and more generic logit model and used it to assess the question addressed by the Commission in section 7.4 of its draft report.

## Results

ACIL Tasman has used its model to estimate the change in mode share from a 30 to 40 per cent increase as assumed by the Commission. This impact varies according to the length route.

Short routes like the Melbourne-Sydney are favourable to road and not for rail (for most commodities), so the modal shift from the 30 to 40 per cent increase in road user charges will be small as the difference in relative service standards offered by road and rail is typically large.

Where the routes are longer, however, relative road and rail service standards are more evenly matched and thus an upwards shift in road prices (caused by the increase in road user charges) is likely to produce a more pronounced shift in mode shares.

The results are based on analysis using a standard B-double truck – the type of truck which now and in the future competes with rail on interstate and many regional routes – carrying 25-30 tonnes of payload freight and with a gross weight of 60 tonnes. Net excise is calculated at 20 cents per litre with trucking firms purchasing diesel for \$1 per litre. Fuel consumption of the reference B-double is approximately 1.9 kilometres per litre. Under these assumptions and with recognition of registration fees, road user charges comprise approximately 8 per cent of total truck operating costs.

Using a mid-length inter-capital city route of 1,500 to 2,000 (e.g. Melbourne- Brisbane) kilometres the results of a 30 to 40 per cent change in road user charges under several scenarios are as follows:

- a 1.3 per cent shift of total general freight to rail transport and a consequential 1.3 per cent shift of freight away from road transport



- by 2011 the volume of freight on the Melbourne-Brisbane route is forecast to have grown to approximately six million tonnes per annum; a 1.3 per cent mode share shift is 78,000 tonnes per annum
- the revenue from 78,000 tonnes of freight on the Melbourne-Brisbane route is estimated at \$8-10 million (2006 dollars). This would be significant for rail operators, who we understand are not making economic profits on the East coast corridor at present.

## Related issues

The draft report is an impressive analysis, but there are some issues (in chapter 4 of the draft report) that should be considered together with the modal share sensitivity results:

- the costs of enforcing heavy vehicle mass and speed restrictions is not recovered through road user charges, unlike the rail sector
- the proportion of road expenditure defined in Australia as "common" is at the upper end of those in other available studies (page 4.21), implying that the proportion attributed to road freight is at the lower end
- the allocation of common costs in Australia is by vehicle kilometres travelled (VKT) which places a higher proportion of common costs on cars than alternative approaches based on passenger car equivalents or average gross mass kilometres. The discussion in the draft report about whether or not the current approach best approximates Ramsey pricing is based on the suggestion that the biggest trucks compete with trains and so have a lower ability to pay. However most trucks do not compete with trains, either serving routes with no rail service, customers (e.g. express freight) for whom rail is not substitute, or urban delivery. Other types of allocation canvassed in the draft report, such as fuel use (DOTARS) or PCU-km, which would allocate more common cost of trucks, may therefore better approximate Ramsey pricing (and hence better avoid any subsidy to trucks). At a more intuitive level, it is difficult to envisage a car having a greater ability to pay than a 40 tonne truck.
- as the Commission notes, the current cost allocation practice is acknowledged as "conservative and sympathetic" [towards road freight].

These factors collectively indicate an allocation of road costs to trucks that is skewed to the lower end of the possible range. As noted above, ACIL Tasman's modelling indicates, in many circumstances, greater sensitivity of modal share to of the price than does the Commission's more aggregate analysis. The combination of the two points to a stronger conclusion than the Commission's about the modesty of the efficiency gains to be achieved from refining the current cost allocation methodology (section 4.5 of the draft report). The refinements would result in a higher relative allocation of road cost to trucks and, where they compete, a higher market share for rail freight.

However ACIL Tasman agrees with the Commission that there is also much to be gained from more efficient pricing arrangements overall and from improved linkages between road demand and investment.

## Is rail freight infrastructure subsidised?

This question is the subject of an interesting discussion in section 5.4 of the Commission's draft report, with a draft finding that "direct government subsidies to rail are common and, in some cases, have been sizeable". This is followed by a discussion about the lack of clarity about CSO payments.



ACIL Tasman suggest that an additional consideration the Commission could bear in mind, in the competitive neutrality context, is that some of the subsidies can be seen as a consequence of past government interference that has reduced the efficiency of rail services - e.g. requirements to run uneconomic services, requirements to use public sector rather than competitively tendered maintenance services, and acquiescence to restrictive work practices. A consequence is poor financial operating results and investment below a long term sustainable level. In other words such subsidies "correct" a distortion within the rail sector rather than causing a distortion between modes (though of course a better outcome would be no imposed inefficiencies and no corresponding subsidies).

Yours sincerely

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