THE APPLICATION AND EVALUATION OF RAILWAY INVESTMENT

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ABSTRACT: *Capital investment in Australian government railways is now approaching $1 billion per annum. This level of investment continues despite increasing railway operating losses, now of the same order. Investment evaluation has had only limited impact on the size and deployment of capital funds. There are developing traffic tasks in which rail recovers its costs and in which investments show high rates of return simply because of the bulk nature of the traffic and its suitability to rail technology. On the other hand, there is a range of tasks where the justification for investment is conditional on other management action being taken. Substantial investment is readily justified in the bulk traffics, but the general case for investment in railways is complicated by poor performance in others. The paper explores some of the issues which underly the justification for railway investment and hence the analytical and associated management needs. In particular, these include identification of different roles within railways and changes in traffic task, the relationship between the investment and the ultimate financial results, and the status of research in basic demand and cost relationships.*

RAILWAY INVESTMENT

INTRODUCTION

Capital expenditure on Australia's Government Railways in 1981/82 was of the order of $810 million. At the same time, the Australia-wide loss on operating expenses only was $770 million. Any private company which could not achieve a return on capital would simply not continue in business. Yet railways have. Furthermore, capital funds continue to be provided, mainly through state government channels. Recent levels are shown in Fig. 1.

In the past decade, analytical effort used to evaluate and establish the justification for capital investment in railways has broadened from an engineering/operational specification of infrastructure needed for particular tasks, to relatively complex cost-benefit analyses. The latter include a number of the early projects of the Bureau of Transport Economics related to railway upgrading; Railways of Australia (ROA) Systems Planning and Development Committee investment studies (ROA 1976); railway systems' own development and application of capital evaluation techniques; and investment and other asset management studies included in the work program of the Australian Railway Research and Development Organisation (ARRDO) over several years.

There is no evidence that the amount of capital funds secured by railways, nor the overall deployment of those funds, has been affected significantly by these evaluations except in a few specific instances. The purpose of the paper is to present some observations on the application of capital funds in railways and why evaluation has yet to have a major impact. Although some of these observations have been advanced previously, action to ensure that investment is clearly justified and directed to specific goals remains slow and difficult.

The important underlying reasons appear to be associated with the mixed roles and multiple products of government railways and the difficulties in dissecting these so that the benefits from the investment can be linked to explicit targets. The businesses to which railways are technologically suited in today's environment are lost within a range of other activities and practices retained over an extended period at least in part because of financial and regulatory protection. This protection is now being removed and other changes in the operating environment are taking place. The information problem associated with a large multi-product business compounds the slowness to change, such that there is little explicit relationship between investment and the benefits which might be expected from it.

The sections following expand on these issues and consider:

- the mixed roles of railways and some historical matters which underly the present difficulty;
- some aspects of railway costs and the changing traffic task which have implications for the nature and justification of investment;
- the management and information system needs in treating railways as multi-product businesses; and
- the relationship between investment evaluation, resource planning and the realisation of benefits.

The paper is drawn largely from the authors' experience, both in ARRDO's investment studies (ARRDO 1983a, b) and reactions to them, and in the National Rail Policy Seminar of May 1983 (ARRDO 1983c).

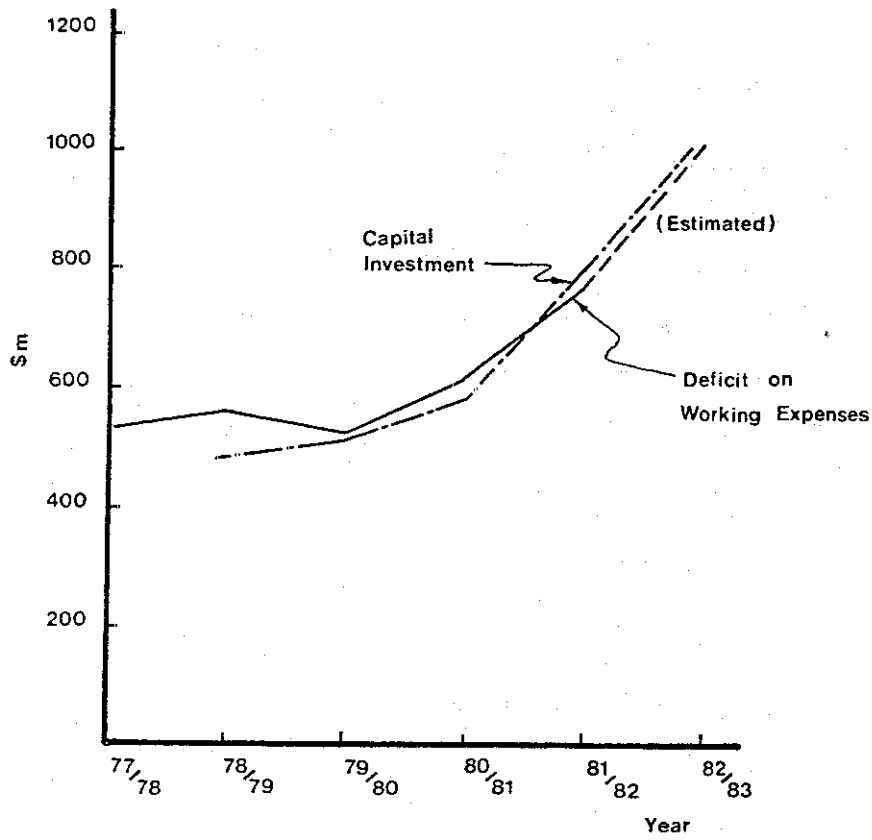

Fig. 1 Public cost of government railways – capital investment and deficit on working expenses.

Sources: Annual Reports and ARRDO estimates.

CHANGES IN THE RAILWAY ROLE

Unlike the railway systems of many countries, the Australian rail network was built almost entirely by government. Most of the early private ventures were very quickly taken into public ownership. Thus from the beginning Australian railways were not subject to the commercial pressures of private firms.

For much of their history, railways have been seen as an essential service, a means to develop the country and a basic element of infrastructure. Even so, a notion that 'the railways should pay' persisted with governments, and with the general public. This came to mean that revenue was to cover working expenses, and capital works were funded separately. Given this privilege, railway finances were not a major problem until the late 1960s, although in some cases some unusual accounting was involved.

One of the reasons that both commercial and social roles could coexist was that the viability of railways was defended by means of regulation of road transport. Regulation was introduced as competition between road and rail developed in the late 1920s. Before then, the modes were complementary; interstate freight moved mostly by sea, and domestic intrastate freight was handled by animal drawn vehicle for short pick-up and delivery operations, with rail for longer hauls. With the exception of some heavy short-haul coal carriage, rail traffics (and so the characteristics of the system) were of a mixed nature, and included general freight, passengers and agricultural produce. The competitive position of interstate freight was confirmed in 1954 with the effective deregulation of all interstate road traffic (BTE 1980, p. 10). Deregulation of intrastate road traffic has followed more recently.

It is notable that this late 1920s period was also seen some 30 years later (Meyer 1956, p. 56) as the beginnings of a 'creeping obsolescence' where railways no longer made adequate provision for depreciation or paid the interest on loans. The same period marked the end of significant construction of new general purpose railways. The coincidence of need for protection and beginnings of apparent decline seem to suggest a point of some significance to railway investment.

After World War II, railway commissioners viewed deferral of maintenance and lack of replacement works as acute (see, for example, Victorian Railways 1953, pp. 5-9). This post World War II period is the point at which Australia's long haul road transport industry became established, brought to a head by the national rail strike of 1949 (BTE 1980). Programs to rehabilitate railways (such as the then Victorian Railways' 'Operation Phoenix'), took place at the same time. The view remains within railways that deferred maintenance continued, and was a major contributing factor in the rapid rise of railway deficits from the early 1970s.

Other changes have taken place in the environment within which railways operate. Mineral developments, for example, were not as significant in the developmental years of railways as they are now. Mineral hauls of some consequence have been grafted on to the government railway network in recent years, taking the system further from the general purpose carrier it once was.

The attitude of governments to railways has also changed recently, at least as reflected in legislation. Deficits began to climb rapidly in the early 1970s and have become a significant drain on state finances. It was in the early 1970s that the notion of railways having a separately identifiable social role gained some force, partly influenced by events such as the British 1968 Transport Act. In Australia, the shock of deficits which had reached over $700 million by the latter part of this decade (and have climbed again since) put the focus back on railways as commercial performers. The charters of recently reorganised railway authorities -

Australian National (AN) and the Victorian State Transport Authority (V/Line) - have an underlying commercial orientation.

The protection given Australia's present railway system and the demands on it over the years have allowed it, or caused it, to respond to change only slowly and so traditional roles and tasks are intermixed with new ones. The 'creeping obsolescence' may be a result of inability to respond to change since available investment was stretched to sustain more than was warranted. Rather than a railway system designed for specific and appropriate tasks, so much of the past remains that it is difficult to isolate the parts that are worthwhile in today's terms. To provide some basis on which to judge investments worthwhile, the roles and tasks of railways need to be identified clearly and investment measured against them.

Conceptually, there are at least two ways to move to a railway suited to today's requirements. One is to look to an entirely new railway designed from scratch for its contemporary environment. The other is to look within the existing railway for the elements that are worthwhile. There are many arguments that can be made for the former of these approaches, especially given the constraints that the existing network and organisation imposes; there is a danger that marginal changes will simply perpetuate the existing unsuitable inheritance. On the other hand there is much within the existing railway that is worthwhile. Without denying the potential of the 'from scratch' approach, this paper is concerned essentially with the nature of the present system, and the means by which it can accommodate the future.

Some aspects of the changing tasks and associated costs are considered in the following section.

RAILWAY COSTS AND THE CHANGING TRAFFIC TASK

In any examination of investment, the underlying nature of the business of the organisation and of its costs is an essential input. The usual cost-benefit evaluation techniques do not, of themselves, provide sufficient information. Investment made in 'The Railways' buys rolling stock for particular tasks, track and signalling which carries particular (probably several, different) traffics, and other equipment all of which has particular characteristics influenced by external constraints and expectations.

Table 1 gives some indication of the underlying cost structure (working expenses only) of Australian railways. It presents the passenger/freight cost split (as it was in 79/80), together with the revenue returns. Within individual systems, freight revenue returns per dollar of avoidable working expenditure ranged from 79¢ to $1.45, and passenger returns from 31¢ to 91¢. Given that avoidable working expenses represent only around 75% of total working expenses, and capital is additional again, the passenger sector is well below a level where it could be considered to have any commercial potential, at least as a whole. The freight sector also shows very poor returns, though they are not as bad.

Australia's railways outside the mainland state capitals (Sydney and Melbourne particularly) are essentially freight carriers. Although investment in rolling stock and pricing/marketing initatives has had an impact on country passenger patronage, the major characteristic is of passenger paths overlaying a freight network. The remainder of this present discussion relates to the freight roles.

Table 1 Passenger/freight financial split (1979/80)
(Source: ARRDO 1981a)

	Revenue		Expenditure		Contribution (loss)	
	$M	%	$M	%	$M	Rev/cost %
Passenger	272	20	521	27	(249)	52
Freight	1074	77	924	48	149	116
Joint and other	47	3	474	25	n.a.	n.a.
Total	1393	100	1920	100	(528)	73

The aggregate breakdown disguises individual freight commodity performance. Taking commodity groups individually, a clearer understanding of railway finances emerges.

In a deregulated environment, clearly rail can operate most profitably where it has a cost advantage over its competitors. Its advantage over road lies in the bulk/long distance markets. Without backloading, road can rarely get costs below some four cents per tonne-kilometre, even if using road trains. For most coal and many mineral and grain movements the economies of heavy train operation and the minimisation of terminal activities give rail a clear cost advantage.

Rail's traffic task has been changing in response to these relative advantages. In 1950 bulk and long distance consolidated freight accounted for some 40% of rail tonnage hauled. It is now about 80% and is likely to rise to near 90% by 1990, largely due to increasing coal hauls (Fig. 2). This is not to say that the shift in emphasis has been as complete or as swift as it should be.

What it does suggest, however, is that more investment must be expected in some areas to allow for expansion even though in others divestment of assets may be required. Assets acquired in the past, particularly the fixed assets established largely in the last century, are not necessarily relevant to the future.

Investment in bulk traffics, particularly coal, should not cause great problems for an investment analyst. Such investment may arguably not even be relevant to rail analysts; rail may be seen simply as part of the production process where the viability of a mining venture or of marginal grain cropping is determined after considering total production costs, including the cost of transport. Even the capital itself is often secured by the client. At the same time these traffics are essential to the future of railways, as will be discussed below. ARRDO has estimated in its investment studies that almost $2000 million is likely to be absorbed over the next five years in sustaining and expanding rail assets for coal, mineral and grain movements (ARRDO 1983a), and that these projects are commercially worthwhile for railways.

For rail analysts, however, the more important areas are the non-bulk traffics, where:

- financial performance is questionable;
- road competition is strong;
- there is scope for improvement in technical efficiency.

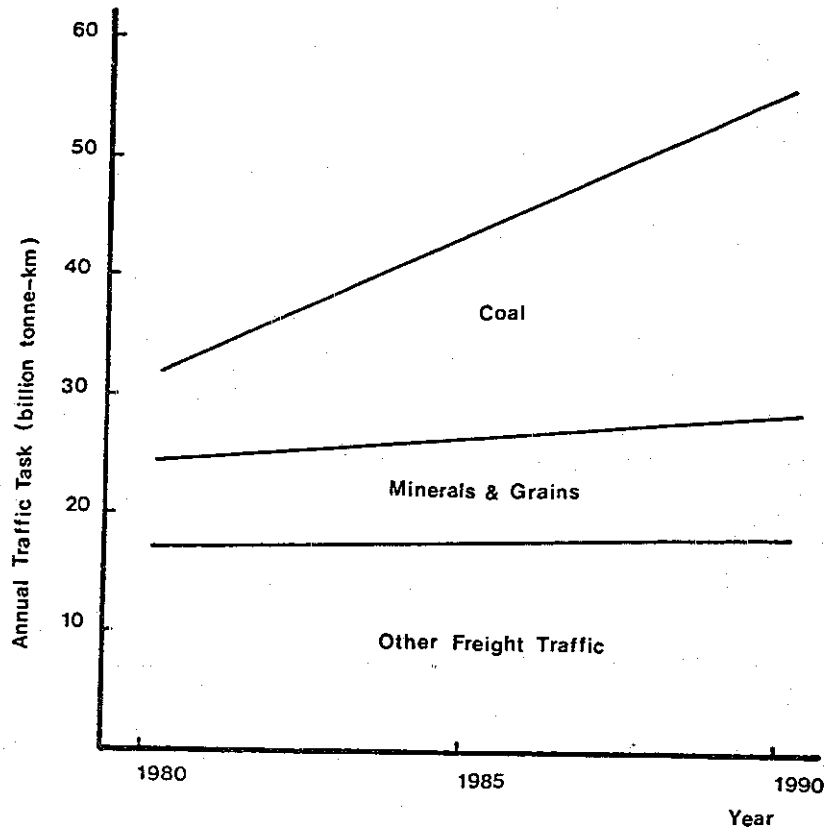

Fig. 2 Rail traffic projections

Source: ARRDO 1983a.

Included in the non bulk group at the bottom end of the scale are a number of traditional and very unprofitable railway traffics, the most notable of which is general merchandise traffic hauled in less-than-car-load (LCL) lots. In 1979/80 LCL revenue of $60 million fell short of avoidable costs by some $50 million. Since then, performance has generally worsened as volume has fallen off. For these traffics with high terminal costs (and often road collection and delivery) rail costs can often exceed 20 cents per tonne-kilometre. Such traffics do not have any commercial potential while they are operated in the present way.

In its recent investment studies ARRDO attempted to assess the extent to which rail operations are commercially viable. A rail operation which excluded about 40% of the network (the lesser branch lines) and the passenger and the obviously unviable freight services was considered without making any presumption as to whether the services excluded would cease or be funded separately. It was estimated that such an operation would have been somewhere near break even. About 90% of existing freight traffic (measured in tonne kilometres) would still be carried using about half the current number of railway staff. Using 1979/80 figures, the revenue earned and the costs incurred would have been about $900 million annually. Thus there was a sizeable freight operation that was effectively breaking even, at a time when overall deficits were of the order of $500 million.

When the breakdown is taken one step further, however, it is evident that this 'break even' position depends heavily on the bulk traffics. The non-bulk not obviously unviable' group includes containers and consolidated freight, for example, which ought to be suited to rail; it is long haul, terminal to terminal and suitable for block train operation. In 1979/80, the typical contribution ratio for containers and freight forwarders was barely 1.0 (revenue/avoidable costs) (ARRDO 1981a). Since then, rates have not increased significantly, while costs have.

In the east coast corridor (Melbourne-Sydney-Brisbane-Cairns), 1981/82 (ARRDO 1983b) estimates suggest the elimination of clearly non-commercial traffics would have resulted in revenues which would have covered a large part, but not all, of the freight costs, including an allowance for capital but making no contribution toward joint freight/passenger costs. The consolidated freight and similar groups form a large part of traffic in this corridor.

1990

Year

These estimates suggest that for commercial performance from the freight railway system overall, the basis of the network (and hence a significant influence on investment) will need to be the bulk traffics, and these will need to carry most of the joint costs. The intersystem consolidated freight traffic is marginal but the logical add-on to the bulk network.

Given similar financial cost recovery levels, if rail external costs are less than road, then on resource allocation grounds rail should have a large share of the long distance consolidated freight market. In fact, the share is relatively small, being only about one-third for Melbourne-Sydney as an example (BTE 1978). Competition is intense, with service factors such as door-to-door transit time, reliability and security being important. Rail could improve its market share with improvements in service and so potentially enhance both its profitability and community resource allocation in this role.

However, for many other non-bulk traffics, the potential for profitability is doubtful. They are unlikely to ever recover working expenses, let alone sustain the capital for renewal and upgrading.

Under these circumstances there exists a major analytical task to examine profitability of the non-bulk traffics, including consideration of long term

competitiveness in a deregulated environment, and checking whether objectives might be achieved by other (non-investment) means. The analytical task is daunting given the unsympathetic character of rail accounting systems and the difficulties compounded by a basic lack of research into demand and cost functions. It is also necessary to ensure that investments relate to corporate objectives and that the benefits flowing from the investments will be realised in practice. The key structural aspects of the management problems relating to this benefit flow are discussed in the following section.

MANAGEMENT OF RAILWAYS AS MULTI-PRODUCT BUSINESSES

In focusing on freight, the above argument relates to railways' commercial roles. The problem is not that simple since different roles persist, appropriate or not. Six were identified in ARRDO's National Rail Policy Seminar (ARRDO 1983c, p. 201f). These roles, or multiple products, were:

- urban passenger;
- country passenger;
- intersystem passenger;
- intrastate general freight;
- interstate freight;
- rail as a provider of social services.

The reorganisations in South Australia and Victoria have separated the suburban passenger business from the remainder, and a number of rail systems have individual product managers in their marketing function. Apart from this, the overall integrity of organisations known as 'The Railways' persists. Objection to the concept of managing railways as a set of separate businesses is often voiced citing indivisibilities and joint and common costs. It had been said that it would not be possible to fully transfer the suburban passenger business of what was VicRail (now V/Line) to the Metropolitan Transit Authority for this reason.

An essential element is to understand the contribution that each component of the business makes to the effectiveness of the organisation, either by physical separation of components or with the use of management information systems. A large proportion of the resources of an organisation with heavy fixed infrastructure such as a railway is common to a number of products (or roles) of the organisation. If the products of railways are split only into passenger and freight, around 25% of costs are joint (ARRDO 1981a) and a significantly greater proportion are common.

Apart from (fully distributed) allocation of costs between a relatively limited number of passenger and freight segments, the analysis (as distinct from the accounting) of railway costs remains an irregular event. ARRDO has undertaken such exercises (1981a) as have ministries of transport and, from time to time, railways. The required techniques are known and available. An Australian Transport Advisory Council Committee of Transport Economics Research reported as long ago as 1958 that 'the solution of the common costs allocation problem probably lies in each authority developing principles to meet the special operating experience of its particular system. The consistent application of such an approach, year by year, would enable railway administrators to see more quickly and clearly where large cost changes are occurring.... ..' (Hall 1958).

RAILWAY INVESTMENT

For many years railway accounts were based on an updated version of a 1929 uniform classification (ANZRC 1961). Some changes have been implemented in some systems, but notwithstanding these developments, it is not yet possible to readily get information by which costs can be attributed to the services for which they are incurred.

Whether a multi-product operation is achieved by physical separation or managerial methods, the structure resolves to a situation where each business worthy of investment achieves an appropriate level of cost recovery in itself after making a payment (which could be equated to a tax) to whatever common infrastructure exists. Such an organisation, where traffic based profit centres are supported by shared cost centres has been considered by managers within at least one rail system. It happens to be similar to the way the road competitor operates.

The concept extends beyond commercial roles. An appropriate level of cost recovery implies that the cost of provision and maintenance of the track (road) would be met by a combination of payments from the commercial business sectors (operators) and other users, plus payments by the community as a whole for those services which warrant some form of community service obligation payment. Economic principles suggest the basis of the charges should be the marginal social cost attributable to each user, with some adjustments to achieve an appropriate level of recovery of public costs (such as suggested by Mills 1980).

The same principles apply to road and rail. In many ways they ought to be more easily implemented in rail, since the whole system is in the hands of one owner in each state. On the other hand, the single owner is one reason why the principle has not taken effect naturally, since cross-subsidies can easily be accomplished.

Despite new commercial railway charters, governments (at the state level particularly) are unlikely to relax their hold on railways completely. In this respect, the choice between 'commercial' or 'social' roles remains open. ARRDO argued in its 1981 Report (ARRDO 1981b) that railways should be seen as commercial operations and, where social roles exist, these should be separated out as the basis for a community service obligation (CSO) contract. Of the recommendations, this has received the least support from the transport community. It would appear that the CSO's concept is seen by many as a means for railways to opt out of the commercial stance, even though the origin of the CSO concept is to enable commercially oriented railways to perform non-commercial tasks (Michael 1984).

This would appear to strengthen arguments that the case for railways to perform CSOs is secondary to that for them to operate in a (visibly) efficient manner, which probably means as measured by commercial criteria. Investment would follow the same criteria, and commercially warranted investment is therefore the only investment which railways should be seeking to justify. It also follows that railways would actively seek to divest themselves of the non-commercial business and apply their resources to the productive ones.

The analytical process used in ARRDO's investment analyses (described in Norley and Kinnear 1983) made some attempt to deal with the different roles and the commercial emphasis. The work concentrated only on the national network' freight task and identified traffics which were profitable or which appeared could be made so. While this gives a good measure of commercially justified investment, whether it is achieved depends upon management action about which the analyst can only make presumptions. The relationship between management and evaluation is considered below, together with some further comments on evalution procedures.

RESOURCE PLANNING, INVESTMENT EVALUATION AND THE REALISATION OF BENEFITS

Cost-benefit evaluation of investment proposals should enable railways to select only projects which are consistent with commercial or other objectives. There are a number of reasons why this is not the case in practice.

First, the basis of the cost-benefit technique is such that the benefits from a project are only required to exceed the costs (with appropriate measures of cost and benefit and discounting of future money flows). Although priorities between projects can be established from the results, a project may be considered worthwhile if it improves the effectiveness of a particular task, even though that task may not be worth doing. For example, mechanisation of LCL handling may show a substantial rate of return in a cost-benefit analysis, yet not turn LCL into a profitable business. It is for this reason that the evaluation needs to be associated with an examination of the cost structure and its relationship to overall objectives, as described previously.

Second, even though cost-benefit analyses are undertaken on many major projects, there remains a substantial proportion of railway investment that is undertaken on an 'essential to continue service' basis. Passenger rolling stock and certain types of track related projects seem to lack any sort of cost-benefit evaluation; locomotive replacement and rebuilding projects are sometimes analysed, and such evaluations that are most often undertaken and visible tend to relate to mainline upgrading (capacity improvement) and standardisation.

Third, when evaluations are undertaken, they tend to be done outside of the line responsibility for the project. Evaluations done by ARRDO, the BTE and State Ministries of Transport obviously fall into this category, but so too does much of the work of the railways own planning groups. There have been moves to decentralise this evaluation function to the operating branches of some systems.

When the evaluation process is separate from the line management process, realisation of appropriate benefits can only be assumed and may fail to occur, despite the best efforts of those concerned. Without a requirement to demonstrate that an investment sought by a line manager will move the organisation towards its corporate objectives, investments will be proposed which have their basis in lower level objectives that may or may not be consistent with corporate objectives. On the other hand, projects generated by the corporate process will not necessarily have the support or understanding of managers who will implement or operate them. Most prudent analysts will attempt to relate line managers' projects to corporate objectives, or to develop projects in consultation with line managers and assign benefits likely to be achieved, rather than potentially achievable. There is, however, no explicit accountability between corporate objectives and benefits achieved in such a process. Furthermore, existing management information systems are usually inadequate for tracing the impact of the investments back to the targets implied in the evaluations.

The fourth aspect of the relationship of investment to commercial or other organisational objectives relates to following through the benefits of an investment after the event. In one railway, manpower changes (whether consequent on an investment or not) are monitored against targets. Other benefits are consequent on technological change through investment (for example, improved fuel efficiency) and are thus automatic. There have been some post-audits done, but otherwise, there is seldom any check as to whether the benefits which were assumed in evaluations (if they were done) are actually achieved with the investment in place. The investment of one year is not reflected in the budget of

the next. In many instances, the potential benefits from an investment are diluted because it is not possible to reach a satisfactory industrial agreement or worse still, because traditional operating practices are retained out of inertia.

The effects of a proposed investment on resource requirements, particularly manpower, ideally need to be a key component of the pre-investment analysis. Implied reductions in manpower from the evaluations can be compared with a manpower plan; a sub-optimum investment program, containing a mix of productivity and growth-related projects, may be appropriate if the manpower plan does not allow for reduced staff levels. Alternatively, the investment would need to be shown to be able to carry the cost of an accelerated redundancy scheme.

One incidental corollary to the relationship of actual benefits to corporate objectives is the question of whether the benefits actually arise from an investment or whether they could be achieved without it. Despite theoretical objections, a pragmatic case is sometimes made for using investment to achieve operating practice changes even where the changes strictly do not need the investment. For instance, concrete resleepering has been used in one situation to introduce mechanised maintenance, even though mechanised maintenance *per se* could have been implemented with the existing timber sleepered track. However, this practice, along with analysis of single projects rather than corporate programs, can lead to double counting of benefits, which destroys most of the value in investment evaluation as a means to improved commercial performance.

None of these problems are, of course confined to railways, and within railways quite substantial progress has been made in recent years. The public costs of railways are such that emphasis on analysis and evaluation must continue.

The application of cost-benefit techniques to rail investment is constrained by a lack of knowledge of many of the demand and cost relationships involved. A self-perpetuating cycle exists: thorough investment analysis is often considered not to be worthwhile because professionally reputable analytical tools are not available; and yet the lack of basic research in the past is in part a result of the low priority given to investment analysis.

There are no demand models presently in use in rail planning in Australia. Apart from some exploratory work in ARRDO (ARRDO 1981c, 1982a) there are no mode choice models or price or service elasticities that can be applied to investments aimed at generating more revenue. ARRDO has had to exclude such projects from its recent investment studies. Another approach used by railways has been to indicate the financial results that would follow from various levels of generated traffic without arguing that any particular level would be achieved.

The understanding of cost causal relationships and consequent life-cycle costs for even the most important of assets is limited. Major track upgradings may involve tens of millions of dollars but the basic relationships between track standard, maintenance policies and the deterioration caused by loading (cumulative tonnage and axle loads) and environmental factors have only been explored superficially. Some, known to be questionable, have been used in the absence of anything better. The accounting and track monitoring systems which would provide the basic data for research have not yet been developed.

Despite the imminent need to consider the replacement of the large numbers of locomotives acquired through the transfer from steam-based to diesel-based fleets during the 1950s (which are acknowledged to be at or near the end of their physical lives), little is known about the effects of age and maintenance policies on costs, and ARRDO's work (ARRDO 1982b) is only just beginning to provide some answers.

CONCLUSIONS

Australia has a government railway system which was built essentially for state developmental purposes to carry general purpose freight, agricultural produce and passengers to, from and along the seaboard. It was protected from competition from the time serious competition developed, until the protection could no longer be sustained; and it has taken on new traffics (on new lines) of a fundamentally different nature to those for which the original network was built.

Over the next five years, it is likely that there will be some $2 billion of investment made in coal, mineral and rail bulk haul traffics. Rail recovers its costs in these traffics and the investments show high rates of return. The benefits from these investments can be achieved without any underlying changes in railway management. These investments might be seen as part of the mining infrastructure, rather than as part of the railways, but together with grain provide the basis of the future of the government railway systems.

There is a smaller but nevertheless significant, amount of investment which will be made in traffics where financial performance is considerably poorer, where competition in the present market is considerably greater, and where there is substantial scope for improved management. These traffics centre on the intersystem consolidated general freight traffics such as containers, freight forwarders and a number of other individual commodities. Were rail able to provide cost effective service in these areas, there is likely to be an economic case for rail to carry the traffics. At the moment, these, plus the multitude of non-commercial intrastate traffics carried by rail largely for historical reasons, are seriously clouding any persuasive case for investment here, and hence in railways generally.

The ability to separately analyse investment in the multiple products of railways is closely associated with structural aspects of railway management and the available information systems. Just as evaluation should direct investment to the most worthwhile traffics or products, the structures of accountability and information systems need to ensure that benefits from the investment will be realised in the way intended. Evaluation cannot make a case for investment in isolation. Further, an adequate understanding through research of basic demand and cost causal relationships is essential.

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ACKNOWLEDGEMENT

The Authors wish to thank the Executive Director of ARRDO for permission to publish this paper. The views expressed are not necessarily those of ARRDO or of its member organisations.