Discussant comments

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There is much in Steve Meyrick's paper I agree with, but let me start with a few points by way of premise, in some cases emphasising and in others clarifying issues he raises.

My first point is that congestion is not a problem. Rather, it is a solution: a solution to the fact that when roads are unpriced, more people want to use them at peak times than can be accommodated at free flow or even at speeds anywhere near it.

The second point is that that solution is objectionable not because it results in traffic jams but because those jams are potentially inefficient. It is that inefficiency economists dislike, not traffic jams themselves.

What is objectionable, in other words, is not the fact of slow speeds; rather, it is that the 'allocation by ordeal' effected by congestion results in a lower level of social welfare than would obtain were traffic levels at the point where the marginal social cost of an additional vehicle, including its impact on the costs borne by other road users, just equalled the private benefit derived by that additional vehicle's user or users.

Whether road pricing is or is not desirable—and this is my third point—therefore does not depend on whether it reduces congestion, as the paper, though usually clear on this point, at times implies (for instance, in discussing the experience of Singapore).

After all, congestion could be abolished by a punitive tax on private car ownership by all but government officials, a solution likely to be favoured in Canberra but that would be less wholeheartedly welcomed by economists interested in maximising social welfare, much less by the great unwashed.

Rather, the desirability of road charging, or indeed of any other method of dealing with traffic demand, depends only on whether road pricing allows us to move towards the efficient point, and to do so with costs that are less than the benefits.

Given those points by way of background, I now want to comment on three specific questions.

How big a problem?

First, what is the magnitude of the congestion, and what role is played in it, today and in the immediate future, by changes in population?

The central element in the charge sheet against the situation as it stands is the estimates of the current and projected costs of traffic congestion published by the Bureau of Transport and Regional Economics and cited by the Henry Tax Review in its report on Australia's Future Tax System (AFTS) and in this paper.

I am sceptical of those estimates for a broad range of technical reasons, but let me mention four.

First, the estimates that AFTS and Meyrick cite are the midpoints of an extremely wide range, spanning from $5 billion to $15 billion.

Second, the researchers themselves issue warnings about the methodology adopted, explaining that it aims to provide broad estimates of the scale of a city's congestion situation using aggregate indicators of a city's average traffic conditions.

However, it is widely understood that accurate assessments of congestion can only be achieved using detailed network models. An earlier report by the Bureau of Transport and Communications Economics (precursor to the BITRE) warned that (aggregated) analysis 'provides little guidance to policy makers concerned with reducing different levels of congestion in various parts of a city.'

Third, the report's estimates for recent periods, suggesting a picture of a nation stuck in traffic, sit uncomfortably both with the results of traffic speed surveys, which show some uneven and limited slowing, and of surveys such as IBM's Global Traffic Pain Index, which places Melbourne, for example, among the cities with the lowest levels of 'traffic pain'. Equally, the results on travel times in the successive HILDA surveys point to relatively little increase, especially when the shift of some travel to public transport, with its relatively long commute times, is taken into account. These all suggest that travel times are rising, but far more slowly than the bureau's trend line would suggest.

Fourth, there are problems with the projections used in the analysis, and many complexities are involved in their interpretation. For example, Steve cites estimates of the contribution of population growth to congestion costs. Those estimates suggest that population growth plays a minor role in increasing congestion costs.

However, it is crucial to distinguish between volume and price changes. Some part of the projected growth in aggregate congestion costs will come from increases in the value of time as wages rise in line with the marginal product of labour. Those increases will raise the costs of congestion at any given level of traffic delays: indeed, they would be likely to increase aggregate congestion costs even if delays were shrinking. But that change in the price of a unit delay must be stripped out if one wants to understand the impact of population changes. Rather, one must focus on what is happening to volumes.

On this, the report itself says that 'for most cities the increase in travel per person has just about saturated' (p. 8). This means volume changes must come either from growth in freight traffic or from increases in population. Most estimates of freight growth in CBDs, including the bureau's own subsequent work, point to modest increases, or even declines, in intensity (that is, of freight task per unit of GDP). As a result, one would expect a high share of the projected increase in volumes to come from population growth.

It is therefore misleading to infer from the estimates that projected population change has little impact. Rather, I suspect that, properly analysed, it accounts for the bulk of the underlying volume increase and for a large part of any change in traffic delays.

Combined, these issues and many others lead me to stress the need to be very cautious in the use of the bureau's estimates. However, that is not to dispute the proposition that there are parts of our cities that are heavily congested. Moreover, my own assessment is that rapid population growth in those cities would, under current conditions, materially slow travel times and lead to rising social costs of congestion.

Can congestion charging solve the problem?

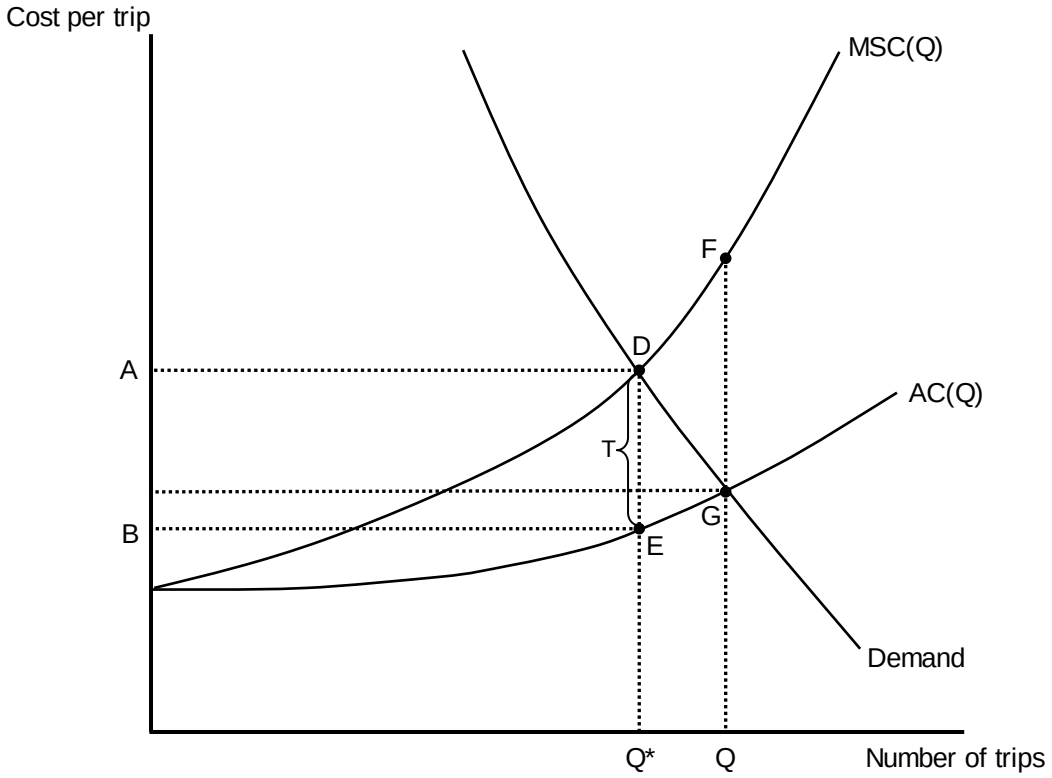
A great merit of congestion charging is that it is a method of increasing the efficiency of road use that is not undermined by demand response; that is, by the fact that a reduction in congestion due, say, to capacity expansion, will induce short- and long-run traffic adjustments (Downs's 'triple convergence' in the short run and changes in location in the long run) that tend to return delays to their original level.

As Meyrick rightly emphasises, that does not mean those initial congestion-reducing initiatives, such as capacity expansion, are not worthwhile. Rather, that depends on whether their benefits, including during the period it takes traffic to adjust, exceed their costs. But an offsetting demand response does make it more

difficult for those initiatives to reduce travel times and vehicle operating costs sufficiently and sufficiently durably for a proper cost–benefit test to be passed. However, that does not mean congestion charging is a no-brainer.

To see why, consider the simplest conceptual framework for assessing congestion charges (Figure 7.5). In this framework, the average cost (AC) of drivers' trips is less than the marginal social cost (MSC) of the trips because drivers do not pay for their contribution to congestion and delays. The result is an inefficiently high number of trips. An optimal congestion toll, τ, reduces travel from its inefficient level Q, to the optimal level Q*, given current road capacity. In response to the toll, some motorists no longer use the road during peak periods while others continue to use the road and pay the toll. The loss to both groups is given by the area ADGEB. The toll raises revenue equal to ADEB. The toll also reduces but does not eliminate the social cost of delay: the efficient level of congestion, in the sense of delay relative to free flow, is not zero. The gain from reducing the social cost of delay to the efficient level is given by the area DFGE. Comparing the areas yields a welfare gain of FDG.

Figure 7.5 **A framework for assessing congestion charges**



Now, two points can be derived from this simple analysis.

First, although the welfare impact of the toll on individual motorists will depend on their value of time, on average, motorists' welfare will be reduced by the toll because the initial full price of travel, including the cost of travel time, was below the marginal social cost of travel. On net, the toll results in a welfare gain, but this is only because the toll revenues to the government exceed the net loss to motorists. In other words, at least in this world, motorists are necessarily worse off from congestion charging, all else equal.

Second, while there is a welfare gain, it is small relative to the loss in consumer surplus and the gain in revenues (that is, in congestion taxes collected by the road owner). In other words, as with most corrective taxes, the transfers from consumers to government are very large compared to the welfare improvement.

Three implications follow.

First, it does not take much by way of the costs involved in developing and implementing a congestion charging system to swamp any welfare gains. This is the point Meyrick makes with respect to London, and that is equally applicable to Stockholm.

Second, the diagram assumes a dollar is a dollar, so the revenues transferred to government are a mere transfer. However, if some of those revenues are wasted, then the transferred revenues should be valued at less than a dollar (that is, there is some shrinkage along the way, with that shrinkage itself being a welfare loss). If there is such waste, then — as rectangles are larger than triangles — it takes proportionately very little of it to eliminate any efficiency gains from congestion charging.

This is crucially important, because it is common to suggest that the revenues from congestion charges be hypothecated to public transport projects that almost invariably have benefits that fall well short of their costs. Indeed, in the careful assessments of European congestion charging initiatives presented in de Palma, Lindsey and Proost (2007), the wasteful use of hypothecated funds from road tolls on misjudged public transport initiatives plays a central role in making many of those initiatives welfare-reducing in an overall sense.

Third, in itself, congestion charging will not solve the problems associated with rapid population growth. To see this, assume the policy question is whether the incumbent motorists (those who used the road originally) are better off. The answer is that they will not be, absent special income transfers back from government, because motorists as a group are worse off. Abstracting from the use of the

revenues, their welfare with the charge in place will be lower than it was without it, and presumably even lower than it was prior to the increase in migration.

All of this makes one relatively gloomy about congestion charging, so let me add two further elements of depressing news from what could be a very long list.

The first is that the very simple analysis set out in the conventional diagram abstracts from tax interaction effects; that is, it ignores the interaction between congestion charging and pre-existing distortions in the tax system. By and large, congestion charges tax commuting, which is a complement to labour. As our tax structure already creates a wedge between the private and social return on labour effort, the effect is to increase the distortion, imposing costs that typically rise rapidly with each increase in the effective tax rate. While the revenues collected from the toll could be used to partially offset those effects, whether a full offset is possible is an empirical question.

Second, there are complex distributional effects that are intimately bound up with the ultimate incidence of the congestion charge. One of them involves the interaction of congestion charging, choice of location and housing prices. In other words, in assessing congestion charging, account must be taken of the fact that in the long run residential and business location responds to changes in the full cost of transport, so that changes in that full cost alter land rents.

Now, in a sense, these effects are favourable to congestion charging because they mean that traffic responds more to the charge than it would were the choice of location fixed. The demand curve shifts, in other words, to be more elastic, reducing the optimal toll and the welfare loss to motorists, and increasing the first-round welfare gains from congestion charging.

However, the net impact of unpriced congestion is to increase house prices, because the average resident benefits more from driving than he or she is hurt by delays. When the congestion charge is introduced, part of its incidence is shifted back, and house prices and land rents must fall. And they must fall especially on home owners in the more outlying areas, with highly distorting taxes on the sale and purchase of houses (stamp duties) only increasing the loss those households bear.

Of course, the government could, in principle, compensate those households, as aggregate revenues from the toll exceed the fall in rents. Whether and how that compensation could occur in practice, and with what welfare costs of its own, are obviously other complex issues that we do not have time to canvass.

But the point I want to stress is that the typical Australian household has two major assets: the family home and a primary job. Both of those assets are largely

uninsurable as far as their capital value is concerned. Introducing a congestion charge threatens the value of the first, particularly in suburban areas, and reduces the net value of the second. For risk-averse households, it is not difficult to see why this would seem like a pretty bad thing.

At this point, proponents of congestion charging typically talk about wider economic benefits — such as enhanced agglomeration economies and better choice of transport investments — and about using the revenue for worthwhile ends, such as building more roads.

There is indeed merit to each of those arguments, but that does not mean they can simply be assumed to outweigh the costs associated with introducing congestion charging.

What role for other instruments?

Finally, I will say a few words about other instruments for dealing with congestion touched on in the paper. My point on each of these would be the same: that they may have merit, but need to be subjected to proper cost–benefit analysis.

There is one, however, that Meyrick seems to endorse and that rather irks me: proposals to deal with congestion by mandating increases in urban density. At least as a method of reducing congestion, those proposals are ill-advised.

First of all, they override long-established and still strong community preferences for lower density living. To the extent that those preferences are exercised in the face of cost-reflective prices, overriding them is inefficient. If the relevant prices are not cost-reflective, the solution is to try to make them so, rather than to impose a particular urban form.

But second and perhaps more important, they are doomed to be ineffective. Given the durability of the existing building stock, the impact of densification is far too small to alter transport patterns, other than by increasing congestion in the areas where denser development occurs. Moreover, carried out on a large scale, it is extremely costly relative to the social value of any feasible reductions it might allow in commuting times. And, last but not least, its advocates are usually blissfully ignorant of even the elementary economics that shape its consequences.

Assume, for example, as the proponents of higher density seem to, that capital and land are good (but plainly not quite perfect) substitutes. That means small decreases in the price of land cause large decreases in the density of development on that land. Now rezone an area to get rid of the park in an inner suburb. The first level of

response is that the boundary of the metropolitan area moves in. This reduces land prices everywhere, but reduces them most right next to the CBD. So of all still-inhabited areas, the reduction in density is greatest right next to the urban centre. This will force the boundary of the metropolitan area out further, closer to where it had been before the change in zoning. Indeed, lower land prices everywhere lead to lower densities everywhere, and so the boundary could go back very close to where it had been before, but the biggest effect will be right next to the CBD.

In essence, the increase in density in the inner suburbs will therefore come mainly at the expense of density in the CBD. It is difficult to see why this would be desirable.

In short, economics does not have magic bullets for improving traffic flows. But at least let us try to better understand the merits and demerits of the instruments we have.

References

de Palma, A., Lindsey, R. and Proost, S. (eds) 2007, Investment and the Use of Tax and Toll Revenues in the Transport Sector, *Research in Transportation Economics*, vol. 19, JAI Press, Oxford.