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Author 1
Surname: Williams
First name: Alan W.
Organisation: Queensland University of Technology
Address: School of Economics and Public Policy
Faculty of Business
Queensland University of Technology
GPO Box 2434
Brisbane
E-mail awilliams~,)qut.edu.au

Author 2
Surname: Ferreira
First name: Luis
Organisation: Queensland University of Technology
Address: School of Civil Engineering
Faculty of Built Environment & Engineering
Queensland University of Technology
GPO Box 2434
Brisbane
E-mail lferreira(~qut.edu.au

ABSTRACT

Title: Commercialising Australia's Interstate Rail Freight Transport: **Some Ownership and Investment Issues.**

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The paper addresses the issues of rights-of-way ownership and application of consistent investment appraisal techniques across modes of transport. There are linkages between ownership, rights-of-way, competitive strategies and market contestability which will have a significant bearing on the choice of investment criteria used by commercialised railways. Investment methodologies in competing modes of land transport must be consistent. Investment in individual elements of railway infrastructure must be integrated with the overall cost recovery strategy of the operator. Major railway projects must be submitted to both financial and economic evaluation, so that the interests of individual railway authorities and the community are considered.

1. INTRODUCTION

The ownership and rights-of-way and associated infrastructure in commercialisation or corporatisation of interstate railways in Australia, and elsewhere, is vital to their commercial success. Under pressure to increase productivity and profitability, the choice of the most appropriate investment criteria for commercialised railways is a vital consideration.

The history of the Australian railway system is one of railways as instruments of development policy. Since the 1980s governments have been compelled by fiscal imperatives to view railways as government assets providing private goods. Consequently, the States and Commonwealth have reviewed legislation and investment practices employed by railway systems in Australia and embraced the introduction of the National Rail Freight Corporation.

The paper explores the link between ownership, rights-of-way, competitive strategies and market contestability which will have a significant bearing on the choice of investment criteria used by commercialised railways.

2. TRADITIONAL RAILWAY OWNERSHIP IN AUSTRALIA

Since Federation in 1901, the traditional approach to railway operation in Australia has been for a single entity, the State or Commonwealth Government, to own and operate the rights-of-way, locomotives, carriages, stations and other infrastructure. The Commonwealth currently own and operate the railway systems of Tasmania and South Australia. In northern Western Australia some mining companies operate their own railways between their mines and ports. In Queensland and northern New South Wales, private sugar refineries own their own light railways to link sugar cane farms and the crushing mills.

Historically, State governments used railways as means of furthering development. Railways were regarded as social services and means of benefiting particular interests. Freight rates were set by political decree not commercial reality. Increasing competition from road transport from the 1 950s onwards produced ever-growing deficits.

3. "NEW" MODELS OF RAILWAY OWNERSHIP

A process of microeconomic reform began in the public sector in Australia in the 1 980s precipitated by budgetary problems at a macroeconomic level. To address budgetary demands from the welfare sector, cuts in direct taxation and internal inefficiencies, Commonwealth and State governments began to pay particular attention to their more significant "flexible" expenditure items including railway deficits which ultimately lead to the current programs of corporatisation and privatisation (see ARRDO, 1981, pp. 34,38).

Moves for corporatisation of public railways have lead to a search for management models which could divorce the functions of ownership, operation and regulation of railways. Operations have been segmented by product lines (e.g. freight and passenger services).

The segmentation process has left operations such as signalling and control systems, rights-of-way and related infrastructure as cost centres without corresponding revenues. As many represent non-renewable specific assets, they are seen as unprofitable activity. Furthermore their realisable value is problematic.

The cost for expansion of the infrastructure to support new commercial activity is regarded as a burden for railway traffic which road transport does not supposedly bear. Thus, it is argued that railway infrastructure provision should be separated as a business to be managed planned and owned by a separate entity.

Advocates of the infrastructure separation model argue that long term investment in transport at a national level can only be optimised if both rail and road infrastructure (rights-of-way) can be regarded as a public good. This represents a highway concept of land transport supply, divorcing ownership of rights-of-way and associated infrastructure from ownership and operation of vehicles, locomotives and carriages. For different reasons, managers of commercial railway services share the desire for organisational segmentation of railway assets. They regard the ownership of rightsof-way as incompatible with the requirement for earning a profitable rate of return on investment.

4. CONTEMPORARY BRITISH AND EUROPEAN RAILWAY POLICY

Public railway deficits in Britain and Europe in the 1960s and 1970s (Nash & Preston, 1994) have prompted proposals to return to the highway principle of the l9th century railways. The reform process started in the 1980s with internal management reforms (e.g. regional/sector management, accrual accounting, labour shedding).

As the economies of internal changes were exhausted, in the 1 990s governments sought new ways to economise on public commitments to railway infrastructure. Discussion shifted to changes in the market relationships for railway services. "New" models of railway management variously propose: separation of ownership of infrastructure and operations within the public sector; privatisation of operations and eventually infrastructure, as a private monopoly; and a private rail market based on the highway principle.

The British model of railway management replaces British Rail with: a public railway infrastructure company (Railtrack); a railway regulatory authority; and operating companies based on region/function. Railtrack will at least own the rights-of-way, as stations might be leased to private enterprise. The regulatory authority's function is to guarantee that Railtrack provides fair and open access to all operators. Passenger operations will be franchised to private companies and freight and parcels operations sold entirely to private companies. Railtrack will be privatised in due course (Nash &

Preston 1994, p.5).

5. RIGHTS-OF-WAY OWNERSHIP ISSUES

The approach to operating railways this century has been as public monopolies. A single public entity acts as both operator and provider (owner) of fixed infrastructure such as the rights-of-way. The fiscal problems of railways and governments generally have prompted moves toward commercialisation and corporatisation of railways. There has been a search for management and operating models which maximise the profitability (or minimise the loses) of the railways. To enhance profitability, accountability has been increased by various means including segmentation of the functions of the railways into various operating units which reflect specific markets such as freight and passenger services. It has been suggested that the fiscal burden of the rights-of-way and related infrastructure, such as signalling and control systems, is too much for a commercial enterprise to endure. As a result, infrastructure provision is increasingly seen as a separate business to be managed, planned and owned by a different entity.

Separation of operation and rights-of-way ownership - the "new" railway management model - could be justified on the grounds of public-private goods theory. Rights-ofway could be regarded as satisfying the conditions for a public good - non-rivalry in consumption, non-transferable property rights and externalities in consumption. The operation of railway services could be regarded as a private good - rivalry in consumption, transferable property rights and no externalities in consumption.

From a management perspective, the fiscal burden of ownership of the rights-of-way prevents achievement of acceptable rates of return on funded invested by railways.
A simple analogy is that road freight transport companies do not own the roads they use, by sub-contracting they minimise their ownership of vehicular equipment and labour and thereby maximise their returns on funds invested. Advocates of the "new" railway management model seek to emulate the ownership model used in Australian road freight transport.

Thus it could be argued that to optimise long term investment in land transport, both highways and railway tracks should be treated as public goods with their ownership a public responsibility while their use should be treated as a private good. Comparable obligations for asset use could then prevail, if taxation principles applying to both road and railway service entities were the same. Both road and rail would be obligated to bear operations costs alone, and hence calculate return on funds on the c~mP. ('...~t h ~

6. SEPARATE OWNERSHIP MODELS - PROBLEMS

Three issues arise when attempts are made to apply the separate ownership model. First, the calculation of return on funds invested is open to creative accounting methods which disguise the true level of commitment of funds (resources). Second,

there are conflicting objectives between operator and infrastructure owner (provider). Third, there is interdependence between rights-of-way and other railway investment ~1P ~ nc

First, the separation argument based on the return on funding is attractive in simplistic form. Separating responsibility for different types of assets, such as track and rolling stock, then calculating the return on funds on one particular segment, such as rolling stock, will exaggerate the return on capital. Schwartz (1962) warns of this fallacy from the corporate perspective, however, the warning is just as valid from the community's perspective. He states, "If,..., the mistake is made of setting the investment at just the cost of the additional assets, ..., the rate of return will be grossly exaggerated. Properly, the amount of the investment is the sum of the new assets plus the liquidation or withdrawal value of the assets presently used in the operation" (Schwartz, 1962, p. 202). Separation of functions does not improve the return on funds invested overall in railways, rather it addresses, albeit crudely, the distortion arising from understatement of the assets committed to long distance road transport.

Second, the objectives of the operators of locomotives and rolling stock and owners of railway infrastructure will conflict because they can have different stakeholders, objectives and levels of accountability. Railway services operated for profit will be concerned about reducing operating costs and increasing revenue (via growth in market share or freight rate increases). Railway infrastructure owners will have to plan and manage their assets. In the case of public ownership of railway infrastructure, there is an obligation to make investment decisions which take account of the interests of current service operators (sectional/private interest) and the community to whom the entity is accountable (collective/public interest).

If there is more than one operator, the infrastructure owner faces potentially different demands for track maintenance, design and capital needs. More particularly, different market segments (freight v. passengers) will require different maximum speed and axle-load standards which have investment implications and ultimately user charges. The more commercial the orientation of the railway service operator, the more their concern with private/internal benefits and costs (accruing to the operator) and less their concern about social/external benefits and costs (accruing to society). This will be reflected in the investment criteria employed (discounted cash flow, economic rate of return, cost benefit analysis). The current debate reflects a more financial and less economic concern about the operation and management of railways. This point is taken up later in discussion of investment criteria.

Third, there is interdependence in railways because of the extent of jointness in production. Railway rights-of-way investment decisions are interdependent with investment decisions about associated infrastructure, as Figure 1 depicts. Investment decisions about track capacity potentially impacts on operating strategies and thus the level of service provided. For example: track design standards and maintenance strategies have direct influence on maximum axle-loads and train speeds; track upgrading including double tracks and cross-loops (sidings on single tracks to allow trains to cross and pass each other) affects transit time reliability and line capacity;

terminal upgrading which results in increased train sizes needs to be coordinated with track infrastructure upgrading; track condition impacts on rolling stock performance and maintenance costs; and train control technology requires track-side investment and compatible locomotive cabin equipment. Thus track investment decisions must be part of an overall strategic plan designed to achieve an organisation's goals and staged over time to maximise their benefit.

7. STRATEGIC RESPONSE AND CONTESTABILITY

The thrust of proposals to commercialise railway operations is that existing management structures and practices have failed to deliver efficient railway services. Antiquated equipment, over-manning, inflexible service schedules and poor customer relations are popularly regarded as symptomatic of deep-seated internal inefficiencies in rail transport operations and management. These attributes of railway activity are however, symptoms not causes of the problem facing railways - contracting market shares in the movement of goods and people in parallel with declining political commitment to fiscal commitments to maintenance or growth in physical infrastructure. The primary objective of New Zealand's economic reforms, beginning with State-Owned Enterprises Act 1986, was fiscal savings for the New Zealand Government (see Mascarenhas, 1991 and NZBT, 1992).

The response of economic rationalism, as reflected in the Hilmer Report (1993), is to rely on market and principal agency theories to inject competitive pressures into railway operations. The arguments for public ownership, on the grounds of market failure due to natural monopoly conditions, are heavily discounted. The transactions costs of buyers and seller and principals and agents under a more privately organised market are virtually ignored by economic rationalists.

The theory of contestability suggests that the threat of potential competition, hit and run entry, will ensure the efficient allocation of resources by multiproduct firms in markets with few sunk costs. The success of contestability theory as a basis for competition policy (mergers and monopolies), in transport at least, depends on the extent of strategic deterrence and the significance of vertical integration as a competitive strategies.

Strategic response concepts entered price theory with the pioneering work of Harrod (1952) and Bain (1956). Harrod classified firms as "snatchers" and "stickers" depending on whether their pricing strategies were directed to shortrun or longrun operations in the market. Bain followed with his identification of barriers to entry product differentiation, absolute cost advantages and economies of scale. He classified industries in terms of ease of entry: easy entry (no cost advantage for any existing or potential competitor); ineffectively impeded entry (current profits foregone by incumbents to deter entry exceed their long run profits); effectively impeded entry (current profits foregone by incumbents exceeded by their long run profits); and blockaded entry (shortrun prices deter entry). Bain's evidence suggested classifications two and three to be the norm.

Sylos-Labini (1962) postulated that potential entrants would expect existing firms to maintain existing output if entry occurred. This would leave new entrants to determine if the residual unsatisfied demand was profitable to serve. However the Bain-Sylos-Labini approach was subsequently refined: first, to explain the need for incumbents to establish the credibility of threats of losses for potential entrants and where entry is ineffectively impeded; and second, to explain the rate of introduction of new capacity in the case of ineffectively impeded entry. While the theory of strategic responses to potential entry is extensive, empirical evidence is comparatively scarce (Hay & Morris, 1991, p.99).

Contestability theory is a derivation of the strategic response approach to price theory. A contestable market in equilibrium will have the following characteristics: price equal to average costs; price at least equal to marginal cost; all firms are internally efficient (zero X-inefficiency); industry output is produced at minimum average cost; no cross subsidisation between products; in the case of a natural monopoly; and Ramsey prices apply (Vickers & Yarrow, 1988, pp.53-61). The theory suggests that the threat of potential competition, hit and run entry, will ensure the efficient allocation of resources by multiproduct firms in markets with few sunk costs (Baumol *et al,* 1982). By implication firms have the same production technologies and costs. In short, the new entrants can match the capacity of the incumbent firms.

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8. CONTESTABILITY AND BRITISH RAILWAYS OF THE l9TH CENTURY

The words of a popular tune suggest that "everything that's old is new again". In the case of railways the case is true. The present proposals for railway corporatisation and privatisation represent a return to railway management systems which prevailed in Britain and elsewhere in the l9th century. Such history demonstrates some of the potential problems of the "new" railway management model.

In Britain, the advent of the iron railways under the **Tramroad Acts 1801-1822** were followed by the development of railways companies that not only owned private railtracks, but also supplied locomotion, carriage, terminals and storage facilities. At first, they supplied only the rights-of-way by charging a toll to general carriers who had to supply the means of locomotion and conveyance, the engine and carriages (the highway concept of railways). The railway companies claimed no other intention because of the potential for exploitation of their monopoly (Jackman, 1916, pp. 572573).

Gradually the railway companies assumed the supply of the entire service, rights-ofway, locomotion, carriage, terminal operation and in some cases assembly and distribution functions. This occurred due to the railway companies offering cheaper rates than the private carriers. Thus the highway principle in British railways became a dead letter provision despite its lingering in legislative philosophy until at least 1889

(Butterworth 1988, pp.5-6 and Jackman 1916, p. 573).

The right to operate a private railway was conferred by a private act of Parliament stipulating the terms and conditions of railway operation. At first, the terms and conditions were act-specific including the rate provisions. Gradually, the rates applied to rights-of-way, locomotion and carriage of goods came to be standardised by Parliament under what was known as the **Maximum Rates Clause** after 1846.

Railway terminals formed a key strategic position in Britain's l9th century railway system because the benefits of service coordination were not lost on the canal and railway companies (Butterworth, 1889, p.3), nor the road transport carriers (see Turnbull, 1969, pp. 52-56). They evolved as part of the range of services offered by private railway companies. The terminal charges covered interest on capital construction, working charges (e.g. maintenance and labour) and profit (Butterfield 1889, p.32).

The history of British railway terminals between 1867 and 1888 indicates that they were employed as instruments of strategic deterrence in the line-haul business and as vital elements in a vertically integrated transport service (assembly, line haul, storage and distribution). They gave monopoly power to the private railways which eventually forced the regulation of their charges by legislation.

9. INVESTMENT CRITERIA

The creation of a more commercial environment for government owned trading enterprises, known variously as government business enterprises, state owned enterprises, has prompted changes in the emphasis given to appropriate investment criteria.

Cost-benefit analysis was developed to evaluate large scale infrastructure investments (dams, roads, power stations) where the impacts of such investments were long-lived, had significant resource allocation consequences and prone to spillover in associated markets and non-markets. The basic ideas of CBA have been attributed to various policy makers and economists such as Benjamin Franklin, Jules Dupuit, Jeremy Bentham, Vilfredo Pareto, Nicholas Kaldor and Sir John Hicks, but it was first legislated clearly in the US Flood Control Act 1939 which required that "the benefits to whomsoever they may accrue [be] in excess of the estimated costs" Gramlich (1981, p.7). In Australia, a 1966 Treasury white paper (Commonwealth Treasury, 1966) pioneered the use of CBA for public investment in Australia.

The choice of CBA as an investment rule for a corporatised interstate rail freight organisation is dependent on the question of what type of services it provides. Until the 1950s, in Australia the public ownership of long distance railway transport was unquestioned due to the inherent problem of market failure - natural monopoly and essential supply arguments were widely accepted. Railways were regards as social/public goods rather than private goods, in both the demand and supply sense. Benefits were collectively enjoyed and costs were jointly incurred. It was an all-or-

10 nothing interpretation on both sides of the market.

The abolition of the restrictions on interstate road transport following the decisions in **Hughes & Vale v. the State of New South Wales No.1** 93 (1954) CLR 1 and **Hughes & Vale v. the State of New South Wales No.2** (1955) 93 CLR 127) lead to a rapid growth of interstate road haulage. The growth put more pressure on the States and the Commonwealth to enhance roads funding and precipitated the deficit growth of the States railways. Gradually, the railways' services came to be viewed as much as a private good as a public good, no doubt due to the influence of the escalating deficits of railway organisations on States' budgets (as discussed in Section 3).

CBAs were adopted to justify public investment in railways in the 1 970s when infrastructure renewal was a government priority at Commonwealth and State level. In the 1 980s, budgetary pressures associated with the growth in social welfare spending and reduced real levels of taxation lead to more concerns about asset management (as opposed to growth), cash flow management and public debt reduction. In the 1990s, departmental restructuring gave way to corporatisation and privatisation plans to effect further cuts in public commitments to infrastructure. Railway services came to be regarded as largely private goods. The public service/good aspect of railway services were relegated to the status of community service obligations which could be measured in output and cost terms and contracted for between government and the railway authority.

Commercialisation has lead to more interest in the economic rate of return (ERR) as an investment criterion. ERR is based on the ratio of net cash flow (less depreciation) and the market value of assets. ERR is difficult to apply due to lack of data and inconsistency in the base of asset valuation. The value of assets is reduced by politically determined (below) market prices with consequent effects on the appropriate depreciation charges (May 1991). Furthermore, the measure ignores external effects which may impact on other markets and non-markets.

In the face of these problems, use of accounting/financial measures must suffice. However, these measures present problems due to historically determined asset values (historic cost method), arbitrary allocation of joint (non-separable) costs, failure to consider external/social impacts and a preoccupation with actual cash flows. Reliance on such measures may be sub-optimal as the organisation focuses upon its proprietary interests rather than the interests of the economy at large.

10. ROAD AND **RAIL INVESTMENT ISSUES**

10.1 Comparability of Investments

If economic efficiency in the allocation of resources between road and rail is desired, then the same means of investment evaluation need to be adopted. Roads authorities currently evaluate road projects on the basis of cost-benefit analysis, potentially capturing the actual benefits of reductions in road vehicle operating costs, personal travel time, road accidents, congestion costs and environmental costs. Using standard

investment rules in CBA - net present value and the benefit-cost ratio - road projects can be ranked in terms of aggregate and relative efficiency respectively (in the case of independent projects). Miller & Tsolakis (1993) proposed a CBA model to evaluate multi-modal infrastructure provision and demonstrated its application for the Australian national hi~hway system.

One of the main reasons for the creation of two public authorities in Sweden, one to supply railway infrastructure and one to supply railway services, was to permit road and rail to be placed on an equal investment and pricing basis (Jansson & Cardebring, 1989). With respect to cost recovery in Sweden's road and rail industries, Nilsson (1992) advocates reducing the relative price of rail to offset, underrecovery of full marginal social costs from heavy road vehicles. As a 'second best' approach, it is comparable with the argument for urban public transport subsidies (to offset fare-box shortfalls) so as to reduce urban road vehicle congestion costs.

The pursuit of efficient resource allocation in land transport infrastructure through segmentation of railway functions need not follow the "Swedish two owner" railway model. Internal segmentation of existing railway authorities is another possible model, within a departmental or corporatised structure. A separate track business unit, accounting for its separable costs, could be established to service internally managed railway services, and possibly private operators as well as per Australia's TelecomOptus model in the telecommunications sector. The internal segmentation model is being progressively adopted in Australian and overseas railway authorities. However, once private operators are admitted to the railway network, the potential conflict of interest for the public railway authority suggests the need for a regulatory authority to guarantee fair trading between the track owner and railway service operators.

The choice of a railway ownership model depends on the perceived efficiency gains in service operating costs, level of freight rate reductions and the level of transaction costs to mana~e the system.

10.2 **Economic and Financial Appraisal**

Financial costs and economic costs are not synonymous. Financial costs relate to the use of resources for which monetary payments have been made by a business or household (explicit costs). Economic costs include financial costs as well as costs for the use of resources for which no monetary payment is made (implicit costs).

Private transport operators, accountable to their owners/shareholders), restrict their capital investment analysis to sales revenue (benefits they accrue) and financial costs (costs they accrue legally). Public transport authorities (accountable to government on behalf of the community) must extend their capital investment beyond the financial focus to take account of wider project effects, such as external and distributional effects, per medium of CBA.

From the above, it follows that major infrastructure projects for road and rail must be subject to both financial and economic analysis, to consider both the fiscal and economic outcomes.

10.3 **Commercial Rail Investment**

Under strictly commercial (financial) criteria full cost recovery of both road and rail operations would be required, assuming away jointness in production and loss-leader (product line) strategies. Track investment would have to be excluded from this requirement for community service/public goods reasons.

Most Australian interstate rail freight movements do not recover avoidable costs (cost avoided in the short run by service withdrawal). With railways being expected to improve financial performance, investment priorities will be financially driven. However, the extent of interdependencies with railway functions demands caution in selecting the level at which investments are assessed. Significant operating and financial impacts may be excluded being beyond the responsibility of a particular level of activity or segment of operations. There will be powerful personal incentives for managers to externalise costs and internalise benefits within business segments due to the embrace of principal-agency relationships which has accompanied the development of commercialised departments and corporatised agencies.

However, the mere presence of interdependence is not sufficient to justify any investment. Any segment which cannot recover its shortrun avoidable costs should be shutdown to maximise profits or minimise losses in the shortrun. In the longrun all costs are avoidable and thus all such costs must be covered by revenue in the lon~run.

10.4 **National Rail**

The total replacement value of the asset base of National Rail is estimated at $6-8 million. The government funds to be made available to National Rail will only enhance the national rail infrastructure to a limited extent. Access to commercial loans will not be permitted until National Rail operates profitably.

To overcome a reputation as an unreliable service provider, new capital investments must occur incorporating advanced technology and the railways must adopt more of a customer-service attitude and less of a railway- operation attitude. NRC may well act as a leader in both regards.

Constraints on government funding for capital, will probably force commercial imperatives upon NRC leading to the adoption financial criteria for future investments. Such criteria will possibly be given more weight than broader economic criteria in investment decisions. Herein lies the conflict of interest between the rail authority (NRC) and the community.

11. CONCLUSION

The commercialisation of Australia' s railway systems, in particular through the formation of the National Rail Corporation, is a direct response to the problem of operating deficits draining government finances (under present fiscal authority) and political manipulation of railway policy (since Federation). The NRC charter to

become profitable within five years compels the adoption of long term investment policies mainly directed at reducing operating costs. There is considerable indecision as to who will own the railway track, the NRC or the State railway systems or the States. Existing arrangements harbour potential conflicts of interest between the parties. The issue has significant implications for investment and resource allocation for the land transport sector. As the operator for interstate freight, the NRC shares rail track with the State rail systems responsible for passenger services and intrastate freight movements. Priorities for track upgrading will therefore be different between the various or~anisations.

For successful commercialisation of Australia's railway system formidable challenges lie ahead. This paper has addressed the issues of rights-of-way ownership and application of consistent investment appraisal techniques across modes. There are associated issues such as heavy vehicle charges for interstate road operations, railway asset valuation and achieving international benchmark standards which must be considered in conjunction with questions of ownership and investment criteria.

Investment methodologies in competing modes of land transport must be consistent. Investment in individual elements of railway infrastructure must be integrated with the overall cost recovery strategy of the operator. Major railway projects must be submitted to both financial and economic evaluation, so that the interests of individual railway authorities and the community are considered.

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