PROGRESS OF RAIL REFORM

Review by Productivity Commission, 1998/99

1. Pricing in a Supply Monopoly Situation

1.1 Relation of Pricing to Efficient Costs

Where public rail is a monopoly or quasi-monopoly supplier, as is the case in transport of coal, with a preponderance of railings on dedicated or near-dedicated routes, pricing

(a) should be directly related to efficient costs; and

(b) differentials should not apply "within industry";

(c) assets should be appropriately valued;

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(d) required return on assets should pay due regard to the level of specific risk; and

(e) reasonable transparency should apply.

1.2 Costs of Hauls from Specific Mines

Importantly, on a dedicated or near-dedicated coal route, costs specific to hauls from individual mines and/or loading facilities, other than those associated with infrastructure capital and maintenance, are identifiable with a high degree of precision.

Infrastructure costs are known in total for each route and are allocatable to individual operations by use of widely accepted standard methods2. Costs of individual operations reflect inefficiencies of not only rail transport but also contributing inefficiencies of miners, eg. slow loading rates, delays at terminals, variations in availability of coal.

1.3 The Case Against Differential Pricing

At page 155 of "Rail Transport of Coal", I comment that "it is questionable whether the

incentive to develop a mining project ..... (and therefore initial railings) is best

provided through differential rail pricing. Problems inherent in rail pricing on Ramsey principles, designed to take cognisance of differing demand elasticities on a "within industry" basis and in a monopoly supply situation, are outlined in Chapters 4 and 5 [especially at pages 48, 49 and 57]. If rail charge differentials are applied in determination of access fees, these problems will persist and may be accentuated. Put simply, the rail supplier is not competent to assess relative demand elasticities nor review changes in those relativities"3. The matter is examined further at pages 156/157, where it is suggested that incentive to produce, and thus to rail, coal is best achieved through collection of royalties rather than by current volume (NSW) and ad-valorem

(Queensland) royalties.

’ Defined as routes where coal represents at least 90 per cent of total traffic volume.

[2] Costing methodology is set out in some detail at pages 69m of "Rail Charges and Costs: Transport of Export Coal, 1997; the Commission has a copy.

[3] Acknowledged by SRA in Submission 98 to the Industry Inquiry into Rail Transport [p. 18].

The Industry Assistance Commission ["Assistance to mining: some issues and preliminary analysis", January, 1998, especially at pages 33/53] arrived at a similar conclusion.

1.4 Valuation of Assets

Rail transport clearly entails heavy capital expenditure on assets and, in particular, infrastructure and rolling stock. Valuation and, as appropriate, revaluation of long life assets are important factors in accurate assessment of costs of provision of rail service. There is disagreement, even between suppliers of rail service, as to method of valuation; market value may clearly be "written out". NSW uses replacement value, Queensland deprival value and the rail regulator in the USA (ICC) insists on historical cost. My conclusions on method of valuation of rail-specific assets are set out in some detail in "Rail Transport of Coal" and in particular at pages 77/93.

Briefly, my conclusion is that historical cost is the appropriate method for infrastructure [pp. 92/93]. Reasons include very long life and the fact that the constituent parts are necessarily continuously maintained to high standards. Attitudes in the USA, reflected in conclusions by the US Railroad Accounting Principles Board, RAPB4 [pp. 91/92 of "Rail Transport of Coal"] which numbered among its members the Professor of Economics at Yale, the Professor of Accounting at Columbia and the Executive Vice President of the American Association of Railroads. I reached a similar conclusion favouring historical cost for rolling stock (as did the RAPB) mainly because of factors such as rapid technological progress which is increasing "service potential" and observed trends in acquisition prices [pp. 88/89].

1.5 Rate of Return on Assets

Levels of return on assets required by rail are clearly factors in determining prices for services. CAPM methodology is favoured by public rail, which in turn involves assessment of the level of specific risk (Beta), clearly low for bulk transport of coal. In the light of available evidence, I have selected an equity beta of 0.3s; reasons are given at pages 105 to 108. Nominal cost of capital rates apply when assets are valued at historical cost; real rates are applicable to current cost (replacement) value. It would appear that the NSW Access Regime applies nominal costs to replacement value; this violates accepted economic and accounting principles and represents a form of double accounting for inflation [see also views expressed by the Industry Commission at page 269 of its 1991 Report on Rail Transport].

1.6 Transparency

Public monopoly supply impels a degree of transparency as to the cost basis for rail charges[6]. There can be no objection on the ground of commercial confidence, especially if there are no intra-industry price differentials, other than those relating directly to cost efficiencies, distance of haul, etc.

[4] The Commission has a copy of its 1987 Report, copied from my personal copy in 1991.
[5] The Network Code of Pricing Conduct developed by the National (Electricity) Grid Management Council uses 0.4 [Appendix L p.23].
[6] The Commission's 1991 Report also takes up this theme.

1.7 Productivity-induced Cost Savings

With a monopoly public supplier, cost benefits arising from greater efficiency/productivity should be passed on to the user; otherwise the rate of return on assets increases above specific-risk-modified market return. But the supplier must have an incentive to improve efficiency. The US Interstate Commerce Commission (ICC) in 1989 introduced a procedure whereby the full benefit is passed on by American railroads to users but with a 2-year lag. This procedure is described at pages 137/138 of "Rail Transport of Coal". A footnote to page 137 describes a 2-year lag process of sharing cost benefits of productivity gains between the PMG and suppliers of telecommunications equipment and cable, initiated in 1949.

2. Pricing in Competitive Situations

Relation of Pricing to Efficient Costs

In competitive situations, which apply to all rail services other than bulk transport of coal and other minerals, pricing criteria (a), (c) and (d) apply with equal force, but with an important reservation. Lengthy experience in the field of costing categories of rail traffic and individual hauls has led, not unexpectedly, to the conclusion that, even for categories over common-user routes, identification of most costs is not practicable7. For individual hauls, of course, identification is usually impossible eg. in particular LCL traffic.

2.2 Basis of Pricing

Prices in a competitive situation must be related to what the market will bear. However, knowledge of costs of operations for at least each category of service and individual route must be as definitive as possible within the constraints referred to in pare. 2.1 These data should cover both actual and best practice (efficient) costs. In the first place, the rail supplier must obviously know his costs if he is to measure the financial outcome of each particular service category. Secondly, a government must have this information to determine specific payments for various community service obligations, which should always be related to efficient performance, or to facilitate decisions to discontinue or restrict a particular service or to close a line.

2.3 Valuation of Assets and Required Rate of Return

Principles similar to those outlined in para. 1.4 should apply, with the reservation that, in most, of not all instances, the level of equity beta will be higher, in some cases much higher, in recognition of specific risk greater than that for coal transport. This higher level of required return on assets is important to government decisions on levels of CSOs, discontinuance of services, closure of lines, etc.

2.4 Price Differentials

A corollary to marked-based pricing is differential pricing. In its best form, such pricing is applied in accordance with Ramsey principles, that is, by varying mark-ups on marginal costs relating to relative demand elasticities. Ideally, the mark-ups overall should be adequate to cover costs plus return but, for most traffic categories and / or routes, this will not be practical. However, if the lowest price to any user is in excess of marginal cost, the overall supplier return improves, without detriment to other users.

[7] Even for coal traffic on such routes, infrastructure costs are not identifiable.

2.5 Productivity-induced Cost Savings

The extent to which it is necessary to pass on to users the cost-benefits of greater productivity will, of course, depend on market forces, and in particular, productivity improvements of suppliers, which will increase their “competitive edge".

3. **Movements Since 1991**

3.1 Productivity-induced Cost Savings

There is no doubt that, in recent years rail in Australia has reduced costs through greater efficiency. Research by the Bureau of Industry Economics has quantified these. In Submission No. 7 to the Commissions Inquiry into the Black Coal Industry, I refer to factors favourably influencing costs of coal rail hauls in NSW and Queensland in recent years [pp. 9/10]. For Upper Hunter hauls these include:

(a) pronounced increases in tonnages hauled;

(b) associated economies of scale;

(c) marked improvements in employee productivity and consequent reduction in costs per tonne of coal hauled;

(d) use of larger consists and greater capacity wagons and reduction in cycle times; and

(e) substantial reductions in costs of servicing and maintenance of rolling stock, achieved by greater productivity and technological developments.

Much of the improvement has been due to the efforts of the railways [ea. performance of "One Stop" Wagon Maintenance Centre at Newcastle, p. 10] but mining companies have also contributed [ea. reduction of cycle times by improved performance at terminals in Queensland, p. 10]. In Submission No. 7, I estimated that, from 1993 to 1997, the cost per tonne of Upper Hunter hauls fell from $3.56T to $2.50T, due partly to the factors listed in (a) to (d) above but also to falls in interest rates and low inflation. I did not have sufficient data to make an equivalent calculation for Queensland but similar factors were operative. Brief reference to cost benefits of improvement in productivity in Queensland is made at pages 3/4 of Submission No. 47. However, in view of the $1244M of capital contributions by Queensland miners, the impact of lower interest rates on capital costs would be much less.

3.2 Adjustments to Pricing

Submission No. 7 indicates [p. 12] that the average charge for Upper Hunter hauls in 1997 was $5.25T, about $2.75T in excess of my estimate of current costs [including return]. This charge includes the "Access Fee" which admittedly embodied an element of 90 cents per tonne representing monopoly rent. The $2.75T excess represents a reduction of 69cT on the excess over costs of $3.44T estimated in 1993 and an even greater reduction in 1991. For 1998-99, the average charge for Upper Hunter hauls will be of the order of $4.60T; the adjustment of 65cT is inclusive of a 30cT reduction in the monopoly rent component of the Access Fee to 60cT.

The lower charge also reflects, in part, cost-savings associated with a large increase in volume of coal railed, which reduces per tonne costs of infrastructure capital and the "constant" element in maintenance.

Trends in Queensland charges in recent years are covered in some detail in Submission No. 47. The situation is not as clear as in NSW, being complicated by the "super royalty" element in the rail charge, now progressively being removed. I would refer the Commission to Submission No. 47 and in particular to the Summary at pages 9/10.

4. Experiences in Rail Transport

4.1 Association with Public Rail

My association with rail began in 1970 when I was appointed consultant to the Beard Inquiry into Land Transport in Victoria. Subsequently, Victorian Railways retained me as a major consultant for 13 years on a wide range of financial, costing and organisational matters [some of the more important are shown in Appendix "A"].

4.2 Transport of Minerals

From 1978 to 1983, I was also retained by CRA as consultant on rail transport. Since 1984, this association extended to transport of other minerals, especially coal, from mines operated by BHP, MIM, WMC, CSR, Shell, BP, Exton and other major companies [details of assignments are shown in Appendix "B"]. From 1991, projects also covered railings to power stations in NSW, Queensland and South Australia.

4.3 Research

I prepared submissions, on my own behalf and for a number of mining companies to the Commission Inquiry into Rail in 1990 91. The Commission accepted and used my estimates of operating costs of operations, with very minor reservations [pp. 262-265 and elsewhere]. It preferred an alternative approach to capital costs9. Submissions were also made to the Commission's Inquiry into the Black Coal Industry.

I have worked closely with the Bureau of Industry Economics in its studies of rail transport efficiencies. The results of my research have also been widely used by ABARE and leading academics, including Professor Freebairn and Dr. Trace.

Research for my doctoral thesis ["Rail Charges and Costs; Transport of Export Coal, 1977"] was extensive and intensive, it drew heavily on Australian and USA principles and practices of rail costing and pricing, as well as my own previous experience.

8 In respect of corporate administrative costs - relatively minor in incidence. 9 Subsequent research impelled me to vary my approach - see "Rail Transport and COSB'', particularly pp. 94/112.

Appendix "A"

Consultancy to Victorian Railways: 1971-83

Major Assignments Included

1. Development, introduction of responsibility accounting and costing system (RAMAS) to

record costs and measure performance against budget for:

(a) Cost centres and aggregations of these; (b) Traffic categories. (c) Routes

2. Development and introduction of costing by routes, **lines and line sections.**

Review of workshops costing to provide for:

(a) More accurate treatment of on-costs and overheads; (b) Costing by locomotive class; **(c) Costing by wagon type.**

Re-organisation of Rolling Stock Branch.

5. Review of depreciation rates.
6 Valuation of major assets.
7 Introduction of asset register
8. Review of overheads applicable to recoverable works, eg company sidings.
9. Expert evidence in major cases for recovers of damages to rail property .
10. Development and introduction of effective procedures for charging hire rates for mobile 11plant and equipment.
11 Introduction of betterment accounting; for infrastructure.
12 Review of scope of road motor repair and maintenance work shops
13 Review of form presentation of balance sheet. profit and loss and other financial statements in annual reports.
14 Review of size of wagon fleet
15 Initial design of an Annual Financial and Statistical

Appendix "B"

Easton Studies of Costs and Freight Rates for Hauls of Coal and other Minerals

A Export Coal

Shipping Terminal	Mines
Abbot Piont	Collinsville* and Newlands*
Mackay	Goonyella, Peak Downs, Saraji, Norwich Park, Riverside, Blair Athol*, German Creek and Oaky Creek*
Gladstone	Blackwater*, South Blackwater*, Curragh, Gregory Yarrabee and Moura
Fisherman Island	Aberdare, New Hope, Oakleigh, Rhondda and Westfalen.
Newcastle	Drayton, Great Greta, Gunnedah, Howick*, Hunt er Valley No 1*, Lemington*, Liddell*. Macquarrie, Mt Arthur, Mt Thorley, Newstan, Preston. Ulan*, Vicker *. Wambo* and Warkworth*.

B Domestic Coal

Hauls from Blackwater*. Curragh. Collinsville*. Boundary Hill*. Callide. Leigh Creek*, and Collie mines

C Other Minerals

Hauls from Mount Isa*. Broken Hill*, Cobar*. Woodlawn*, Mount Lyell. Hellyer. Rosebery. Kambalda and Leonora mines

D New Zealand Export Coal

Hauls from Westport mine to Lyttleton and Oahu mine to Invercargill

* Multiple studies have been undertaken in respect ot these hauls