

GOVERNMENT RAILWAY CONTRACTS

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Abstract:

This paper investigates the bases for subsidy payments between government transport operators and those paying the subsidy, to off-set the deficit incurred by suburban rail passenger services.

The interaction of costing procedures with public service obligation schemes is also examined and as a result possible changes to present (general deficit) subsidy schemes are identified. The aim of the proposed changes is to:

- .. motivate the service operators to provide an effective service at the lowest cost;*
- .. motivate the service providers to increase the patronage on an effective service; and*
- .. reduce the level of subsidy payable over a period of time.*

The subsidy scheme proposed would also overcome a weakness of cost based schemes in which the service operators are disadvantaged in a contracting market and providers of the service suffer in a situation of increasing patronage.

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INTRODUCTION

This paper aims to help management take the initiative in negotiating 'contracts' for transport subsidy schemes with government. These subsidies can be defined as:

Payments by a government agency in consideration for services rendered, the payment being made to increase the revenue received by a transport operator for transport services which the operator would not assume, or would not assume to the same extent or under the same conditions, taking only its own commercial interests into consideration.

Generally speaking the bases for subsidies that have been used for transport services supplied under obligations to governments, have not been successful in improving performance of the services. Experience ⁽¹⁾ has indicated that cost related subsidies do not encourage lower operating costs or motivate greater marketing of those public services which are being sold at less than cost.

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1. In Canada, the National Transportation Act stipulates that each mode of transport, so far as is practicable, receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty (Williams and Copley, 1976). The Canadian Transport Commission (CTC) determines the level of subsidy to be paid and, in the case of passenger services, this was set at 80% reimbursement of the loss. A study (Johnson et al, 1976) found that the short history of the rail passenger subsidy programme has resulted in escalating subsidies on services that are deteriorating in quality and that are patronised by declining numbers of paying passengers.

In Western Australia an increase in subsidy requirements for suburban rail passenger services, and a decline in patronage, has also been experienced since the introduction of a cost-based subsidy scheme, as illustrated in Appendix 1. Further, a recent urban public transport marketing study in Perth (Bettison, et al, 1978) concluded that a marketing campaign would be an acceptable and feasible means of increasing patronage and revenue.

Similarly a suburban passenger market research study in Brisbane (Layton, 1978) indicated that of the 87% of the present population who do not use trains at all 30% may be induced to use them occasionally or more often if the system were to improve.

That is, where subsidies have been set on a cost or loss related basis for "contracted" services the general experience has been a deterioration in the financial performance over the longer term, together with the need for an increasing level of subsidisation. Further, the history of subsidisation indicates that escalating cost and loss subsidies, as a rule, are not matched by an improvement of the same magnitude in the quality of services provided, and subsidy programmes implemented by some governments have resulted in escalating subsidies on services that are deteriorating in quality and patronage (Johnson, et al, 1976). The same authors suggest that deliberate degradation of unprofitable services may be caused in order to divest services and the public responsibilities involved with continuing their uneconomic operation.

ANALYSING THE PROBLEM

Use of Subsidy Payments

Along with other studies (Arthur & Stevenson, 1977; ARRDO, 1979a) we consider that the major contributing factor allowing this situation to arise, is the selection of an inappropriate basis ⁽¹⁾ for compensating these services. For example from the point of view of the service operator, the payment of a direct subsidy based on costs tends to remove from the operating management and staff much of the incentive to improve the efficiency and quality of the service. This results in the subsidy provider obtaining an inefficiently operated service at an uncontrolled cost and requiring a larger subsidy than necessary.

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1. Westrail has recently undertaken research and a brief outline of the Westrail study is provided at Appendix 2.

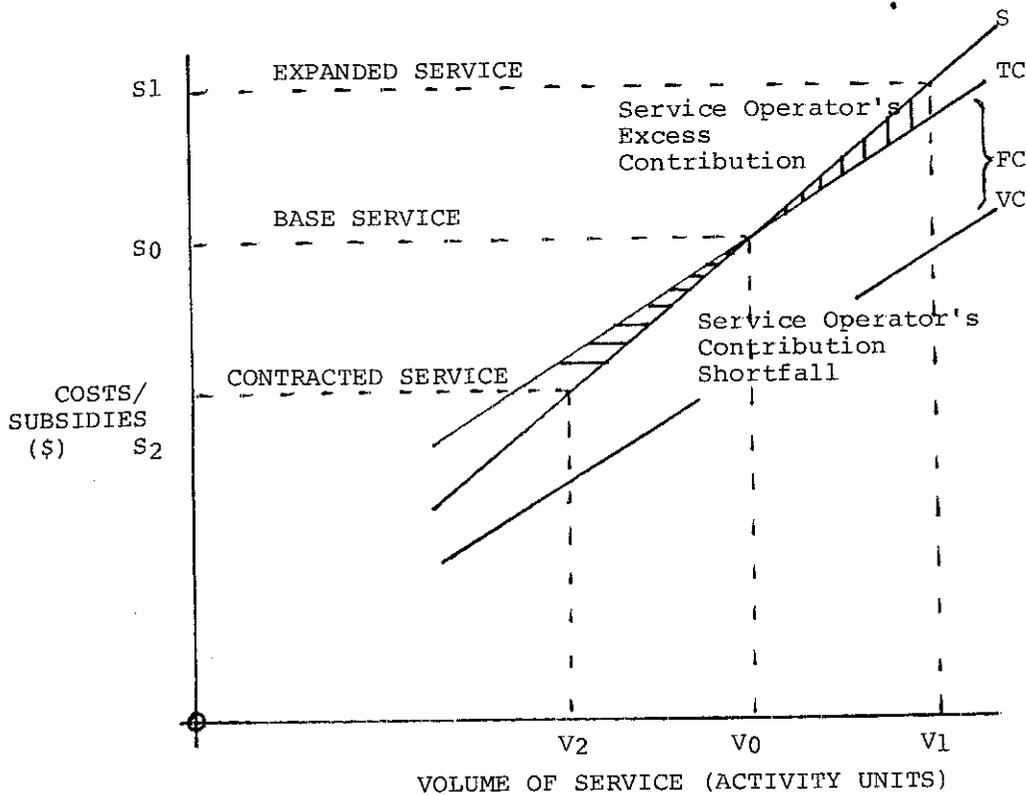
In addition cost based subsidies can inappropriately disadvantage the service operator in a contracting market, and the subsidy provider in the event of an expanding market. That is, when traditional full absorption costing methods of assessing costs are used an arbitrary share of overhead costs and joint costs with freight services (eg. administration, track maintenance) are treated as directly variable with the level of service provided, when a large proportion are usually fixed or independent of service level changes. This in turn means that if the operation expands, the subsidy provider will not gain the full benefit of the economies of scale that result, because the service operator will get an increased contribution towards fixed and joint costs. Conversely, if the service operation and direct costs decline, the service operator will suffer by receiving a lower contribution towards fixed costs. This situation is illustrated in Figure 1.

IDENTIFYING A SOLUTION

Subsidy Payment Schemes

As the first step towards identifying a solution to this problem of fixing a payment basis for "contracted" services we will now briefly review the objectives for subsidy schemes and the types or various bases that could be used for fixing the subsidy payment.

From the point of view of both the subsidy provider and the operator, we believe that it is important that the subsidy payment scheme should be designed to compensate for the loss of management control resulting from the subsidy provider imposing the public service obligation (PSO). PSO's are best characterised (ARRDO, 1979a) as government imposed requirements in the form of constraints which inhibit



Where :

- TC = total costs
- FC = fixed costs associated with the service at V_0
- VC = variable costs
- S = subsidy payment

and

- $S_0 = VC \text{ at } V_0 + 0.2VC^* \text{ at } V_0$
- $S_1 = VC \text{ at } V_1 + 0.2VC \text{ at } V_1$
- $S_2 = VC \text{ at } V_2 + 0.2VC \text{ at } V_2$

*Under full absorption costing methods the arbitrary share of fixed costs is often set proportional to variable costs or to volume.

FIGURE 1

Relationship between costs and subsidies of Service Operator.

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changes proposed by management to reduce deficits, and public service goals for which the service operator is required to incur extra expenditure or forego revenues. Therefore if the subsidy payment scheme can be designed for use in future "government contract" negotiations, in a way which compensates for these constraints and may even provide an incentive to "beat" the contract, then it may be possible to prevent the inhibition of management incentive and initiative.

In an endeavour to find an effective method of subsidisation a number of subsidy schemes have come under consideration. Among them, the more common from both the theoretical and practical points of view, are subsidy schemes which have the following assessment bases:

- Capital subsidies
- Operating subsidies, related to either:
 - general deficits
 - costs
 - losses, or
 - outputs

Therefore the form of subsidies can initially be classified as capital subsidies and operating subsidies. Capital subsidies are oriented to the future in that they provide funds for replacement and improvement of assets and thus provide potential for increase in patronage through improved services. The operating subsidies, on the other hand, tend to prolong the survival of an obsolete transport system and thus may retard long term improvement.

A further important initial consideration is whether subsidies should be paid before the event or after it. The main advantage associated with subsidy payment before the

provision of the service is that it provides an incentive for efficient management of operations. The disadvantage of this method, however, could be that since the amount of subsidy is paid in advance a deterioration of the standard of service may take place. The disadvantage of the method where the subsidy is paid after the event is that since losses will be offset by a corresponding subsidy there is little or no incentive for the operator to improve his efficiency. However it does allow the operator to maintain or improve the standard of service.

Relative characteristics of the various operating based subsidies are as under:

General deficit related subsidy

This type of subsidy recognises that at least some of the services provided by the subsidy recipient are being sold to the public at less than cost. However it leaves both the subsidy provider and the service operator "in the dark" as to what services are being subsidised and what incentives are being offered to encourage quality and efficiency of public services.

Cost related subsidy

In this situation, the subsidy is based on the cost of operating the service while the income or revenue from the operation is foregone to the subsidy provider. This form of subsidy probably works against the interest of the subsidy provider since there is little incentive to the service operator to maximise revenue or to control costs to an economic minimum.

Loss related subsidy

Although this form of subsidy overcomes part of the criticism of the cost related subsidy, i.e. income is taken into consideration, no incentive is given to the service operator to reduce the loss or improve the efficiency of the service.

Output related subsidy

This form of subsidy relates the level of subsidy to the level of operation and therefore gives the service operator some incentive to encourage patronage and operate efficiently. By far, this method seems to offer the greatest incentive for management to improve the service. However, problems are encountered in the selection of suitable measures to which the subsidy should be tied, e.g. whether the rate of subsidy should be assessed on qualitative or quantitative factors of the service. Further if the subsidy is set too low the service operator will encounter solvency problems; if it is set too high the service operator will be encouraged to provide a service level above that which is in the best interests of the subsidy provider.

To resolve this apparent dilemma in determining the most appropriate type of subsidy scheme it is necessary to consider at least two important attributes in relation to each available option, viz:

the potential for promotion of a more effective and economic service; and

the compatibility with the costing procedures and associated management planning and cost control systems of the service operator.

Advantages of Output Related Subsidies

Our review of these various methods of subsidisation used in Australia and in overseas countries resulted in the conclusion that the form of subsidy which is linked to a measure of output, or performance, offers the only real encouragement to the service operator to manage the service efficiently and economically. Also to provide the necessary incentive the subsidy bases must be agreed in advance.

We therefore support the use of clearly defined and readily determinable subsidy rates, and the related output or performance measures, as the basis for negotiating government service "contracts".

Two examples of the main elements of the type of output related subsidy scheme proposed are as follows:

Case 1, where the subsidy provider receives the earnings from the service (and is responsible for marketing it) but needs to encourage the service operator to suitably control costs:

- payment based on a rate per vehicle kilometre (to cover variable costs) plus a lump sum (to cover fixed costs);
- rates negotiated annually in advance;
- rates set to recognise productivity improvement targets (eg. rates set 2% lower than necessary if costs increased pro rata to general - Consumer Price Index - inflation).

Case 2, where the service operator is responsible for both operation and marketing of the service:

- payment based on a rate per passenger km (also negotiated annually in advance and set to recognise target patronage and productivity improvements).

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The interaction and negotiation necessary to implement this type of scheme are illustrated in Figure 2.

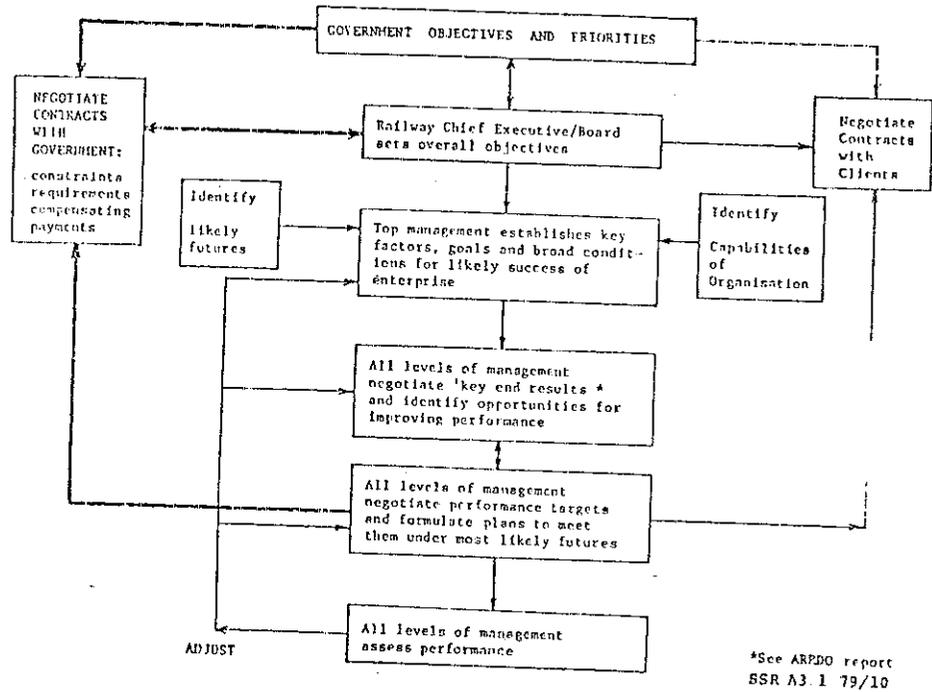


FIGURE 2

Principal Interactions in Management Process showing Negotiation of Government Contracts.

In summary such output related schemes should provide management with positive goals to aim at and an incentive to plan future operations to improve the efficiency of the services. Also the cost of subsidisation grows with measures of the level of activity or output, but is also limited by these measures and inbuilt target efficiency improvements. The subsidy provider's goal to provide the public service is achieved and in exchange, the service operator is compensated for the interference with its operations.

Management Control Mechanisms

From the review of the various subsidy schemes it was also evident that supporting management control mechanisms (measures of performance) and incentives are desirable with all subsidy methods because:

all methods have some deficiencies or weaknesses in application;

extra attention to control is necessary where the usual business "profit" measure is inappropriate because of public service obligations imposed by government; and

there is a need to have access to adequate control costing data for the purpose of negotiating the "contract".

The management control mechanisms required are internal measures of performance based on costing information and statistical operating data. They may relate to the service as a whole or cover service functions or sub activities, which various line managers need to monitor and control. As part of this control system the annual goals, set by the service operator as their corporate planning objectives, can

be translated into specific targets and used as the basis during annual negotiation of the rate and terms of the service contract. The knowledge of the level of subsidy payable for particular targets will allow both negotiating parties - i.e. the operator and government to plan future services and investments. Furthermore the level of performance achieved over a time period by the service can be monitored against the pre-determined targets at regular intervals throughout the year. The results would provide an indication of the extent of public service obligations being undertaken and also a guide to the effectiveness and efficiency of performance of the service.

Role of Co-ordinating Body

A further complication to subsidising a public service occurs where the government appoints a co-ordinating body (1) to act as service provider. In these circumstances the co-ordinating body contracts to purchase the services from the service operator and is, in turn, compensated by the government to assist in maintaining the desired level of public service. However an output related scheme can also be applied in this situation by using a "Case 1" type scheme for the contract between the service operator and the co-ordinating body and a "Case 2" type scheme for the contract between the co-ordinating body and government.

1. This situation pertains in Western Australia. The Government in 1974 appointed the Metropolitan Perth Transport Trust (MTT) as the Perth metropolitan co-ordinating body. The MTT is responsible for the determination of the level of service to be provided and Westrail supplies the resources required to provide such level of service. Westrail is fully compensated for the cost of resources provided by it and MTT receives the revenue. The MTT in turn is compensated by State Government for the general deficit incurred. The fares charged are determined on city-wide zonal basis, and are identical and interchangeable for buses and trains.

An example of a practical application of similar principles involving a co-ordinating body is the National Railroad Passenger Corporation ⁽¹⁾ (Amtrak) in the USA. This organisation is experimenting with contract pricing based on performance assessed on "quality of service" ratings for frequency of arrival on time, the total magnitude of delays, the cleanliness and functioning of cars and equipment, and improvements in schedules (Baumol, 1980).

CONCLUSIONS

Output Related Subsidies

The form of subsidy which is linked to a measure of output or performance offers real encouragement to management to improve the efficiency of the service. The output related subsidy complements the use of pre-determined contract rates and offers some reward for reducing costs and raising patronage - as applies to commercial operations not concerned with providing PSO's. This basis for the subsidy payment should also lead directly to reduced subsidies because productivity improvement targets can be incorporated in the annual review and rate negotiation process.

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1. The National Railroad Passenger Corporation (Amtrak) was formed (National Railroad Passenger Corporation, 1975) to manage the basic national rail network and be responsible for the operation of all intercity passenger trains - excluding commuter trains - under contracts with the railroads. Under the criteria approved by the Congress, Amtrak can add or discontinue intercity rail passenger routes and services based on priority rankings determined by district economic, social or environmental considerations. Amtrak is financed by a combination of earned revenues from passenger service operations and federal government assistance.

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Therefore the contract pricing arrangement should:

- motivate the service operator to provide an effective service at the lowest cost;
- motivate the service provider to increase the patronage of an effective service; and
- reduce the level of subsidy payable over a period of time.

This form of subsidy can be used to advantage for providing a range of public services, e.g. air, sea, rail and road passenger and freight services.

Measures of Performance

Finally all subsidy schemes have some weaknesses and therefore suitable management control mechanisms (measures of performance) to assist in monitoring performance assume particular importance for both the service operator and the subsidy provider.

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APPENDIX 1 - WESTRAIL EXPERIENCE

Experience in Westrail with suburban rail passenger services (SRPS) reflects problems of escalating losses and subsidisation, and declining patronage and services, with a marked acceleration of the problems since the introduction of a cost-based subsidy scheme in 1974, viz⁽¹⁾:

	Revenue	Cost	Deficit	Subsidy	Passenger(1) Journeys (Million)
	\$M	\$M	\$M	\$M	
1970/71	1.5	5.0	3.5		10.6
71/72	1.6	5.8	4.2		10.8
72/73	1.7	6.2	4.5		11.1
73/74	2.0	7.8	5.8		11.3
					Present system introduced 1.7.74 (2)
74/75	2.1	9.7	7.6	9.7	10.0
75/76	2.0	10.2	8.2	10.2	9.1
76/77	2.2	10.6	8.4	10.6	8.0
77/78	2.2	12.4	10.2	12.4	8.9
78/79	2.4	12.2	9.8	12.2	8.9
79/80					
(Est)	1.7	12.0	10.3	12.0	6.0(3)

(1) There are some minor differences in the methods of deriving these data for the various years.

(2) Westrail has been operating the SRPS for the Metropolitan (Perth) Transport Trust (MTT) since July 1 1974 under the arrangement outlined below:

the MTT formulates and administers overall policy and determines the level of rail and road passenger services to be provided;

Westrail retains control of railway operations;

the MTT accepts the transfer of the full Westrail costs attributed to provision of these rail services, and all fares collected are remitted to the MTT;

the fare levels are the responsibility of the Trust but subject to Government approval. Fare schedules for rail and bus services are identical and are based on a system of zone pricing. Passengers may interchange between rail and bus services travelling on tickets issued by either authority; and

the MTT is compensated by State Government for the general deficit incurred.

- (3) Services discontinued on the Perth-Fremantle line from September 1979.

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APPENDIX 2 - WESTRAIL STUDY

Westrail has recently undertaken research with the aim of improving costing methods, and to investigate the bases for subsidy payments for the SRPS. As a result of the investigation, a package of remedial actions to overcome problems highlighted is being proposed, viz:

- the development of improved costing information and monitoring procedures. It involves the provision and use of cost models as a means of measuring costs by activity and service, and as an aid to management planning and control.
- potential revenue increases and cost reductions which will improve the financial results and economic performance of the SRPS.
- changes in the subsidy basis to improve SRPS and also overcome a weakness identified in the present method of assessing the Westrail/MTT cost related subsidy.