



Priorities for road freight pricing reform

Submission to
Productivity Commission
Inquiry into Road and Rail
Freight Infrastructure
Pricing

ADVISORY

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1 Executive summary

- The provision of an efficient road infrastructure network is vitally important to the economic and social life of Australia.
- Unlike other areas that have been reformed over the past twenty years, the provision of roads in Australia is still largely conducted on a non-commercial basis by non-corporatised government agencies.
- There are not explicit links between use of specific routes by carriers, charges paid by carriers in the form of fuel excises, registrations fees etc. and investment.
- A road freight transport system based on the principles of economic efficiency would integrate pricing and investment decisions such that users pay prices that cover the least cost of provision of infrastructure.
- However, the most important issue in the reform of road provision is the requirement to create a mechanism that aligns prices paid by users and infrastructure investment decisions.
- The main gains that can be achieved by the reforms envisaged in the Productivity Commission's draft report come from allocative efficiencies. That is to say, an improved allocation of resources towards investment in road projects that users value most highly, and are most willing to pay for.
- Reforms to institutional arrangements to achieve allocative efficiencies are likely to be a necessary condition for any significant pricing reform.
- At present there is little indication of what sort of mechanism would be used by a "National Road Fund" or an alternative body to ensure that funds raised from road users would be directed toward appropriate projects.
- Any attempt to reallocate investment and resources in the provision of roads will have implications for cross subsidies. The potential requirement for Community Service Obligations could be very significant. Work to identify the incidence of and need for, Community Service Obligations should be undertaken. At present the existence and extent of Community Service Obligations are not transparent.

- A means through which authorities responsible for investment can determine the level of road quality that users are willing to pay for, would also need to be established.
- Overall, greater attention needs to be given to how future road investment decisions will be undertaken and how these decisions will reflect the demands of users. This issue will need to be satisfactorily resolved if the greatest gains from reform are to be achieved.

2 Introduction

The inquiry by the Productivity Commission into freight infrastructure pricing has raised a number of issues about the manner in which freight infrastructure (road and rail) is funded in Australia in terms of structure, pricing and allocation of funds to investment. Potentially there are a number of issues that will be addressed by public policy makers in Australia over the next twelve months and beyond if the government decides to implement reform of the road and rail infrastructure industries.

The purpose of this short paper is to identify some of the major issues that have been raised in the course of the inquiry that appear to require a substantial degree of study in the future, both by industry participants and policy makers. In this paper attention will be concentrated on the road rather than the rail industry. In particular the main emphasis will be on the issue of the manner in which funds are allocated to road projects and between road agencies. This was an issue raised as one of some concern by the Productivity Commission.

Australia's road network has a range of complex characteristics that distinguish it from both road networks elsewhere and other infrastructure networks such as electricity, gas, telecommunications and rail. Nonetheless, we suggest that the development of solutions to many of the economic reform issues for Australia's road freight network is likely to be informed by study or benchmarking of how similar issues have been dealt with in other networks.

The next section provides general background and context. The following section identifies some of the major issues raised by the inquiry and outlines possible future work. The final section sets out conclusions.

3 Background

3.1 Competition and efficiency

Over the past twenty years there has been a considerable amount of reform of the manner in which governments both in Australia and abroad operate government business enterprises and deliver government services. This has tended to involve the corporatisation of service provision, abolition of restraints on competition and in a number of cases the privatisation of government businesses.

In general the main emphasis has been to open up to competition as much of the economy as possible. Competition is not perceived as being a good thing for its own sake but instead is seen as being a major driver for the achievement of higher levels of efficiency and therefore a better use of resources and higher standards of living.

In the case where there are industries which have monopoly elements the tendency has been to isolate those elements that have monopoly characteristics and introduce as much competition as possible into the other elements. The monopoly elements have then been made the subject of economic regulation (price and service standards). In the rail industry, for instance, freight carriers compete with each other (the competitive element) and the rail track infrastructure is the subject of regulated access regimes (the monopoly element).

The freight carrier elements of both the road and rail transport industries are the subject of competition and the Productivity Commission's inquiry concentrates more on the monopoly element of the transport industry; the provision of road and rail infrastructure and whether they are provided in a commercial and efficient manner.

Although the commercialisation process is fairly well advanced in the case of the rail infrastructure provision the commercial reform of the provision of road construction and maintenance has been slower. This is not to say that the industry as a whole has not been the subject of some reform. Legislative restrictions on competition between road carriers have in most cases been abolished, the contracting out of road construction and maintenance is now

more widespread and there is a growing recognition that there should be a link between the raising of funds from road transport and expenditure on the upkeep of the road network.

Nonetheless it is still true to say that the pricing of road use is still conducted largely on a non-commercial basis with large cross subsidies between different parts of the road network and road users being common. This is true not just in Australia but in most countries around the world, however, there is a growing recognition in Australia and abroad that a more commercial approach to road pricing will potentially lead to a number of substantial gains in terms of economic efficiency.

Economic efficiency is about making sure that the demands of consumers are met, at least cost. If prices reflect all the costs of providing a good or services and these costs have been minimised as far as is reasonably possible then economic efficiency is achieved. In the case of road construction and maintenance economic efficiency is achieved if roads are provided that meet the needs of users, at least cost and are charged to those who demand them.

A road freight transport system based on the principles of economic efficiency would therefore be one where there is an integration of pricing and investment decisions so that users pay prices that cover the least cost of provision. Historically this has not been the case in the Australian road transport system or indeed those overseas. Instead the decisions to invest in particular road construction programmes are often not heavily aligned with the pricing and the raising of funds for road construction. This means that road construction and maintenance funds are not used in such a way that could be conceived of as being economically efficient.

3.2 Road and rail in Australia

The transport freight industry is important to the economic life of Australia in that it provides factor inputs to a wide range of Australian domestic and export industries. Freight transport directly or indirectly affects all aspects of economic life as it links together producers, both with their supplies of input goods and with their markets. Road transport decisions and pricing have a very profound impact on the decisions made by firms in terms of where they locate their businesses and with whom they do business.

In Australia the transport of freight is dominated by the movement of bulk commodities such as coal, other minerals and metal ores, as well as agricultural

products from regional locations. There are, however, also substantial movements of non-bulk, long distance freight and short distance freight movements within urban areas.

Although a substantial part of Australia's domestic freight movements are shipped by either sea or air carriers most of it travels overland by road or rail, which requires a heavy investment in infrastructure.

Land freight transport is divided into road and rail carriage. Although there are some exceptions, bulk freight in Australia is mainly carried by rail transport and non-bulk, non-containerised freight by road carriers. Containerised, non-bulk movements are carried by both road and rail with the latter increasing its share over longer distances (Table 1).

The freight transport industry itself is made up of extensive road and rail track networks, as well as a large number of road and rail freight operators. Australia's road network is comprised of 810,000 km of roads compared to around 44,000 km of rail track (Bureau of Transport and Regional Economics 2006). Within the road freight industry private carriers operate light commercial vehicles, rigid trucks and articulated trucks and in the rail transport sector there are a far smaller number of private and government rail freight operators.

Table 1: Tonnes carried '000; 2000-2001

	Road	Rail	Other	Total
Bulk solid	283,273	480,274	29,545	793,092
Bulk liquid	59,672	2,476	11,617	73,765
Containerised	65,423	20,053	3,529	89,005
Other	205,554	6,229	2,857	214,640
Total	613,921	509,032	47,550	1,170,503

Source: Australian Bureau of Statistics 2002.

Figure 1: Domestic freight, Australia 2003-04

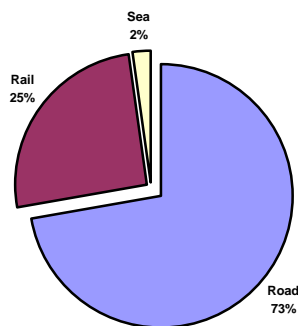


Table 2: Funding in new fixed assets in transport 2003-04 \$m

Source	Road	Rail	Other	Total
Federal	1,007	-	29	1,036
State	1,295	2057	884	4,236
Local	1,375	-	35	1,410
Total Govt	3,677	2057	948	6,682
GBE	11	-	817	828
Private	1,350	361	2,063	3,774
Total	5,038	2,418	3,828	11,284

Source: Bureau of Transport and Regional Economics 2006.

Compared to the rail industry the road network is not only of far larger scale in terms of the number of carriers and infrastructure mileage it also generates a far greater level of economic activity. Road freight transport comprises 2.42 per cent of Australia's GDP compared to rail's 0.54 percent (Australian Bureau of Statistics 2005).

From Table 2 it can be seen that the sums invested in the road network are quite substantial and that it constitutes one of Australia's largest economic assets. Any improvement to its use has therefore the potential to create significant economic and welfare gains.

Although the Australian road and rail freight industries have a number of competitive interactions the regulatory and funding arrangements in the sectors in Australia differ somewhat.

In the case of the rail sector the rail track providers are all corporatised entities (either government or privately owned) and operate largely on a commercial basis (although with some community service obligations and payments). The funding of road construction in contrast is carried out by a range of government agencies and has a far less commercial, corporatised structure.

The funding of road construction and maintenance is a joint responsibility of local, state and federal governments. The federal government is responsible for “National” roads which include the major links between the state and territory capital cities as well as a number of urban links. State and territory governments have responsibility for funding arterial roads and local government is responsible for local roads. There are also a few privately owned toll roads in Australia.

The Australian Government’s current policy for land transport infrastructure planning and development is known as AusLink which is comprised of the defined national network of important road and rail infrastructure, a National Land Transport Plan, an investment programme for grants to state and local government and legislative, intergovernmental and institutional mechanisms.

3.3 Funding

Funding for road construction and maintenance comes from fuel excises, registration fees and stamp duties. The National Transport Commission makes recommendations to the Australian Transport Council on heavy vehicle charges and the state and territory governments are responsible for setting registration fees for vehicles under 4.5 tonnes. The diesel excise is set at 20 cents per litre.

Unlike rail and many other utilities such as rail, telecommunications, gas and electricity the provision of the road network in Australia is still largely a responsibility of uncorporatised government agencies and has not been placed on a commercial footing. This means that there is no explicit link between use of specific routes and charges paid for their use.

In the past although road construction and maintenance has been largely paid for by road users through the excise and registration fees there has been a heavy degree of system wide averaging across the road network. This means that

prices do not reflect the costs imposed by users of particular routes on their construction and maintenance. In the past rough charging of this sort was necessary because of the impracticality of monitoring road use in detail. Technological improvements such as electronic road pricing, however, may become increasingly used to make more specific pricing feasible. The view of the Productivity Commission in its Draft report is that although it is possible that these means are still not economically viable, this may change in the near future as technological progress occurs.

Because of the high degree of averaging there are price distortions and a misallocation of investment in the sense that in some locations over investment in road provision has led to an under utilisation of assets while in other areas an under investment has led to over use and congestion. If prices paid for transport are incomplete or wrong, or inconsistent across modes, then transport choices are likely to be distorted and transport systems will exhibit such things as physical deterioration, congestion and the inability to raise funds to pay for upgrades and expansion of the system. At the same time that there is congestion on some parts of the network in other parts where there has been an over investment, there would be a high degree of under utilisation of road assets.

In many ways these problems are similar to those that occurred in the electricity, rail, gas pipeline and telecommunications industries before the reform of these industries occurred. In each case there was a substantial over investment in some parts of the infrastructure and underinvestment in others.

In the case of road provision, over time, gains in efficiency would be expected from:

- a shift from the present system to one that makes more use of explicit price mechanisms, and
- improving the link between road demand and pricing on the one hand and investment in infrastructure on the other.

Making changes to the present system of road freight pricing and infrastructure investment funding will however raise a number of issues that will need to be addressed by policy makers and industry participants. A number of these issues have been raised in the draft inquiry report of the Productivity Commission.

4 Prioritising the major issues

Although a range of issues was raised by the Productivity Commission report these issues do not rank equally in importance. Perhaps the most important issue raised is the manner in which funds will be allocated to alternative road building and maintenance projects. Any change to the manner in which this occurs will affect tremendously the distribution of funding for construction and maintenance of roads across the network.

Major work still needs to be undertaken on determining what alternative methods of spending mechanisms are available. Examination of the precedent mechanisms used both overseas and in other network industries in Australia, would be useful.

The other issues raised such as pricing and the structure of funding bodies etc are to a large degree a means to the achievement of a more sensible and economically efficient, allocation of road projects. Although they are important they do not rank as highly as that of the means by which investment in road construction and maintenance will be directed.

4.1 A National Road Fund

One of the major options canvassed by the draft report is the notion that an independently run “National Road Fund” be created in order to improve funding, governance and spending discipline. Revenue for this proposed fund would come from some combination of current taxes and charges, or perhaps by a mass-distance fee. Leaving aside the issues of how/when/and where such a body would raise funds and how these would be allocated to investment projects, the establishment of such a body would raise a number of issues of structure and governance.

This body would presumably be a combined inter-jurisdictional Federal/State government one and so its establishment would involve a number of jurisdictional issues as well ones of governance. What responsibilities and powers such a body would have would all need to be sorted out as well as

issues of reporting responsibilities, appointments and so on. The relationship of the body to other state and other federal agencies would also need to be settled.

In recent years a number of joint jurisdictional agencies have been established in Australia such as the National Competition Council and the Australian Prudential Regulation Authority so there is some experience in Australia with the establishment of this type of agency. An understanding of the manner in which these older inter-jurisdictional agencies function would be of assistance to those seeking to have an influence on the manner in which a national road fund would operate.

4.2 Road pricing

Once a national road fund was established the manner in which it was funded would need to be settled. As well as the types of charges imposed the levels at which they were set would be a particularly important issue.

Determining what charges are imposed and at what level would appear to be an area of considerable future work and perhaps controversy. Alternative methods of funding such as registration fees, fuel excises and mass-distance charges would need to be assessed. As well, the technical and economic viability of locational pricing would need to be assessed.

In the past these issues have tended to be the ones that have attracted most attention from industry participants and presumably will also do so into the future. In Australia and abroad there has been a growing interest in determining the possibilities of using advanced electronic means to impose locational pricing in order to better align pricing with expenditure on road construction and maintenance.

The technical and investment requirements for such a system that might be implemented in Australia are not yet researched and understood in detail. In practical terms, it would likely represent a significant national investment that would carry considerable technological, financial and political implementation risks. The general conditions for success for any major technological or IT implementation can be expected to apply. Perhaps the most important and basic is that the technology should serve not drive, the economic imperatives of reform. We suggest that in practical terms this is likely to require the institutional and economic mechanisms objectives and long-term policy objectives for road freight pricing to be specified first and in practical detail.

However, we also suggest that even in the absence of explicit locational or mass distance pricing any reform process is going to involve a move towards a stronger alignment of road pricing and road construction and maintenance.

4.3 Investment in infrastructure

Perhaps the most important issue that will need to be faced in the future will be determining the method of aligning the charges that are imposed with that of the direction of investment in new infrastructure. This aspect has both economic and political implications.

From the point of view of economic efficiency it is important that future investment in the maintenance and construction of roads takes place at the point of greatest demand. To achieve an efficient allocation of resources investment needs to be directed towards the maintenance and construction of roads on routes for which users have the greatest desire to pay for them. The present system does perhaps not carry out this function to the best possible degree.

In a market economy the whole purpose of the price mechanism is to direct resources into the production of goods and services that consumers are most willing to pay for. In the case of the road transport industry this does not occur because there is a separation of the means of payment for road use and the provision of the service itself (the construction and maintenance of roads).¹

In the road freight industry carriers do not pay road providers directly for use of roads but instead pay indirectly through fuel excises, registration fees etc. This is in contrast to the rail industry, for instance, where freight carriers pay track providers specific charges for the use of specific track routes.

Indeed it is possible to suggest that the main aim of microeconomic reform of government businesses over the past twenty years is to bring together a greater alignment between the demand for, and supply of government businesses and services. In this way a greater degree of allocative efficiency is achieved.²

¹ This is not entirely true in all cases. In the case of privately owned and charged toll roads there is a firm link between provision of infrastructure and payment for its use.

² As well the reform process has tried to achieve a greater degree of productive efficiency through the creation of competitive pressures on companies that compel them to lower their costs of production and as well dynamic efficiency in terms of the degree to companies innovate and improve their products and production techniques over time.

In the case of road construction and maintenance even if distance and locational pricing methods are introduced to cover costs this will not create the greatest degree of efficiency unless the funds raised are directed to the development and maintenance of roads that freight carriers demand. An important part of the reform process, therefore, will be the creation of a mechanism that more explicitly links together the demand for road use and pricing and that of the supply of road construction and maintenance.

Indeed it is possible that if no such mechanism to determine the level and direction of investment is put into place schemes such as locational pricing could be used as a form of “rent collection”. This is true even if the charges cover the full cost of road construction as rents collected from some users on some routes could be used to support users elsewhere on the network. For instance if users on heavily constrained routes of the network pay relatively high charges they will effectively become monopoly rents if the money raised is not used to alleviate these constraints.

If some form of locational pricing is developed this helps to create a method of “user pays” but does not of itself create a mechanism through which these funds flow to investment unless some explicit commitment is made. A mechanism of fund allocation to the various builders and maintainers of roads (federal, state and local governments) needs to be devised.

If locational pricing is not used it is still possible to create a link between road use and investment. It could be possible, for instance, to identify heavy vehicle capacity bottlenecks and allocate funds to the alleviation of these bottlenecks. This, however, does depend on the implementation of a consistent mechanism that links specific demand on the network to investment in road construction to meet that demand.

An important part of future work, therefore, should be directed toward looking at the various mechanisms used around the world which allocate funds toward alternative investment projects. Studies of other network industries in Australia may also be useful. Whatever structure of road pricing is devised this mechanism be will crucial to whether any reforms to the present system generate economic efficiency gains.

A number of stakeholders will have an interest in the manner in which this mechanism operates.

- First of these are the governments that are involved in the funding and construction and maintenance of roads. A change in the mechanism by which funding is allocated to different road usages will impact on the size and scope of expenditure in each state. Different funding allocation models will have different relative impacts on the states involved. Governments responsible for heavily constrained road routes have the potential to gain the most from any attempt to more strictly align pricing to road construction and maintenance.
- Secondly, there are the road freight carriers. A change in the allocation of funding will impact on the spending levels of different road transport routes. Some road users would clearly gain from this process while others presumably would lose.
- Thirdly, there are the rail network operators. Moving the allocation of funding of roads to a more efficient basis would help to address concerns about the inefficient allocation of road investment adversely impacting the economic viability of the rail network.
- Regional centres around Australia could also be potentially affected. Any change in the allocation of funds to road construction will affect some regions at the expense of others. While some regions would gain in terms of the upgrading and upkeep of roads, some would clearly lose.

It would be quite possible not only to undertake a study of alternative models used in allocating funds to road construction but also infer what the impact would be of their introduction on these stakeholder groups. Not only would this help to determine what impact these changes would have on groups involved but also would give an indication of the benefits of the reforms overall.

The points made here are crucial to understanding the impact of reform of road construction and maintenance. Microeconomic reform in Australia over the past twenty years has led to a substantial improvement in the productivity efficiency of many deliverers of infrastructure but as well it has led to in many cases quite sharp changes in the allocation of resources. The measures being discussed by the Productivity Commission if implemented, will tend to lead to quite substantial changes in allocative efficiency perhaps more so than in productive efficiency. It is important that stakeholders fully understand the impact of these proposed changes.

4.4 Community service obligations

In terms of the achievement of allocative efficiency any change in the allocation of investment in road infrastructure is going to have an impact on the provision of road services to remote and regional Australia. In the past for other infrastructure services such as post and rail which have particularly strong impacts on regional development, studies have been undertaken of the impact of regional or locational pricing. As well studies have been undertaken and systems put in place to make and community service obligations (CSOs) more transparent and where possible, financed from government budgets rather than through cross subsidies.

At present it is unclear to what degree different locational sections of the network cross subsidise each other but any attempt to better align demand with investment will need a more transparent system of determining cross subsidies and accounting for them. This issue has been addressed extensively in the past in the case of network industries such as postal services and rail track infrastructure provision and similar work should be undertaken for the road network.

4.5 Pricing, access and service standards

In most markets consumers reveal what they are willing to pay for a product through their expenditure and the choices they make between rival goods and services. A consumer, can for instance choose between paying a low price for a low quality good or alternately a higher price for a higher quality good. Typically in the case of the provision of network services this sort of choice cannot be made by individual consumers.

In the case of electricity transmission and distribution, for instance, consumers are compelled to experience the same degree of system reliability and are compelled to pay for a quality level that is fixed for all consumers. Something similar occurs in the case of rail track provision, gas pipelines and the local loop of the telecommunications industry.

The roads network provides different levels of access for different categories of heavy vehicle user. Not all vehicles are permitted to access all roads and the cost of road maintenance can be heavily influenced by which vehicles travel down which roads. However, in addition to the payment of prices satisfying demand for access from different categories of users, it would seem reasonable to assume that all users would expect prices to meet their expectations of

service standards. For example, physical characteristics that might impact the wear and tear and fuel consumption of heavy vehicles.

In the provision of monopoly networks government regulators generally regulate not just price but also the quality of the service provided as well. In regulating the quality of service provided some sort of indication is generally acquired of the preferences of consumers for alternative quality standards. If consumers cannot reveal their preferences for quality standards through their choices between competitive providers then regulators and infrastructure providers have to discern these preferences through other means.

In the case of networks services such as electricity and natural gas supply often user surveys are carried out to determine if consumers are satisfied with the level of service reliability and if they would be prepared to pay for a higher level of service reliability or even endure a lower level if that means that could enjoy lower prices. This issue is one that would invariably arise if pricing of road use was more strictly applied to road use. As the market for road use is an imperfect one the preferences of road freight carriers for service quality are not easily revealed through their expenditure choices.

It might be possible to charge road users for their use of a particular route but this might still lead to the creation of economic inefficiencies if the price and level of investment on that route's maintenance was higher or less than that desired by users. For instance users of a particular route might be charged a level of money that covers the cost of its use but the level of service might be a higher level than that demanded by the users. The reverse might also occur. In this circumstance users might be prepared to pay more, if the result was a considerable upgrade in the service provided.

Determining the quality standards demanded by users is an important part of any network industry regulatory regime. This would appear to be true in the case of road transport as well just as it is in the cases of electricity and gas transmission and distribution for example. We suggest that a means by which a national road fund can determine the levels of quality standards as well as access, demanded by freight carriers may be an important part of any efficient road-pricing scheme.

Again there may be scope to observe how this issue is addressed overseas, both the road freight industry and in utility industries in general. Similar experiences in the electricity, gas, telecommunications and postal industries in

Australia could also be investigated in order to determine what standards are demanded by users and whether these standards are being maintained.

5 Conclusion

In the past the reform of infrastructure industries has tended to have quite substantial effects on the allocation of both resources and incomes. What has been true in the past of rail, airports, electricity, gas, post and telecommunications will almost certainly be true of road provision. The main gains that can be achieved by the reforms envisaged in the Productivity Commission's draft report come from allocative efficiency gains that are derived from an improved allocation of resources towards investment in road projects that users are most willing to pay for.

The pricing of road infrastructure is only one-half of the problem when it comes to the provision of an economically efficient road infrastructure network. We suggest that it is necessary to ensure that the funds raised from road use are allocated to the construction and maintenance of roads that users wish to pay for.

Arranging a mechanism by which this occurs is by no means easy. But potentially it could lead to not only a substantial gain in economic efficiency but also to a substantial redistribution of road projects between regions. At present there is little indication what sort of mechanism would be used by a "National Road Fund" or alternative body to ensure that funds raised from road users through fuel taxes or other means would be directed toward appropriate projects.

Knowledge of the manner in which these mechanisms can be put into effect is incomplete, as is knowledge of the redistributive impacts that reform of the road network will deliver. Overall, greater attention needs to be given to manner in which future investment decisions will be undertaken and the way in which these decisions will reflect the demands of users. This issue will need to be satisfactorily resolved if the greatest gains from reform are to be achieved.

A great deal of research work needs to be undertaken if it is going to be possible to understand just what impact various different alternative mechanisms will have on these distributional issues. Not only should attention be given to the manner which these issues are addressed overseas but also lessons can be learnt from the experiences of other network industries in Australia such as rail, electricity, gas, telecommunications and postal services.

6 Definitions

By “allocative efficiency” we mean that resources are allocated in a way that maximises the net benefit attained through their use. Allocative efficiency refers to a situation in which the limited resources are allocated in accordance with the wishes of consumers.

By “productive efficiency” we mean that production is achieved at the lowest cost possible, and the least amount of resources are used to produce a given good or service or output is being produced at the lowest possible unit cost.

7 References

Australian Bureau of Statistics, 2006, *Australian National Accounts: input-output tables*, cat. No. 5209.0.55, Canberra.

Australian Bureau of Statistics, 2002, *Freight movements Australia, summary (reissue)*, cat. No. 9220.0, Canberra.

Australia, Bureau of Transport and Regional Economics, 2006, *Australian transport statistics*, August, Canberra.

Productivity Commission, 2006, *Road and rail freight infrastructure pricing, Issues paper*, Melbourne, March.

Productivity Commission, 2006, *Road and rail freight infrastructure pricing: Productivity Commission Discussion Draft*, Melbourne, September.

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