

Privatisation of Regional Infrastructure and Government Business Enterprises: Issues to Think Through

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Preamble

The University of Sydney has been invited to contribute through a submission to the inquiry into the privatisation of regional infrastructure and government business enterprises (being undertaken by the House of Representatives Standing committee on Transport and Regional Services).

This submission is a mix of background issues related to the broader considerations supporting the privatisation agenda with some experiences from various countries on what appear to be important lessons for moving the debate and decision making forward.

Some very specific points should be noted up front as key lessons:

- Privatisation per se can deliver enormous benefits to society but this will only be assured if an effective regulatory regime is in place to ensure that the privatised entity operates in the interests of society.
- Often perceived or actual failures are as much the result of regulatory failure than the privatisation process. These failures within a public sector regime are often not revealed and so privatisation engenders greater transparency.
- The interests of society are met by delivering appropriate services at cost efficient levels in structures that reduce transactions costs within an interconnected supply chain (eg rail and truck door to door distribution with efficient and effective transfer hubs).
- Privatisation should be considered within a framework in which greater competition is also introduced even if there is a period of protection after sale under the 'value of a government right' banner to prepare the privatised entity for effective competition. The failure in some cases to keep operations and infrastructure under the one organisation creates enormous confusion for a working market since operations are typically clear candidates for competition whereas infrastructure may have strong elements of natural monopoly (at least on the supply side through economies of scale), but also on the demand side where

network integrity is increasingly more important in the delivery of regional infrastructure provision.

- Where there is a significant community service obligation (CSO) there is merit in long term franchises (through competitive franchising) which do not involve the sale of assets but the provision of a concession to operate government assets on their behalf. Under such a scheme one can operate under a performance based contract in which subsidised services can be provided in a way that ensures value for money for the scarce subsidy dollar. Importantly well defined key performance indicators on operating performance, service quality and costs must be in place with an appropriate monitoring and reporting regime with if possible incentives for better service (above some agreed minimum) and penalties for non-compliance (including the ultimate sanction of re-franchising).
- The above sends a very strong message that the privatised/franchised regime requires a total rethink about the regulatory role and the greater need to set up links between the key stakeholders under what I promote as a trusting partnership. In my view the greatest failure in the supply chain of institutional reform in the delivery of regional infrastructure and associated operations has been the failure of the regulatory framework to do its job.
- A crucial role of the regulatory process is to capture data to track performance (something that should also have been done in a non-privatised setting). This role must be taken more seriously instead of reacting when a complaint. We need more pro-active regulators.

Introduction

Transport businesses, whether in the public or private sector, are subject to a range of regulatory and market forces, which mould the way in which they go about their daily business and plan their future. Even in markets where there is freedom of entry and exit and where individual organisations are 'free' to set prices and levels of service, regulatory agencies acting in the interests of consumers are watching to ensure that the principles of competitive efficiency and fairness are being complied with. This is designed to ensure that consumers do indeed have the opportunity to purchase goods and services at prices deemed to be in the 'public interest'. Anti-competitive behaviour is frowned on and, in the 1990s and beyond, is increasingly not tolerated and subject to sanctions in various forms such as fines, compensation, and termination of business.

The discussion of privatisation, interpreted as the sale of assets to the private sector, opens up a debate on the (additional) gains from exposing businesses to competition through encouraging competition in the delivery of services by competitive tendering or outright economic deregulation. This raises the question of whether there is more to gain in introducing competition in various ways rather than changing the ownership of a transport business from public to private control.

Privatisation: Concepts, Issues and Arguments

Transport businesses throughout the world are increasingly exposed to the economic elements of competition, private ownership and tendered operations as part of a strategy by governments to improve the efficiency of service provision and reduce the level of explicit subsidy from the State. The experience with increasing exposure to competition and privatisation is not limited to the transport sector. In a growing number of countries, electricity, telecommunications, water and gas utilities, and postal services have been privatised and opened up to competition. To gain an appreciation of the debate on privatisation, and especially the lessons for government, I address the following topics:

- the role of efficiency objectives,
- exposure to capital markets,
- the weak bankruptcy constraint in the public sector,
- exposure to competition in the product market,
- price control, and
- the promotion of competition.

The evidence has a direct bearing on future strategies for all transport agencies, public and private.

Privatisation and increased competitiveness in all its manifestations continue to be attractive options for governments who seek greater efficiency. Governments recognise that they ultimately have responsibility for ensuring that socially necessary services are provided and that 'fair-play' ensures the continuity of supply at prices (and quality) that are consistent with pre-defined objectives set for suppliers, such as profit maximisation and (constrained) social welfare maximisation. But this ultimate responsibility does not require government to own the services; indeed an effective umpire is one who has no vested interest in any of the players but an overriding commitment to ensuring that the game is executed efficiently, effectively and equitably. Any decision by government to provide direct financial support (albeit a subsidy) must be justified on the basis of community service obligation. *There is a strong view that it is transparently easier to do this where there is an unambiguous separation between ownership, operation and regulation.*

Privatisation and increased competitiveness is a learning process for governments and analysts, as is the relationship between the utility regulators and the more general pro-competitive institutions and legislation. The lack of experience and information acts as an inhibitor to change. The experiences since the mid-1980s provide a rich base of evidence to draw on as a springboard for ongoing debate.

Objectives for Change

Underlying the overt process of privatisation are two ideological objectives and a set of economic efficiency objectives. Ideology centres on the desire to shrink the direct state

influence on economic affairs (including the reduction of government debt) and the spreading of share ownership more widely within the population. 'Shrinkage' has become a synonym for reducing the influence of labour in State enterprises both in respect of the direct bargaining with unions and the incidence of labour in overall expenditure. Spreading share ownership either through listed acquisition or worker buy-outs is seen to be incentive-compatible, giving much more explicit links between principals and agents.

The great motivation for privatisation is the belief that more productive efficiency must be introduced into (public) enterprises. *Productive (or cost) efficiency* is a very precise economic concept which is satisfied if a business is able to use inputs such as labour, capital, energy, information and materials to supply a *given level of service* at the lowest cost. It is different to cost minimisation, which is a meaningless objective (since the zero-cost 'solution' is to close down). In recent years the idea of corporatisation has embodied the fulfilment of the cost efficiency objective. References to commercialisation imply compliance with cost efficiency, although such efficiency is a necessary but not sufficient condition for commercialisation. Consideration of prices is also required, and is known as the fulfilment of allocative efficiency with respect to output (ie levels of service), according to the agreed pricing strategy of the business (eg profit maximisation or social welfare maximisation).

A central feature of the privatisation debate is the idea of effective incentives. The 'owners' of public organisations are in a sense the taxpayers, who 'appoint' politicians to represent their public interests. Unfortunately, from a business perspective, the loose association between taxpayers ('principals') and governments ('agents') is usually shown to have limited if not negative incentives. The privatisation process is designed to bring an organisation closer to its financial owners, which will in most cases, create the right set of incentives for management and staff to perform in a cost-efficient manner.

Privatisation often removes the Central Treasury capital rationing constraint, which in the case of public utilities often inhibits profitable development. While it is true to suggest that sourcing capital under the protective cloth of government in many western countries does produce more attractive risk profiles (given the stability of government), it stifles the opportunities for greater reward under increased financial risk. There has been recognition that just because the market does not work optimally, this is not a sufficient reason for government ownership. Government failure can be more serious than market failure. Privatisation also lessens substantially (if not solves entirely) the problem of multiple objectives imposed on public enterprises. Chief executives of Government authorities often complain that they are not given an unambiguous brief with clear mandates and a single objective. This results in continuous 'battles' between them and government. The introduction of a single commercial objective and an independent decision-making framework eliminates the hassles of dealing with government ministers and provides a more transparent basis for identifying cost structures if government imposes or seeks a community service obligation (CSO).

The manner in which privatisation has been implemented in most countries has also exposed enterprises to market forces in various forms. The two major sets of market

forces are exposure to the capital market and exposure to more product market competition. The former has not been given as much attention as the latter. Creating market competition has promoted a number of economic paradigms. These range from economic deregulation to franchised 'competitive' operating areas, with a number of variations on competitive tendering at spatial levels of activity such as the route (eg truck, bus, coach and rail) and network (eg rail, airline, port and bus). Competitive tendering or franchising in its various guises is a softer form of privatisation in which a service may be supplied by the private sector under a government-determined set of operating requirements such as minimum levels of service. Specifically, competitive tendering forgoes the direct test for the existence of new or changed markets, available through free entry and exit.

Exposure to Capital Markets

The capital market discipline exposes a business to bankruptcy, to the possibility of takeover and has a direct influence on the supply of capital. In the context of promoting efficiency and competition the bankruptcy threat within a public enterprise is a very weak constraint. Although accountability for public money is never absent, the limits on behaviour when managing someone else's money (especially where 'someone else is not the transparent shareholder) are likely to be less binding. Exposure to capital markets also provides a real continuous market test of the value of an enterprise. Privatisation without flotation on the stock market means either a management buy-out or sale by tender. The market is tested at the time of buy-out or tender, but there is no continuous test of the value of assets or of the appropriate opportunity cost of capital as there is in the case of a stock market flotation. But a private firm is always subject to the possibility of non-sustainable losses and hence the increased threat of takeover and merger. The incentives to be more efficient are very clear.

Exposing a business to the possibilities of takeover is closely allied to exposing an industry to managerial competition. Takeover is very largely a matter of one set of managers using the corporate vehicle to supplant another set of management. This increased rivalry among top management has an accompanying paradox - you cannot replace too many managers in a takeover otherwise you would have little to sell. The emphasis must be on top management - the individuals who receive the corporate gains and who are put at risk differentially in this process. There is strong evidence of a higher degree of turnover of top management in the lead up to and after privatisation than is usual. Governments in many countries have progressively moved from a 'chauvinistic' position in respect to takeovers (e.g. foreign shareholding restricted to 15%) to a more open policy, which can lead to sizeable amounts of takeover. This is not necessarily undesirable from an efficiency point of view. There appears to be no basis on ideological grounds for imposing artificial 'golden shares' for a fixed period that limits the powers of shareholders to change the direction of a business. The 'normalisation' of a company needs to be open from the first day.

When there is a direct exposure to the capital market, a business's cost of capital is dictated by the required rate of return from shares of an equivalent risk class (or in the

case of the absence of a trading market, by the opportunity cost of capital invested elsewhere). This strategically places a business in its correct risk spectrum, having an effect on the direct cost of raising capital at the margin. This has to be justified. Exposing an enterprise to stock market performance measures enables an assessment of share price behaviour relative to the market. This information feeds directly into the rating of managerial performance. Falling stock prices is an indication of poor management and the beginning of exposure to takeover. Unfortunately the absence of a stock market indicator for many transport businesses and the difficulty of creating a shadow market (given the problems of identifying the nature of risk due in part to the small amount of transacting) results in the use of a rate of return criterion based on an average return from alternative investments without due consideration of relative risk. Access regimes where infrastructure such as rail track has been separated from utilisation of the track, relies on an implicit rate-of-return for the owners as the criterion for establishing access prices in competitive downstream markets.

An additional advantage of participation in capital markets is that an effective monitoring system is created. There is an entire industry developed around financial advice that has a fiscal incentive to monitor performance and to take an interest in the affairs of the privatised enterprise.

The United Kingdom has been privatising longer than any other western country and is a rich bed of experience for newcomers. In the United Kingdom, experience with progressive privatisation of utilities - beginning with British Telecom, then gas, airports, buses, water, electricity and rail, has demonstrated the wisdom of increasing the potential for the market's influence over successive flotations by having smaller units to privatise. The number of privatised entities out of each utility has increased over time. For example, British Telecom and British Gas were kept intact, later there were 10 water entities, 12 electricity distributors, 25 rail companies and 70 bus companies. The need for more effort in restructuring before privatisation is essential. Why three English electricity generators when there are 72 generating sets? The answer must be guided by a combination of supply side considerations such as economies of scale, estimates of the potential number of bidders under alternative packaging scenarios, and any potential benefits to consumers through economies of network integrity (ie economies of scope).

Privatisation requires a track record of at least five years of accounts to put in the prospectus. Where an enterprise needs more preparatory time, corporatisation as an intermediate stage may have some appeal providing an opportunity to undertake the restructuring required for eventual privatisation. In the water and electricity authorities in the U.K. for example, information and accounts were readily formed into several enterprises. In contrast, British Telecom prior to privatisation had a very inefficient accounting system and managerial structure resulting in it having little idea of business conducted with its largest customers. This top end of the market is where the greatest degree of competition is occurring (from Mercury in particular). It took six years after privatisation to establish suitable accounting systems to identify the relationship with British Telecom's 350 largest customers.

Exposure to Competition in the Product Market

A desirable feature of a strategy to change the ownership profile of a business from public to private is to remove or lower barriers that have previously restricted competition. The private sector has a long history of presence in a competitive market. Critics have argued that not nearly enough has been done to lower entry barriers at the same time as privatisation. Consequently the gains from privatisation are not fully extracted, notably in the product market. The essential issue here is the extent to which a desirable condition for privatisation is economic deregulation. A key issue is the determination of what the government should accept for selling "its property"? This increasingly relates to the degree of competition *ex post*. The receipts could be negative - with the government putting money in or donating property. In the larger utilities the political issue of selling the family silver cheap and Treasury's desires to use the proceeds for macro-economic purposes requires careful consideration of the timing of free entry for competitors.

Timing is especially important when government wishes to secure maximum value from a sale - the risk of the privatised entity losing market share through accompanying economic deregulation is sufficient reason for government to throw caution at opening up the market. This has, however to be balanced against the gains in internal efficiency which result from competitive pressures. It appears on balance that potential investors often prefer the monopoly outcome, at least for a number of years after privatisation. The recognition of open competition down the track is sufficient incentive to improve performance. There is a rather different story for buses in the U.K. for example. Treasury was content to have 'claw-back' rights for profits from property put into the management buy-outs, since it could not hope for the cash flow associated with selling a big utility.

Despite the attraction of securing greater efficiency gains through exposure to capital and product markets, there is potential conflict between exposure to the capital market and increased exposure to product market forces. You cannot sell anything to the capital market without selling something. What is it that is being offered to the capital market to attract funds? Even when a business has been dismembered, potential shareholders must have an incentive to invest. The incentive in a government enterprise with an unknown or very uncertain rate of return and risk portfolio is some *value of a government right*. This is some value of protection from entry - you have to sell the entity for something, so inherently if you want to get the capital market involved you have to pay the capital market for its participation.

The premium is usually based on some arbitrary estimate linked to the historical value of assets. Thus the practical privatisation process requires providing the capital market with some rents of the government position, including current barriers to entry for a period of time. Some analysts have described this as the price that government has to pay for stifling the organisation's performance in the past by over-regulation and protective monopoly. The fundamental point is that there must be some demonstrated positive value for someone to consider investing in the enterprise. Without an appropriate market to reveal these rents (for example, what is the cash flow and profitability profile for a private supplier operating in the current catchment area of the public supplier of rail services?), government rights for a negotiated period become the carrot. This procedure

has also been applied in competitive tendering in New Zealand where a 15% cost advantage was given in 1991 to the incumbent bus bidder in Auckland in the first round of three year tenders to enable them to gain the necessary experience in delivering competitively regulated services.

The process of establishing an attractive investment involves establishing the required rate of return by identifying an equivalent risk class. The value of what is being sold should be converted to present value terms. A firm with a present value of zero is a commercially viable firm but not an attractive investment. The capital market needs a present value greater than zero. If the present value is to be greater than zero, the terms of sale have to be improved. This can and often is improved by a more generous price capping. Since government both sets the *price cap* and wants security for the assets, there is no given solution to the trade-off. Hence an arbitrary value, such as historical cost is usually selected.

The Regulatory Processes

A major feature of the privatisation process has been the accompanying divestment of regulation. Independent regulators have been set up in many countries. In Britain there is OFTEL for telecommunications, OFGAS for gas, OFWAT for water (OFWAT), OFFER for electricity and OFRAIL for the railways. In Australia a centralised agency - the Australian Consumer and Competition Commission (ACCC) - is the national watchdog for all sectors (although there are signs that specialised watchdogs are being supported, such as the decision in March 1998 by the Federal government to transfer the regulatory role for the finance sector to the Australian Securities Commission). Each State in Australia has its own watchdog such as the Independent Pricing and Regulatory Tribunal (IPART) in New South Wales. The selection of a single centralised 'umpire' in contrast to a set of specialised umpires is in itself an interesting issue. One might argue that a single regulatory agency is unlikely to have the detailed expertise necessary to work closely with a specific industry sector and to secure some sense of confidence from that industry.

These offices are responsible for two essential regulatory tasks - price control for (natural) monopoly and promotion of competition in situations where there is a typically high starting market share for the incumbent. They also provide a sharp focus for the first time for consumer complaints.

The enterprises that display a more-or-less permanent natural monopoly must be subject to price controls involving price caps (or rate-capping), popularly referred to as CPI- x , where CPI is the consumer price index. This formulation enables the regulator to exact reasonably tough conditions in terms of future financial performance and productivity. Prices are allowed to move with the general level of inflation (as measured by the consumer price index) less a fixed amount x which reflects productivity improvements. An enterprise can make any changes it wishes provided that the average price of a specified basket of goods and/or services does not increase faster than CPI- x . The value of x has to be negotiated up front based on how a business or industry could perform, and then the agreement is in place for a fixed period. In many countries, five years has been

selected. Performance benchmarking is a crucial input into the determination of x . Best practice operators will achieve the lowest possible x value.

This form of price control has in general met with strong support. To ensure its effectiveness however, the independent regulator depends on three sources of information:

- Cross-sectional comparisons (local or worldwide) in order to undertake bargaining of the separate monopolies if they are in place. This establishes best practice. Performance monitoring and benchmarking has flourished under this regulatory regime although in Australia we have been somewhat slack and data is generally of very poor quality or non-existent..
- Cash-flow oriented predictions based on required rates of return. This information is critical. It requires a gradual move away from slavishly adhering to accounts as evidence on what the ex ante cash flow is going to be in the next five years or whatever period is agreed upon.
- Evidence of the required rate of return on assets. This is especially important for establishing the set of regime prices for accessing infrastructure.

These data requirements go deep into legislation in many countries. For example, the Water Act in Britain requires cross-sectional comparisons. It has consequently recognised explicitly the regulator's need to have comparisons by making very difficult any horizontal mergers in the English water industry. To preserve any challenges to incumbent managers, takeover is allowed provided there is no horizontal merger. The basis of any future change to the number of incumbents is conditioned on the need for the regulator to make comparisons. The possible disappearance of evidence is a strong counter merger requirement.

Furthermore, there has been a willingness to learn from stock market dealings about the required rate of return on capital. The challenge is to identify existing listed businesses that have a similar risk profile to the entity to be privatised. A capital asset pricing model is an important tool in this debate.

For industries without natural monopoly characteristics, the regulator has to ensure that competition is promoted and that fair play ensues. Rail operations, airlines, shipping, trucking and buses are examples of competitive industries. The regulator is charged with the task of creating opportunities to enter the market, using a managed competitive policy. Before the 1980's the U.K.'s general competition law was weak in dealing with incumbent large firm power. Subsequently regulators had to be given power to stop predation and other forms of undue discrimination. The anti-trust law in the USA was not so weak because of the compensation possibilities which were absent in the U.K. In the USA, for example an incumbent proven to be damaging a competitor can be open to suits for damages at 300% of the cost of the damage. Under the competitive policy promoted by the independent regulator, there is a broad non-discriminatory clause so that a firm can be

in breach of its licence if it discriminated unduly. The burden of proof of good behaviour is on the incumbent. This allows for the possibility that the incumbent might cost-justify any discrimination as might arise where she is trying to combat an entrant. For example, this feature of the process has prevented British Telecom from providing any effective counter to Mercury's capture of its big accounts. The cost to British Telecom of trying to eliminate a small competitor is too high. The regulator's response would require British Telecom to discount to all customers rather than just the large customers (the latter being the set where competition from Mercury is most directed). The same situation occurred in Australia between Telstra and the new entrants Optus (and the now demised One-Tel).

The strength of this approach comes from the regulator being pro-active with an ongoing monopoly or antitrust policy. The actual opportunities to enter the market are themselves a function of regulatory change. This makes for a very dynamic and market-responsive regulatory process. Indeed an efficient market will always have movements in the incumbents and entrants.

Some Lessons for Government

Privatisation highlights the extent to which public enterprises may have "conned" ministers over many years in respect of service and cost. The need to "turn stones" arises because of the focus on a prospectus. Disclosure processes often reveal the lack of price control and hence the relative state of inefficiency. The experience with independent regulatory authorities highlights the benefit of constructing a regulatory framework that minimises the costs of differences in information and objectives between the principal (government) and the managers of public enterprises (agents). Privatisation is particularly concerned with the role of ownership and management in this regulatory framework.

There are clear efficiency advantages in the association of ownership and management, because it relieves incentive problems that arise if there is a separation between the ability to take decisions that have financial consequences. There are also efficiency gains if management is located at the place that holds fullest information about the effects of the activity.

The focus thus far has been on privatisation through the sale of assets. Experience has demonstrated that the scope for privatisation via competitive tendering (in contrast to sale of assets) may be preferred in situations where the product specification is relatively uncomplicated and the technology is well known, so that the difficulties of prescribing contracts and of differences in the information available to the independent regulator and the regulated are relatively small. We now turn to ways of involving competitive forces in the privatisation process.

Challenging the View that Network Industries Such as Railways are a Natural Monopoly: The Open Access Debate

A number of countries have vertically separated infrastructure from operations in transport sectors where networks and economies of coordination are a major focus. Examples are gas pipelines and rail track. It is most often suggested that this vertical disintegration recognises the natural monopoly profile of infrastructure supply and the competitive profile of operations above the track. A burgeoning literature is emerging which questions the extent to which this division of administrative and regulatory convenience is defensible. Notions of open access throughout network industries suggests that railways as a natural monopoly is questionable and open to challenge.

Open access in its broadest interpretation exists where anyone wishing to move goods and/or passengers has access to rail track. Where this has occurred in practice or is being considered, the precursor is a separation (or vertical disintegration) of rail track and right of way as well as control structures from rail movements, the latter now called access. This split affords opportunities for a large number of configurations of railways, interconnections and networks. In particular, currently spatially independent railways can grant rail track rights to one another and extend their networks across borders currently restricted by archaic regulation. European Union directive 91/440 for example, requires that all railways of the European Union member states provide track rights for international passenger services. Open access to rail track is emerging fast in Europe (including Britain), Australasia and the USA. But what is its attraction?

The fundamental issue is access rights to rail track infrastructure. Open access to rail track requires a right to move trains over a track segment in some well defined way. The allocation process is essentially an allocation of the *capacity* of track to carry train movements. Such movements can range from a complete train movement through to space allocated on a specific wagon over a specified time period. Importantly capacity is subdividable, even when indivisibility's in track exist. What this suggests is that the indivisibility problem disappears once rail access rights are defined as a right to some movements per some agreed unit of time such as a quarter, over a predefined rail segment. This is called an undivided interest in the natural gas pipeline industry.

This open access interpretation of the rail infrastructure company obligates the rail access company to supplying movement 'slots' over its right of way and rail track. It may retain some of its capacity to move its own trains, contract out some amount of movements, and possibly place the remainder in a spot (or auction) market. When the access company is itself a user of the track as well as a competitor with open access entrants, there is the potential for anti-competitive practices against third-party access; this is when a set of established pricing regimes (and an effective regulator) are required to ensure that there is no discrimination in favour of the access company. In establishing appropriate prices, rate-or-return procedures be implemented which take into account the value of infrastructure assets, such that an allowable return to owners of track is consistent with competitive structures with due allowance for upstream and downstream competition.

The pricing regime, given the cost structures and upstream-downstream competition will have a major impact on the acceptability of an in-house competitor in the open access market.

The advantage of placing a ceiling on the amount of contracts negotiated ex the spot market is desirable as a way of taking market power away from a few major access players and decentralising price making to the market. The market as defined will include these major players but will also involve in time the many shippers and forwarders who as part of the supply chain will not be directly involved in actually accessing the rail network per se and running trains. This is a way of extending the definition of rail customers. Such customers can purchase transport rights from many sources, including the track owners, contractors with capacity rights, brokers etc. Customers requirements can be met in any movement dimension as appropriate such as a wagon load, tonne-kilometres carried etc. The 'creation of a market' becomes an essential step.

The concept of natural monopoly ceases to be relevant when the rail infrastructure is organised according to open access with market pricing of rail track rights. The essential component of this diversified access portfolio is capacity rights to a fixed and indivisible facility. That is, the rail track is indivisible but its capacity can be divided among several owners by creating a property right in transportation. A right to move trains over track segments could then be used to avoid the problem of natural monopoly (on the supply side). The issue that will need careful scrutiny is the existence of empirical evidence that there exist economies of network integrity (the demand side argument for natural monopoly), even when the supply-side case for economies of scale inherent in natural monopoly is not substantiated. The extent to which multiple owners of property rights can coordinate their operations will be the real market test of economies of network integrity being unsatisfied, if indeed they are present.

We might suggest that a manager be hired to coordinate the use of individual rights, realising economies of scale with decentralised output. This is an interesting and controversial issue potentially adding another layer of (in)efficiency, and a regulatory headache in ensuring maintenance of competitive practices between the owners of individual rights. The regulators role moves from price controls of a 'natural' monopolist to preservation of competitive prices emanating from the operations of a competitive market. One might hope that this freeing up of supply will open up opportunities for efficiency enhancing entrepreneurial activity. If we believe that economic deregulation benefits the end users, provided the regulatory processes in place are there solely to protect the competitive process and hence consumers, then this open access approach must be applauded.

The Swedish model, which is one of the first applications of vertical separation of rail infrastructure and access recognises the opportunities promoted above, yet the bounds imposed on it through Swedish regulation has to date failed to deliver the real benefits which such decentralisation might offer. The rail infrastructure authority, Banverket, was established in 1988 with the aim to achieve a fair balance with road. Users of both road and rail infrastructure would pay an annual charge per vehicle and a charge per vehicle

kilometre varying with the type of vehicle. The revenue from this source falls a long way short of covering total cost. The state owned company (ST) remains the monopoly train operator on the main lines, although secondary routes are put out to competitive tender. A greater degree of open access is under discussion, but there is no intention at present to privatise Bahnverket or SJ.

A number of individuals have reviewed the Swedish experience and are critical of its outcomes to date. They ask the question: 'Will competition between several enterprises on the same track lead to more effective railway service for the country as a whole?'. They raise the supplementary question as to why, if the competitive model can offer advantages propounded by its supporters, the new organisational structure has not emerged before given the very long history of rail transportation; even in past times when public regulation has not been a constraint. We suggest that the historical vertical integration is the result of driving forces pertaining to the production of activities.

Indeed the debate on vertical separation or integration is at the heart of the literature on transaction costs, which refer to the costs of maintaining and running a market. Such costs are associated with the vertical separation of infrastructure and operations as well as the additional regulatory activity. They include the development of prices, purchasing and contracting. Indeed a careful review of the evidence suggests that the main opposition to 'vertical disintegration' is the considerably high level of transactions costs (compared to air, sea and road), and the claim that infrastructure costs amount to almost 50% of total rail costs compared to 5-10% for other kinds of traffic such as road, rail and sea. A vertically integrated commercial approach with cooperative activity between a number of possible users of the right of way is appealing. Whether this will be shown to be a preferred model to the vertically separated model applied in the UK and Australia remains controversial.

The broad literature provides some guidelines for further consideration worth assessing in the Australian Regional context:

- regulating the access provider's profits is an appealing mechanism for solving the concerns which accompany natural monopoly.
- establishing a set of efficient access prices in the context of a rate-of-return regulatory constraint requires industry specific information in respect of the nature of downstream (ie individual track users) competition and the relationship between the track 'owner' (the upstream agent) and the downstream competitors.
- Efficient access prices will be determined by either a downstream market exhibiting *open entry* (essentially driving super-normal profits to zero), or a downstream market with a *fixed number* of competitors. The latter will require a role for the access company (or companies) and the regulator in setting prices to reflect marginal costs (which is equivalent to drawing super-normal profits down to zero in an open market). In practice it is unlikely that the downstream market will exhibit open entry characteristics.
- If the upstream access company is also a competitor in a downstream market defined by a fixed number of competitors, then there will be conflict between the access

provider and the regulator. The socially optimal access prices will differ substantially from the prices preferred by the access provider since the upstream owner has no incentive to establish an access pricing regime which will optimise the number of downstream competitors.

- Issues of the 'allocation' of shared costs will play a major role here, since the opportunity to pass on contributions to the infrastructure must be dealt with in such a way that we ensure efficient use of the track as well as an equitable contribution from each potential downstream operator. The application of Ramsey pricing and the inverse elasticity rule may mean that commercial fortitude argues in favour of a constrained social welfare maximisation pricing regime (price marginal cost subject to covering average total cost) rather than social welfare maximisation (price = marginal cost). This trade-off may be necessary in order to establish a rate-of-return in upstream operations that does not deter investment. The challenge is to identify a rate-of-return that is generous enough to encourage (non-excessive) investment while at the same time not undermining economic welfare.
- A 'third-best' compromise in the absence of appropriate data for the regulator to determine a single set of efficient prices downstream is to set the per unit access price equal to short run marginal cost accompanied by a pre-set fixed access fee to ensure that all costs are covered under the rate-of-return constraint.

The Private Sector as a Promoter of Transport Infrastructure

Introducing the private sector to promote transport facilities through mixtures of build, own, operate, and transfer introduces many advantages, as proposed below.

1. Competition in ideas. Better information on consumer preferences. Better management techniques that the public sector could incorporate in its own transport planning. The incentive to adopt such information and techniques is blunted if promoting transport schemes remains a public sector monopoly. Caution against the "dollar being mightier than the plan". The public sector finds it difficult to try alternative designs and solutions because of the political constraints to differentiate the quality of its product with the aid of efficient user charges (eg tolls on roads). Private participation gives the politicians the legitimate basis for a wide range of pricing instruments such as tolling (be it for financial and/or efficient economic charging reasons).
2. Revealing costs. Private sector involvement is likely to reveal the incremental costs of catering for different types of traffic and vehicles. Transport planning as currently practised implicitly assumes economies of scope in catering for a broad range of transport users (different vehicles, purposes etc.). Introduction of private capital will test this assumption. The private sector will be inclined to compare the incremental costs and benefits accommodating different segments of the market for transport facilities.

3. Reducing information asymmetries. A private sector in transport services will provide policy makers with an alternative source of information for the purposes of formulating policy. The issue of the monopoly supply of information to the “regulator”/legislature is recognised as important. This is the principal-agent theory. The agent (e.g. VicRoads or the RTA) does not share the same objectives as the principal (the elected Govt). The principal is dependent on the agent for information. The agent has an incentive to filter or withhold information. The introduction of a private transport sector will add diversity to the sources of information available. Hopefully the private transport sector is not constrained by the public agent in the manner in which it has to go about its opportunity to participate. Central to this concern is the source of data on traffic flows, passenger and freight data etc.
4. Internalising adverse spillovers. The private transport promoter is unlikely to be as constrained by rules of compensation for nuisances caused to residences affected by major transport schemes as are public sector authorities. Compensation currently where practised is based on market value with no account taken of the consumer surplus enjoyed by householders. Countering objections at public inquiries can be costly. Because of this more attention is likely to be given to reducing environmental impact of a privately financed scheme, and where such impacts remain, affected parties are more likely to be fully compensated with the aim of reducing adversation.

Some Obstacles to Private Financing

Exclusivity of Ideas with assurance of first option on the idea is often something that innovative private sector companies hold dear to their heart. Generating ideas is expensive, and it is argued that there should be incentive-based rewards where the source of an idea is not offered the opportunity to provide it. If a privately generated idea is subject to competitive bidding, the incentive to “free ride” the ideas of others will be considerable. This is equivalent to protection from predacious interests.

Governments generally are reluctant to support compulsory land acquisition to assist the private sector. However the difficulties could be exaggerated. The private sector is not constrained by rules that limit the compensation payable to market value. However some mechanism for purchasing property compulsory (as a last resort) would make it easier for the private sector to advance original proposals. Governments often make the alignment available to the private sector: the role of the private sector in road provision is typically reactive to Government requirements for infrastructure rather than pro-active to private sector initiative. The private sector may either not be mature enough to sense a role or be disinclined for various reasons.

Inherent conflicts may arise with two road promoters, the private sector and the public sector. The unusual circumstance is that the public sector promoter is also advising ministers on possibly competing road schemes (suppliers). The road authority is then “judge and jury” on road schemes. The prospect of private road schemes possibly competing with public road schemes brings the conflict into sharper relief. There is a

wider implication: reductions in the road program "on a scheme-by-scheme basis" to offset privately financed projects. What is the name of the game: substitution or expansion? One implication is an incentive for the public road authority to marginalise the promoting role of the private sector.

Even with pricing (via tolls) of new roads, it does not necessarily follow that the private sector will find this commercially attractive (it will depend on demand). Given that such roads will be competing against a base network (especially in urban areas) which is "free" at the point of use, some additional incentives may be required. There is a desire to capture the wide range of benefits often associated with road and transport investment. This is known as *benefit capture*. For example, the private road superimposed on the existing public network of roads, free at point-of-use, will have beneficial effects such as reducing road congestion on the public network which cannot be captured by the private road interest.

The financial community perceives toll roads (especially urban toll roads) as a high risk investment. Key concern is reliability of traffic forecasts and revenue streams under different tolling scenarios including values of travel time savings. A long gestation period for a road scheme, with little likelihood of repaying the capital during the early years of a project (plus uncertainty over the termination clauses), means that there will be less dependence on bank debt and greater use of long-term fixed rate debt and other less common financial instruments. To compensate for this high risk, the returns have to be high. It is a challenge to Government (if they want to extend the "public infrastructure purse") to seek out a better set of incentives. These incentives should also be available to the public supplier. Indeed some already are such as certain tax exemptions.

Competition exists from the public sector adds to the risks of competitive entry. For example, another road scheme being constructed which will divert traffic from an existing privately financed scheme. Such risks are however always present in the private sector and are part of the process of competition. In case of roads the risks are accentuated. They are durable investments with negligible value in alternative uses: costs are sunk. Sunk costs combined with strong competition from alternative road products (thus high cross elasticity of demand) can be shown to lead to too many products in the market. There is risk of competition from new public sector schemes; these are not subject to the usual constraints of a commercial contract and therefore it becomes more difficult to judge these risks. Published road programs into the future provide some signposts, but schemes can be brought forward in the program and new proposals introduced on an accelerated timetable.

Issues in Private Sector Participation in Infrastructure Provision: The Case of Roads

Private roads are a topic of considerable interest. This interest appears to have arisen primarily because of:

1. the crisis level of road congestion in many urban areas;
2. the growing need for high disbursements to maintenance of the existing road system especially in regional and rural areas;
3. the recognition in some countries that there are high benefit-cost ratios attached to Orbital/Freeway routes; and
4. the growing interest internationally in the private sector owning and operating facilities traditionally supplied by the public sector - a move towards greater political acceptability of privatisation.

Economists have always advocated charging specifically for road use as a means to maximise the net social benefits from road construction. With a lumpy investment like roads, this implies a specification of a changing set of prices to reflect, over time, the states of congestion and other social costs implied by use. The government's decisions on new road investment should be guided by the marginal benefit per dollar of extra expenditure, preferably after the imposition of a user charge, compared with the shadow price of (public) funds used to finance the investment.

Where the private sector becomes involved in the ownership and operation of a tolled facility, the unconstrained social welfare maximisation criterion is subject to commercial considerations which may require the imposition of a financial constraint to ensure that reasonable return on the investment is achieved within an acceptable time span. This requires that at least average financial cost is covered, including normal profit. The extent to which the return on the investment is met out of user charges or other sources such as tax benefits from private participation in public projects will be influenced by a number of considerations including the toll level, the tax incentive and any deals with government on risk sharing. The central question is that if we chose a privatised mode for new roads will society be better off? For example, in the context of road congestion, will the shift to a profit maximisation base bring us closer to equating price with marginal social cost than would otherwise be the case? If privatisation of roads is to be socially successful, it should be introduced as an element of a broader planning process and not justified simply on the basis of a public funding shortfall. So much is likely to be widely appreciated and agreed.

This submission identifies further issues that need to be addressed if a case is to be established for the privatisation of roads. It should not be assumed that private sector funding is required, but rather that it may be an option worthy of consideration. First, what do we hope to achieve by private rather than public ownership? Second, privatisation involves a process of transferring rights to own and operate roads to the private sector from the government. This process raises four kinds of problems. These are:

1. the identification of the cost of capital required by the investor, which once established can be treated essentially as an exogenous variable. What is the cost of capital which will satisfy the new owners?;
2. the prices attached to the provision of the service (i.e. tolls). How do we cope with monopoly power which currently exists: privatisation brings with it the pricing problem of who sets the prices;
3. the value of government rights which are being sold. Privatisation of roads involves government giving up certain rights; and
4. how do we negotiate the deal?. The skill of negotiation in this context is often quite alien to the public sector as the proposals are quite novel. A number of ideas developed in this paper are speculative - think-tank in nature - but they do provide a basis for further inquiry.

The provision of improved transport infrastructure is high on the political agenda of a number of States and countries. The concomitant shortage of public sector funds and intolerable levels of traffic congestion have encouraged Governments to open up a dialogue with private sector interests. The New South Wales Government for example has put in place a program of priority major roads which will be financed, constructed, operated and maintained by private sector consortia. The current plan is to allocate government rights to the successful private consortia for the period of capital cost-plus recovery, with the facility being handed over to the government in accordance with a termination agreement.

A central consideration in the financing and operation of private roads in urban areas is the mechanism for charging the road users, and the community at large, for the stream of benefits which accrue from the additional infrastructure. There are three main items to consider: who should pay? what price should be charged?, and how should the monies be collected?

Road User Charges and Capital-Cost Recovery

Tollways represent a new pricing regime for the provision of road space. There is a world-wide resurgence of interest in road user charging, setting the price of road use to reflect the marginal social costs of use. This has come about primarily because of recent developments in electronic technology for the setting and collection of user payment. The economic-theoretic debate is centred on pricing strategies which implicitly assume that all the road system is publicly-owned and that the basis of charging should be in accord with economic principles of efficient resource allocation. The debate on whether the prices should reflect short-run or long-run marginal costs of roads was established over twenty years ago (e.g. Walters 1968), with a number of major variations on the theme being offered in the 1970's (e.g. Kolsen et.al. 1975), and the eighties (e.g. Small et.al. 1989). It is now recognised that road pricing and investment are facets of the same

problem, and that the setting of road user charges should account for the optimal level of the investment. Optimal investment involves some scarcity of capacity and durability; pricing is a natural economic response to scarcity. Essentially the economic argument is that each user of the existing road system should contribute towards the costs incurred by the road system by their presence. Walters interprets this condition of efficient economic charges (EEC) for the use of the road as covering three cost items:

1. The variable maintenance costs, which are the infrastructure resources used up in making the journey. These costs are variable in the sense of varying with the use of the road for one additional journey. Road user charges such as that imposed in New Zealand base the variable maintenance cost on the pavement damaging power of heavy vehicle axle loads.
2. The congestion costs, which are the delay costs to other vehicles imposed by the vehicle journey.
3. The operating costs of the journey, which are borne by the traveller and are internal to the decision regarding use.

The strict interpretation of an EEC excludes the costs of new investment as part of the costs of the vehicle journey. It is a strictly short-run marginal cost pricing rule. Implicit in the rule is the assumption that the solitary vehicle does not cause the investment, and decisions made regarding an investment are independent of decisions of whether or not to use the existing roads. The implication is that funds for new infrastructure investment should not be derived from users by way of road user charges, but should be derived from other sources. These other sources can include vehicle-related taxes of a non-use nature (e.g. registration fees) and any other taxes derived from vehicle ownership which are arguably not dedicated taxes (e.g. an apportionment of fuel taxes).

A major limitation of the single-vehicle argument for EEC's for road use is the presence of indivisibility in road investment. Roads in practice serve many uses, with joint costs existing amongst the heterogeneous traffic stream. Consequently there is a case for revising the pricing rule in recognition of a possibility of allocating some of these joint costs to specific-types of traffic. The Walters' approach can be extended by recognising that there are some other costs which can be attributed not to the individual vehicle per se but to groups of vehicles distinguished in various ways. Although the overall capacity dimension of road investment is attributable to the entire traffic stream, and in particular automobiles, there are however reasonably well-defined classes of road user who require specialised infrastructure. For example, crawler lanes for heavy vehicles. Such cost items can be removed from the global set of joint costs and treated as long-run class-specific separable costs. These costs can be avoided in the planning stage by not providing the capacity for the user class for whom they would be incurred. This extension to the Walters' interpretation of an EEC supports the argument that class-specific users impose costs on the road system by their joint use which would be avoided by their joint non-use.

In addition to the capacity dimension of road investment, there is also the durability dimension (or long term serviceability of pavement). If we accept the assumption of Small et.al. {1989) and others that for all practical purposes the structural damage to roads is caused by trucks and buses, not cars, then consideration of the durability dimension in pricing the use of existing roads can be specialised to the class of heavy vehicle.

This brief discussion of efficient economic charges highlights the dilemma between pricing and new investment decisions. If investment in roads does not arise directly from pricing signals, then decisions on efficient levels of investment are unlikely to be equated with EEC's for road use. One important implication of this is that investment decisions should ideally be aided by a knowledge that the use of existing road investment is being priced in accordance with specific pricing signals, which may be short-run marginal cost (SRMC) pricing, SRMC pricing plus class-specific long-run separable cost (LRSC) pricing, or some other regime. The pricing regime may be inherently inefficient, in an economic sense, for many reasons: equity, political and administrative difficulties in pricing, modal competitiveness etc.. In one sense an inefficient pricing system may be worthwhile if as a trade-off one gets assistance in making new investment decisions. The current practice does not appear to accommodate efficient user pricing or contributions to investment resources. A Ramsey pricing regime consistent with constrained social-welfare maximisation (i.e. marginal cost pricing subject to covering average variable cost), would not approximate the revenue required to recover the capital costs because the constraint is on average variable costs, rather than average total cost.

This lack of association between user charges and new investment resources means that proposed urban tollways tend to be integrated into a network system of roads which provide no guidelines on price setting for use or as a contribution to the investment costs. The reference to the literature on efficient economic charges fails to allow for the presence of private participation in the supply of infrastructure and more importantly the predominance of the profit motive. The EEC literature would interpret private participation as just another way of supplying road space which should be subject to the same rules as any publicly-supplied road infrastructure. The issue of an acceptable return on the investment given the risk would then be accommodated by an appropriate commitment by government as the arbiters for the public good, to ensure that any revenue-shortfall after appropriate user-charges would be honoured.

This is not the strategy in the current climate of private provision of road infrastructure. Rather what we observe essentially is an investment strategy in which tolls will be set under the guidance of assumptions on user sensitivity to prices and the need to recover all costs of construction, operation, and maintenance within a required rate of return regime. The prime issue becomes one of setting tolls and collecting revenue in line with cost-plus recovery rather than in terms of economic efficiency pricing. Furthermore, governments will find it extremely difficult to identify the proper user charges under rules of EEC if they attempt to establish their relationship with cost-plus recovery toll levels, as a basis of contributing to the setting of tolls. Efforts in the past to reconcile the economic efficiency criterion with strictly commercial criteria have in the context of user costs identified a

comparability ratio; however the ratio is very sensitive to assumptions on the nature of marginal costs and demand before and after the new investment, the extent of price discrimination, the deviation of a pricing policy from profit maximisation, the consistency of the pricing policy employed as investment alters the cost and demand conditions, and the incidence of externalities, especially system-wide road effects.

Kolsen, H.M., Ferguson, D.C. and Docwra, D.E. 1975 Road User Charges: Theory and Possibilities, Occasional Paper No. 3, Bureau of Transport Economics, Canberra

Small, K.A., Winston, C. and Evans, C.A. 1989 Road Works: A New Highway Pricing and Investment Policy, The Brookings Institution, Washington, D.C.

Walters, A.A. 1968 'The Economics of Road User Charges', World Bank Staff Occasional Paper No. 5, John Hopkins University Press, Baltimore