Road Pricing - Considerations for Australia
Are we having the right conversation?
May 2013
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Are we having the right conversation?

Executive Summary

Explicitly charging for all road use (road pricing) is seen as part of the solution to reduce congestion, assist in funding much needed transport infrastructure, and improve the efficiency of road use. One of the key hurdles to the introduction of broad scale road pricing is community acceptance. It is proposed that an aggregated transport account will be a mechanism for gaining community acceptance of road pricing.

The case for road pricing and transport funding reform in Australia has been discussed for many years. The road pricing debate has been entertained at many transport forums in this country. Roads, one of the last non-priced utilities, are overused. They compete (possibly too well) with other modes of transport yet, when saturated, detract significantly from social, environmental and economic outcomes.

Effectively pricing road usage is a significant task and may be extremely complex to implement. Nevertheless, potentially suitable models have been proposed that could raise sufficient revenue for infrastructure investment, be revenue neutral and improve congestion on our roads.

Technology is not the issue, nor is funding – The key issue is one of community acceptance because of the inevitable debate about “winners & losers”. Even if consensus could be achieved, implementation is likely to take considerable time. Without broad community acceptance, introduction of a road pricing scheme may never happen.

There is evidence that incremental approaches will work and that community opinion will move towards acceptance of proposed road pricing arrangements provided that: firstly, the phrase “congestion tax” is not used and secondly, funds are transparently directed into better transport outcomes.

Given there will be winners and losers and that self-interest is likely to be the loudest contributor to any debate - how do we change the conversation?

A new message is required. We should be discussing the value of the transport services users are receiving rather than the charge applied for a utility that (until now) appeared to be free.

It is proposed that, through the introduction of an aggregated transport account, users will be provided with sufficient information to understand their total cost of transport. Such an integrated account would enable users to easily compare mode choice outcomes and monitor their individual transport expenditure. An amount that currently represents over 16% of total Australian household expenditure [18].

Furthermore, a transport account aggregator could provide benefits to users through better prices for services, bundled transport offerings and discounts for optimal transport choices. Ultimately users could elect to participate in optional road pricing arrangements and have visibility into actual costs through the use of the aggregated account thus paving the way for acceptance of broader road pricing schemes.
Background

Road pricing (or congestion charging) has been implemented in a relatively small group of cities to date. Well known schemes include the London Congestion Charge, Singapore’s Electronic Road Pricing and a congestion tax in Stockholm. Further examples include high occupancy toll lanes in the United States and distance based charging in New Zealand, Germany, Austria, Poland as well as several US States.

Many approaches to road pricing have tended to be controversial resulting in schemes being delayed or cancelled. Public opposition to road pricing is based on claims of inequity and unwelcome economic impacts on adjacent communities and businesses. The “just another big tax” claim has been easily made. These arguments have influenced policy decisions.

It seems that most economists [1] agree that road pricing to reduce congestion is inevitable in some form however there is considerable disagreement over the specifics of an appropriate scheme.

Unresolved questions include: How charges are set, where revenues are spent and compensation for users of previously “free” roads.
Road Pricing

The case for road pricing in Australia

The case for road pricing reform in Australia is well made. It is needed to reduce congestion, assist in funding infrastructure, increase efficient road usage and possibly improve long term equity outcomes by providing more funding to alternative transport modes.

Over time demand based road pricing (congestion charging) will reduce Australian traffic loads and lower the cost of congestion. How do we know this? Fortunately there have been a sufficient (albeit small) number of reference cases to provide an indicator of the likely effects of congestion charging on Australian cities. John Stanley from the Institute of Transport and Logistics Studies [2] suggested, based on British research, that traffic levels only need to fall by 4-5% for a large proportion of congestion costs to disappear. Furthermore, international experience, according to Stanley is that effective “congestion pricing can reduce traffic levels by 14-23% in a very short period and that traffic levels stay down. Traffic speeds improve relatively more than volumes fall.”

Current transport taxation is underfunding transport infrastructure development and maintenance. According to Infrastructure Partnerships Australia (IPA) [3], “reform of transport taxation could … assist Australia to fund its next generation of public transport and road projects. Furthermore congestion already costs Australia $9.4 billion every year. Without action, these costs will more than double to $20.4 billion by 2020.”

With respect to improved equity outcomes, IPA suggests that an appropriate road pricing scheme would increase the accountability of road users, facilitate better road use choices and reduce current disproportionate fees and charges that apply to some heavy vehicles.

Arguments about improved equity outcomes are likely to be debated even if the claims, as made by IPA, are true. Improving equity outcomes, by definition requires some people to pay more while others pay less.

Gary Banks, Chairman of the Productivity Commission, addressed the Economic and Social Outlook Conference, ‘Securing the Future’ in November 2012 and highlighted a list of actions necessary to enhance productivity, including “introduce institutional reforms for roads to connect revenue with spending decisions, while progressively moving to location-based road pricing...”
With effective road pricing likely to deliver significant benefits, including reduced congestion, better funding, improved equity outcomes and increased productivity why do we not have one in place already? After all, the Australia’s Future Tax System Review\(^4\) (established by the Rudd Government in 2008) recommendations included:

- Governments should analyse the potential network-wide benefits and costs of introducing variable congestion pricing … congestion charges should apply to all registered vehicles using congested roads
- Revenue from fuel tax imposed for general government purposes should be replaced over time with revenue from more efficient broad-based taxes
- The revenue-raising component of State taxes on motor vehicle ownership and use should be made explicit
- COAG should nominate a single institution to lead road tax reform, and ensure implementation of this agreement

And, in 2009, the COAG road reform program\(^5\) recommended that the merits of national charging treatments for externalities be re-examined following the introduction of location based charging and that jurisdictions support the continuing development of incremental pricing trials.

These recommendations infer the case has been made for road pricing reform and suggest a very tentative approach to implementation when in reality a suitable model is likely to involve considerable and complex changes to existing revenue collection and distribution mechanisms. The case ‘for’ can be made, however, the ‘how’ needs a lot more work.

Even when the implementation details of a scheme have been worked through, persuading the community of the benefits will be essential.

**Road pricing models**

All potential road pricing models are likely to involve alterations to existing taxation systems as well as an appropriate measurement of the value of roads to the economy and an approach to dealing with varying circumstances (e.g. rural versus city).

There are many potential models. As an example, research undertaken on behalf of IPA\(^3\) has proposed a model of road pricing that would deliver a charge for the average motor vehicle of just 7.9c/km and replace all existing road related taxes and charges (barring the Goods and Services Tax and Fringe Benefits Tax) while still making available an additional $4 billion annually for investment.

This model is likely to fail like many others fail. This is not because the technology is unavailable. Neither is it because of the complexities of taxation reform (an extra $4b annually should be sufficient to drive success in this area) and it is not because the need is not great enough.

It is because the ‘average’ cost means there will be “winners” and “losers” and there is the potential that self-interest will rule. Even if consensus could be achieved, implementation is likely to take several electoral cycles. Without broad community acceptance, introduction of a broad road pricing scheme may never happen.

How is such acceptance to be gained?
A successful road pricing strategy will need to:

- Raise sufficient revenues for infrastructure investment and maintenance
- Be revenue neutral or better to satisfy Treasury
- Reduce congestion
- Be technically simple to implement
- Address equity concerns
It has been argued that communities will accept congestion charging (a form of road pricing) if 100 percent of the revenue was used and demonstrated to be used to improve public transport. This may be because users could readily connect the “extra” charge with reduced congestion. The support for congestion or distance based charging diminishes if the funds collected are not allocated in full to public transport. Studies by Hensher et al. [6] show that there is real evidence that how the revenue is allocated “is critical to obtaining buy in to road pricing proposals”. What is also mentioned in their study is that distance based charging only gets ‘over the line’ if combined with a reduction in annual registration charges. They go further to suggest a two stage implementation strategy. Their argument is that in step 1 people will get used to reduced expenditure where their usage drops and in step 2 people will actually experience time savings as well, thus validating one of the objectives of a road pricing strategy – reduced congestion.

IPA [3] suggests that there are a set of preconditions for public acceptance of the need for road pricing and that these are:

• Growing congestion
• Environmental degradation
• Declining liveability
• Fewer opportunities to support new investment

It could be argued that these preconditions already exist in our largest cities and appropriate pricing models are available. The issue preventing implementation of road pricing remains self-interest and this hurdle needs to be overcome.

Without broad community acceptance, introduction of a broad road pricing scheme may never happen.
Leadership

History has shown that most Australian Federal or State Governments are reluctant to promote and debate the benefits of congestion pricing. The potential for a slogan of the next “Great Big Tax” tends to stifle proper discussions on road pricing reform, gaining significant community acceptance is critical.

Price Waterhouse Coopers\(^9\) suggested that the introduction of ‘congestion’ pricing will “be a test of political backbone” that would need considerable public education and any “scheme would need to provide assurance that it would not impinge on privacy.” They suggested that to sell a road pricing scheme we should “focus on the economic costs of congestion as the main benefits will be to the motorists themselves – predicated on multiple benefits delivered if accompanied by public transport improvements.”

Perhaps there is an alternative route to acceptance and it lies with informing (rather than educating) the public? The first step is the consumer knowing, with a lot more precision, what their transport decisions cost them and what the alternatives are to better manage their transport budget.

Understanding true cost

The cost of road congestion is significant. For example Dr Ken Henry, Chair of Australia’s Future Tax System Review Panel and Treasury Secretary, has estimated road congestion wastes “around $9 billion a year in avoidable congestion costs, increasing to around $20 billion by 2020.” \(^4\)

It is also apparent that road user charges are necessary to efficiently manage mode choice – the tax review \(^4\) recommended that “on routes where road freight is in direct competition with rail that is required to recover its capital costs, heavy vehicles should face an additional charge on a comparable basis, where this improves the efficient allocation of freight between transport modes.”

But what about funding allocation? - The Australian Rural Roads Group\(^10\) argues that the Productivity Commission got it wrong and that the current PAYGO road charging system is not effective because it is an expenditure recovery system rather than a cost recovery system. “What was spent is not necessarily what should have been spent”... also “Because there is no interest in reporting on the actual condition of roads and their true long run maintenance costs nationwide, Australia is underestimating its road pricing needs – the presence of big funding gaps in the local road network make this clear”

Furthermore, the costs involved in addressing Australia’s infrastructure backlog are often sheeted home to discrete projects. Schemes such as Westconnex in Sydney are seen as essential to unblocking major arteries and making transport more efficient. The challenge of designing and building these schemes is probably a secondary issue to that of how to fund them. While the obvious and immediate approach is to apply tolls to the new road segments, this is probably only part of the solution. It is expected that the task of funding these new road segments will require funding above that feasibly collected by direct tolling of these new assets, at least in the short to medium term.
“Tolls are set to refinance the investment and to provide a return to equity rather than as a demand management tool to control the efficient use of the infrastructure.”[11]

As these new projects are developed the opportunity to look at how proposed new tolls complement existing road use charging mechanisms should be considered. Furthermore, effective, network wide approaches to road use charging should be taken into account.

In 2009 Advisian released a discussion paper “Delivering the Missing Links to Sydney’s Motorway Network” which introduced the idea of combining all of Sydney’s tolled roads under a single, umbrella organisation, thus paving the way for uniform tolling approaches across all links. It also suggested the possibility of non-tolled network extensions and improvements to be built with a whole of network outcome in mind.

That paper looked exclusively at the tolling of existing and planned motorway segments. What is the impediment to extending the discussion to the entire road network?

Tolls are an immediate cost to the motorist that do little to provide a balanced view of real transportation costs. They are often seen more as ‘penalty’ than a fee for a service. Users will use alternative roads to avoid tolls in many cases. The true cost of road transport for commuters is rarely spelled out and the level of cross subsidies is far from transparent.

As a direct comparison, while users may complain about the cost of train fares – there is a general understanding of the ‘value’ of the service being provided and the price to use it. Unfortunately, subsidies for rail travel are also less than transparent so the real cost is not obvious.

If we were explicitly paying ‘per use’ on every road we traversed then the current batch of tolled links would start to look very attractive. An appropriate fee/service relationship would emerge.

Furthermore, if we were easily able to compare the cost/value equation across different modes of transport then transport providers, freight operators and commuters, may be making very different transport decisions to the ones made today.
Transport – an unpriced utility?

Scott Charlton, CEO of Transurban, when discussing network pricing, equated the concepts of demand pricing in electricity and other utilities with transport infrastructure when he quoted IPA and said that “roads are the last great unpriced utility”. [17]

Further, IPA equated roads with other ‘priced’ public utilities “Utilities like water, energy and telecommunications have already undergone significant and ongoing reform in terms of how monopoly infrastructure is priced - and how demand is managed. Under most of these regimes, revenue generated from access to monopoly infrastructure is reinvested to improve overall performance and promote efficiency”.[3]

The de-regulated energy retail market has brought about incremental change in the way we view our energy consumption. Not only can we compare pricing arrangements from different retailers we can, if we choose, compare our current usage of energy with past usage; we can also compare ourselves to ‘typical’ consumers and, if we are really committed, investigate ways to save energy costs. Furthermore we can elect to install smart meters in the hope that selective use of energy will result in lower charges.

Importantly, price driven, selective use of energy is able to reduce peak-loads.

Water is a similar utility but with slightly different drivers. Variable pricing on water is focussed on total consumption rather than time-of day consumption. Dealing with supply/demand issues is currently managed through water use restrictions and innovative water capture solutions rather than pricing signals.

Telecommunications is provided by an industry that brings with it a plethora of different products, suppliers and pricing structures. A great deal of energy is put into maximising the use of such utilities as they seem to have an ever increasing ability to add capacity. Nevertheless the telecommunications market is also driven by efficiencies and asset sweating.

Investments in telecommunications infrastructure are made to meet forecast demand and pricing models are developed to ensure that demand is met. Build it and they will come and if they do not we will make the pricing model so attractive they will come anyway! Pricing models are often based on sophisticated yield management models to ensure that the network use is maximised but not saturated. Importantly, premium users are able to be provided with specified levels of service (potentially at the expense of other users).

Individual transport is, in many ways, a utility. It contributes to overall economic outcomes on a grand scale and should be analysed in this way if we are to maximise its usefulness and minimise its limitations.

What can transport learn from existing utility demand management pricing and telecommunications yield management models?

With congestion a major issue within our larger cities it is suggested that perspectives on car ownership will change. The issue is likely to become one of mobility and the total cost of transport rather than vehicle ownership.

It is obvious that travel costs vary depending on mode, time and distance travelled. What is not obvious is the net cost of travel incurred by individuals and the potential savings to be made by making alternative choices? This is the very data that is required for public acceptance of broad road pricing schemes.
A new conversation

Road pricing can be a fairly blunt instrument for managing road demand but does it provide the full picture? If we shift commuters away from road where do they go? Is it possible that better individual decisions can lead to better collective outcomes?

A new language is required. Hensher encourages the marketing of road pricing reform to stop using language like a congestion tax imposed on top of existing charges. It is suggested that the notion of no choice and choice pricing with reference to specific kilometres, or travel at specific times of the day and locations should be introduced. Furthermore we should talk about travel time benefits or annual registration fee discounts instead of the emotional and misunderstood language associated with a congestion charge.

The first step to better individual decision making is to be very clear on what we actually spend on every mode of transport. We should be talking about transport pricing rather than road pricing because reforming road pricing would also provide the opportunity to review public transport fares, many of which are currently set artificially low.

David Hensher and Corrine Mulley have shown that it is possible to introduce a road pricing scheme progressively through the “reform of registration fees in the presence of a distance-based charging regime.” Furthermore, they have demonstrated that a phased implementation “can deliver financial gains to motorists with prospects of revenue growth to the State.”

So, what do we actually spend on transport related activities?

Relative Household Expenditure

- Housing: 18%
- Food: 16%
- Transport: 14%
- Energy: 2%

Source: Australian Bureau of Statistics ABS 6530.0 - Household Expenditure Survey, Australia: Summary of Results, 2009-10
According to ABS data, transport costs in Australia represent 16% of total household expenditure compared with energy costs which represent 2.5%. This is a significant portion of expenditure and it is argued that demonstrating financial savings is likely to be more effective in reducing road use than highlighting travel time savings. To take a lesson from the utility industries, a well presented and comprehensive “statement” will be a key element in demonstrating savings and drive changes in behaviour.

The utility account statements actually attempt to provide consumers with extra information such as average usage, comparison usage and energy/water saving hints. This extra information may help consumers make alternative decisions.

**Opt in schemes**

In order to change the conversation on road pricing, a model could initially be introduced as an optional scheme. Transport users could choose based on perceived benefits, to enrol in a scheme that provides a financial benefit in exchange for being charged explicitly for every kilometre driven.

The question of how an opt-in scheme might be practically implemented then arises.

An opt-in approach to road pricing might involve:

- Reduced registration fees in exchange for usage charge on every road
- Pay-as-you drive registration/insurance
- Mobile-phone style schemes (e.g. car plans based on expected usage with penalty charges outside projected use)
- Comprehensive information on transport related costs
- Cross modal transportation account to include public transport related costs

One way for such a scheme to be implemented is to draw from the experience of other utilities and introduce the concept of a consolidated transport account. What if we could see all of our transport costs in one place and compare our choices? Would our decisions improve?

An aggregated transport statement may provide part of the answer.
Aggregated transport statement

A combined transport statement (provided by a transport account aggregator) would provide a side by side analysis of the costs associated with different transport modes. It would provide clear pricing signals and give the consumer the ability to make informed mode choice decisions in advance. This would make it easier for individual assessments of the trade-offs between convenience and cost.
An aggregated model provides the customer with potential advantages such as:

- Better prices for certain services (the bill aggregator provides significant purchasing power)
- Potential for cross modal pricing
- Better priced combination of modes (bundles—e.g. drive, park and ride)
- Visibility into actual costs
- Comparisons of actual mode choices
- Recommendations for alternative activities
- Real-time mode choice data
- The ability to “pre-pay” for specific trips at a significant discount
- Immediate price signal responses

The aggregated account could be “real time” through appropriate mobile apps. An aggregated model provides better information for both the customer and for transport providers.
Furthermore the provider of the aggregated transport account could provide:

- Dynamic deals in real time based on time place and usage;
- Group purchasing power for its customers
- Interaction via the web and smart phone applications

### Transport Billing Statement

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**Did you Know?**

You could have saved up to $50 a day by not owning a private vehicle and using public transport. NSW bus and rail provide a more environmentally friendly and cost effective route between Doonside and Chatswood.
I have an app for that

In 2007, it was argued that ubiquitous road pricing was both technically and socially achievable.[14] This argument was centred on three key themes:

- The increasing use (and begrudging acceptance) of toll roads in Australia
- The evolution and standardisation of vehicle communications
- The proliferation of in-vehicle navigation systems

The scheme proposed a road pricing which included the following features:

- Dynamically changeable charging regimes – managed by the road owners
- Reduced charges to infrequent and “considered” users
- Pre-paid distance allowance with registration
- Vehicles with a road-use “gauge”
- Insurance and registration as a pay-as-you-use option; and
- Smart “road-use” algorithms to provide “least cost use”

A lot has happened since then: GPS is wider spread and more accessible than anticipated at the time; discussion of congestion charging and road pricing is no longer taboo; and we have a backlog of transport infrastructure to finance and build.

Possibly, more importantly, in 2007 - the first iPhone was released.

Perhaps most telling is the tighter integration of our smart-phones with our cars. It is possible to manage your engine via a smartphone app. For example, Opel offers integration between an iphone and the car’s engine management system. This means that a smart phone is capable of knowing such things as what vehicle it is in, its location and its speed. It is feasible that the smart-phone could serve as both a road price calculator and payment device. Given that smart phones can be used in contactless payment systems when equipped with near field communication (NFC), the smart phone may turn out to be the one device that can manage all of our transport payment needs as well as provide users with the information needed to make sense of their complete transport expenditure.

A well-presented, aggregated transport account coupled with a progressively introduced comprehensive road pricing regime and innovative consumer applications may provide a path to acceptance of road pricing and maintainable road transport funding.

So now - we probably already do have an app for all of this!
References


[9] Lennon, S and Jones, O. PricewaterhouseCoopers (2009), The case for change: Road Pricing Reform, December.


