

The Economics, Ideology and Politics of Anti-Congestion Policy for Brisbane

Roads 2005

Brisbane, 30 August 2005

Ken Willett

Executive Manager Economic and Public Policy

Royal Automobile Club of Queensland Limited

ken.willett@racq.com.au

07 38728650

0412045455

1. Introduction

Brisbane's traffic congestion has become a matter of serious concern to residents and governments. The problem has been worsening inexorably.

The Commonwealth Bureau of Transport and Regional Economics (BTRE) forecast that, unless governments act quickly and appropriately, congestion costs in the Brisbane metropolitan area would increase by 258 per cent between 1995 and 2015, compared to an average increase of 132 per cent for Australia's capital cities. BTRE predicted that Brisbane's congestion costs would exceed those in Sydney and Melbourne within a decade. Pertinent estimates for 2015 in 1999 prices were:

Brisbane	\$9.3 billion	\$4600 /head
Sydney	\$8.8 billion	\$2000/head
Melbourne	\$8.0 billion	\$2100/head. ¹

BTRE's forecast allowed for 5 percent growth in road network capacity during the intervening period. BTRE included costs of delays and higher fuel consumption, but not costs of extra accidents and higher vehicle emissions arising from congestion.

Brisbane's relatively rapid rate of growth of congestion costs is linked to the region's high rate of growth of population and economic activity compared to other major Australian metropolitan areas. It also derives from pre-existing transport infrastructure deficiencies in the region.

Traffic congestion involves social costs. Congestion delays movement of workers and freight. So, stress and frustration levels rise, and productivity falls. Fuel costs can double or triple in congested conditions. Delays and higher fuel costs raise transportation costs. Vehicle emissions rise with fuel consumption. Accident risks increase in congested conditions. Traffic congestion chokes the atmosphere and economic growth, as well as clogging roads.

A substantial part of congestion costs is economic waste. But, some congestion is consistent with economic efficiency (not wasteful), when costs of further increasing road capacity and/or reducing road space demanded at peak times and locations exceed consequential benefits.

Finding a politically acceptable cure for economically wasteful traffic congestion has proven to be as elusive as discovering a cure for cancer. Around the world, many anti-congestion strategies have been tried, but most of the world's major cities are still plagued by the problem, even those growing significantly less rapidly than Brisbane.

One purpose of this paper is to assess anti-congestion strategies included in current transport policy documents prepared by the Brisbane City Council, Queensland Government and Commonwealth Government. Another purpose is to formulate an effective package of complementary strategies for alleviation of Brisbane's congestion malaise. The paper addresses political and ideological obstacles to implementation of key elements of such a package.

¹ Gargett, David and Cosgrove, David, *Urban Transport – Looking Ahead*, Information Sheet 14, Canberra: Commonwealth of Australia, Bureau of Transport Economics, 1999.

2. Causes of Congestion

Traffic congestion has multiple interacting causes. A brief summary follows.²

Demand for cars has risen with incomes, so that car numbers have risen faster than population. Falling real prices of cars, and improving comfort, quality, and reliability and fuel-efficiency of cars have also added to car usage. These trends were reinforced by falling real fuel prices prior to the early 1970s and between 1980 and 1999.

The combined effects of increasing car-based mobility, consumers' preferences for detached houses on a block large enough for lawn, gardens, children and perhaps a dog, and accommodating zoning regulations have resulted in sprawling, low-density suburbia. The same factors have induced decentralisation of employment and business centres.

The combination of dispersed, low-density residential and business/work areas has reduced the viability of public transport and discouraged car-pooling. This has been reinforced by consumers' preferences for the greater convenience, flexibility, speed, comfort and protection from harassment offered by single-occupant vehicles.

“Except for walking, travelling by car is the most democratic and socially equitable form of transport ever seen in history as it allows more than 90 per cent of adults to go where and whenever they want to travel... .In particular, because the car allows chained or multi-purpose trips to work, schools, shopping and friends, it has been a potent force in the struggle for gender equality. The car has allowed women the freedom to do what they want to do in today's society and is the reason why surveys have found that women are more pro-car than men nowadays.”³

John Cox (2003), transport economist

The increasing integration of regional, national and international economies and the increasing complexity of metropolitan economies have led to freight shipments growing faster than gross domestic product. In addition, the proportion of freight moved by road has been rising.

So, there has been strong growth in demand for road capacity connecting suburban residential areas with activity centres and linking dispersed activity centres. The demand for road space is heavily concentrated in early morning and late afternoon peak periods, because of the desire of business, governments and educational institutions to have participants involved during approximately the same hours of the day for the purposes of efficient interaction and operation.

² For a more detailed discussion of some of these matters, see Downs, Anthony, *Still Stuck in Traffic: Coping with Peak-Hour Traffic Congestion*, Washington DC: Brookings, 2004, pp. 37-59.

³ Cox, John, “Labor stops ‘common people’ people from moving around”, *The Australian Financial Review*, 20 June 2003, p. 83.

Governments have been reluctant to increase road capacity to keep pace with peak demand growth, because of the high costs involved and the commonly held view that more capacity attracts more usage (the “induced demand” theory), cancelling out the effect of the capacity increases. So, peak period excess demand increases at the typically zero access price. Queues form to ration first-come-first served access to limited road space, which means congestion occurs.⁴

“An iron law of economics states that demand always expands beyond supply of free goods to cause congestion and queues. Drivers caught in traffic jams on the freeways in and around major cities of the world regularly run afoul of this law.”⁵

Gary Becker (1998), Nobel Laureate in Economic Sciences

Traditionally, governments have allowed free access to roads funded by various taxes. The economic rationale is that an uncongested road displays one of two characteristics of a pure public good, “non-rival consumption”. This means allowing an extra user does not detract from benefits enjoyed by others. Consequently, the social cost of adding each extra road-user (marginal social cost) is approximately zero, while each additional user gains benefits (marginal social benefit is positive). Then, excluding an extra user through pricing would be economically inefficient.⁶

Roads do not have the other characteristic of a pure public good, “non-excludability”. It is feasible to use prices to exclude some potential users of a road, although a system to exclude non-paying cars involves costs.⁷

Nevertheless, the case for not charging remains intact on economic efficiency grounds, provided that the marginal social cost of adding an extra vehicle remains low. This condition is violated when congestion emerges, because extra vehicles impose costs on others (external costs) by causing delays, higher fuel consumption and emissions in stop-start conditions, and higher accident risks.⁸ Then roads become more like private goods and less like public goods, with access by one detracting from the benefits enjoyed by others.

Road-users consider only costs and benefits that they individually experience in congested conditions. They ignore the contributions they make to congestion costs

⁴ Downs, Anthony, op cit, p. 323.

⁵ Becker, Gary, “Good-Bye Tollbooths and Traffic Jams”, *Business Week*, Industrial/Technology Edition, 18 May 1998, p. 26.

⁶ Walters, Alan, *The Economics of Road User Charges*, World Bank Staff Occasional Paper, No. 5, Baltimore: Johns Hopkins Press, 1968, pp. 15-21; Stiglitz, Joseph, *Economics of the Public Sector*, Third Edition, New York: Norton, 2000, pp. 128-130;

⁷ Stiglitz, Joseph, op cit, pp. 130-132.

⁸ The condition is also violated when road users impose costs on other vehicle owners and taxpayers by causing pavement damage (another type of external costs). Heavy vehicles are responsible for most road damage, which rises exponentially with weight per axle.

imposed on others. These costs vary according vehicle type, as well as time and location.⁹

“While it may be efficient to have some congestion on the highway, the fact that the motorist is not required to pay for the congestion he causes will induce too many motorists to use the road and there will be too much congestion. These conditions are probably typical of large conurbations throughout the world. Rarely do user charges reflect adequately the congestion in large cities – traffic jams and snail like speeds are the consequence. These are the wastes of user charges that are too low.”¹⁰

Sir Alan Walters (1968), prominent British economist, seminal contributor to theory of congestion pricing

In the absence of differential pricing to require road-users to confront the varying costs they impose on others, it is clear that from a social/economic perspective, parts of the metropolitan road system will be over-used by all vehicle types at peak times. Consequently, resources will be used inefficiently.¹¹

Indirect road-use charges such as fuel taxes and vehicle registration fees do not adequately ration access to crowded roads. Fuel tax payments are only very remotely linked to use of congested roads, and other vehicle taxes are independent of time and location of vehicle-use.¹²

“.....in no other area are pricing practices so irrational, so out of date, and so conducive to waste as in urban transportation...In nearly all other operations characterised by peak load problems, at least some attempt is made to differentiate between the rates charged for peak and off-peak service...But in transportation, such differentiation as exists is usually perverse.”¹³

William Vickrey, (1963) Nobel Laureate in Economic Sciences

3. Commonwealth Policy on Urban Congestion

The Commonwealth Government’s *AusLink White Paper* on land transport policy acknowledged that traffic congestion problems were “already considerable” in

⁹ Heavy vehicle operators ignore both road damage and congestion costs, imposed on others. A heavy vehicle also contributes more to congestion than a car, because of its size and slow acceleration in stop-start conditions.

¹⁰ Walters, Alan, *The Economics of Road User Charges*, op cit, pp. 11-12.

¹¹ Further inefficiencies arise because freight routes will be overused by heavy vehicles at all times.

¹² Similarly, registration fees and fuel tax payments are very imperfectly related to propensity to cause road damage, which rises exponentially with weight per axle.

¹³ Vickrey, William, “Pricing and Resource Allocation in Transportation and Public Utilities”, *The American Economic Review*, Vol. 53, No. 2, Papers and Proceedings, May 1963, p. 452.

Australia's major cities and "projected to increase substantially" over the next decade.¹⁴

However, the Commonwealth Government appears determined to minimise its responsibility for traffic congestion. The clear message from the *AusLink White Paper* is that state and local governments are expected to bear most of the responsibility for tackling congestion. Commonwealth interest in congestion appears to be confined mainly to roads serving airports, ports and other centres of inter-modal activity.¹⁵

The *AusLink White Paper* advised state and local governments to fund public transport and congestion-alleviating improvements to road capacity from their own revenue sources or to invite private sector provision of toll-roads.¹⁶ The document also suggested that traffic congestion and its adverse economic effects could be addressed via an increasing emphasis on congestion pricing.¹⁷ However, the Commonwealth Government avoided responsibility for implementation of such a regime.

The Commonwealth Government's 2005-06 budget papers criticised state governments for not implementing congestion pricing.¹⁸ But, the apparent political unpalatability of introducing congestion charges on top of fuel excise/customs duty was not addressed. It is disappointing that the Commonwealth did not offer to reduce fuel or income tax to make room for, and thereby improve the political palatability of state or local government congestion charges.

*"So, through the Budget Papers, the Federal Government endorses a bold new approach to reform. But it's floated safe in the knowledge that other governments would have to implement it."*¹⁹

Nicholas Gruen (2005), Visiting Economic Fellow,
Melbourne and Australian National Universities

Commonwealth avoidance of responsibility for serious urban congestion is poor national economic policy. Apparently, the Commonwealth Government perceives it to be good politics.

Metropolitan and other large urban areas are the major centres of economic activity in the Australian economy. As well as clogging roads, traffic congestion chokes economic growth, by reducing productivity of the workforce and capital, and by raising costs of transporting people and goods. This is an important national

¹⁴ Commonwealth of Australia, *AusLink White Paper: Building Our National Transport Future*, Canberra: Department of Transport and Regional Services, June 2004, pp. 10-11.

¹⁵ *Ibid*, p. xi.

¹⁶ *Ibid*, pp. 9, 13-14, 22-23, 33.

¹⁷ *Ibid*, p. 11.

¹⁸ Commonwealth of Australia, *Budget Strategy and Outlook 2005-06*, 2005-06 Budget Paper No. 1, Canberra, 10 May 2005, p. 4-15.

¹⁹ Gruen, Nicholas, "Welsher's Guide to the Arcane Art of Wedge Politics", *The Courier-Mail*, 18 May 2005.

economic policy issue. It should be addressed in a new round of Commonwealth-led microeconomic and public sector reform.

Commonwealth neglect of urban traffic congestion is linked to its failure to address adequately the serious vertical intergovernmental fiscal imbalance (vifi) problem afflicting Australia's federal system of government.

Vifi refers to a mismatch between revenue raising capacity and expenditure responsibilities of different levels of government in a federal system. In Australia, vifi is severe because the Commonwealth Government collects tax revenues far in excess of expenditures required to meet Commonwealth responsibilities under the Australian constitution, while state and local government tax revenues fall far short of expenditures required to address their responsibilities, such as roads, health and education.²⁰

Historically, the Commonwealth has chosen to deal with vifi by providing:

- general purpose grants, like GST Revenue Grants and before that Financial Assistance Grants; and
- specific purpose grants, like *AusLink* road grants.

These grants have partly covered the gap between tax raising capacity and expenditure responsibilities of sub-national governments. This has helped to mask fiscal imbalance, but has left various issues and the cause of the problem unresolved.

Various unresolved issues include:

- over-allocation of government expenditures to Commonwealth functions and pork-barrelling activities, and under-allocation to state and local government responsibilities;
- over-reliance by states on taxes that are narrowly-based, relatively inefficient (more likely to cause misallocation of resources) and/or incapable of maintaining revenue as a proportion of gross domestic product without increases in tax rates;
- state and local governments preferring to bleat for Commonwealth funds rather than fully exploiting their more efficient tax bases and charging mechanisms, particularly those relating to land, mineral and energy resources, water and payrolls;
- further misallocation of resources (inefficiencies) because recipients of intergovernmental grants do not have to bear the odium of the taxes required to fund the grants and are not fully accountable to taxpayers for spending decisions in respect of grants received;
- attempts to shift blame and responsibilities in both directions.

²⁰ Collins, David, *The GST and Federal-State Financial Relations: A Personal Assessment after Four Years Operation of the Intergovernmental Agreement*, Australian Tax Research Foundation, August 2004; Quiggin, John, *Untangling the Web of Commonwealth/State/Local Government Funding – What Did Your GST Buy?*, address to Infrastructure First plenary session, HIA Home and Building Expo, 26 May 2005; Grewal, Bhajan, *Vertical Fiscal Imbalance in Australia: A Problem for Tax Structure, Not for Revenue Sharing*, Centre for Strategic Economic Studies, Victoria University, Melbourne, March 1995.

The under-funding of roads and the allocation of federal excise/customs duty on automotive fuels help illustrate the problem of vifi and its adverse consequences. National Network roads in Queensland require capital expenditure of about \$8.8 billion to lift them to a reasonable standard, but Commonwealth *AusLink* funding for capital expenditure on such roads over the five-year period to 30 June 2009 is less than \$1.6 billion. Meanwhile, the Commonwealth collects \$14 billion annually from fuel excise and customs duty throughout Australia. Less than \$2.25 billion or 16 per cent is provided to state and local governments for roads.

*“The rights of self-government of the States have been fondly supposed to be safeguarded by the Constitution. It left them legally free, but financially bound to the chariot wheels of the central government. Their need will be its opportunity.”*²¹

Alfred Deakin (1902), Commonwealth Attorney-General and later Prime Minister

Because the vifi problem is complex and not widely understood, the Commonwealth has been able to mislead the public regarding the effects of its policy of providing GST Revenue Grants to the states from July 2000.

The extent of vifi is greater post-GST than pre-GST.²² Because GST is a Commonwealth controlled and administered tax and its implementation was accompanied by the removal of a number state taxes, with removal of others scheduled, the effect has been to reduce the proportion of tax revenues raised by the states and increase the proportion collected by the Commonwealth. However, the inefficiencies associated with greater vifi would have been ameliorated to some extent by replacement of some narrowly-based, inefficient taxes with a broadly-based relatively efficient tax, GST.²³

Suggestions by the Commonwealth of a GST revenue bonanza for the states are misleading.²⁴

Nett GST receipts for all states except New South Wales are expected to exceed the minimum amounts guaranteed by the Commonwealth for the next four years.²⁵ However, the guaranteed minimums were based on foregone financial assistance grants and foregone state tax revenues with a reduction for any state tax revenue growth dividend deemed to have resulted from the Commonwealth’s taxation reforms.²⁶ It is clear the guaranteed minimums were not designed to make a serious

²¹ Deakin, Alfred, “From our Special Correspondent, Sydney”, *Morning Post* (London), 12 May 1902.

²² Collins, David, op cit, p. 20; Quiggin, John, op cit, p. 3; Stone, John, “Howard’s Great Betrayal”, *The Australian*, 18 April 2005.

²³ Collins, David, op cit, pp. 19-20.

²⁴ Quiggin, John, op cit, p. 2.

²⁵ Commonwealth of Australia, *Federal Financial Relations 2005-06*, 2005-06 Budget Paper No. 3, 10 May 2005, p. 17.

²⁶ Commonwealth of Australia, *A New Tax System (Commonwealth-State Financial arrangements) Act 1999*, Schedule 2 - *Intergovernmental Agreement on the Reform of Commonwealth-State Financial Relations*, 1 July 1999, p. 9.

effort to address the under-funding of state functions. These guaranteed minimums implied a continuing decline of state revenue relative to GDP.²⁷

Analysis of tax data and GST Revenue Grants to the states from 2000-01 shows that Commonwealth revenue less GST has grown more strongly than GST Revenue Grants to the states and those grants plus state taxation revenue. Growth of Commonwealth income tax revenue has been particularly strong. It seems the Commonwealth has been the main beneficiary of the tax revenue bonanza.

A genuine attack on vifi and its adverse economic consequences would require the Commonwealth Government to allow the states direct access to tax bases sufficient to meet the states' responsibilities on an ongoing basis. This transfer of taxation capacity would be accompanied by the unwinding of most Commonwealth grants programmes for other levels of government.

Income tax is an example of a growing tax base to which the states could be allowed direct access. It would not require a constitutional amendment, because the states already have constitutional power to levy income tax. In the past it has not been politically palatable to exercise that power, while the Commonwealth continues to dominate the income tax base as it has since taking over state income taxes during World War 2 under wartime powers. State access could be facilitated by cuts in Commonwealth income tax rates to make room for state income taxes.

While the states could not access commodity tax bases like GST and fuel excise/customs duty without a constitutional amendment, the Commonwealth could make room for and facilitate congestion-charges and road-damage charges. It could legislate to allow offsetting reductions in the rate of excise and customs duty on fuel in any state which implements comprehensive charging schemes to deal with congestion created by all vehicles on busy roads at peak times and road damage caused by heavy vehicles. Although the states have constitutional power to levy such charges, they have considered it to be politically unpalatable to exercise that power while the Commonwealth continues to levy a high rate of fuel tax on road users.

Substitution of road charges for fuel tax would yield a "quadruple dividend". Congestion and road damage charges would directly improve the efficiency of resource use. Further economic efficiencies would arise from the displacement of fuel tax by much more efficient charges. The effective transfer of resources from the Commonwealth to other governments would facilitate provision of congestion-alleviating facilities to complement congestion charges. In addition, vifi and associated inefficiencies would be reduced.

Unfortunately, instead of making a concerted attack on the problems of urban traffic congestion and vifi, the Commonwealth Government is trying to walk away from the former, and pretending it has solved the latter. In the meantime, Commonwealth ministers have been advising the states to use their GST Revenue Grants "bonanza", which is more myth than reality, to fix congested roads, as well as every other infrastructure deficiency for which the states have constitutional responsibility, but

²⁷ Quiggin, John, op cit, p. 2.

which only the commonwealth has adequate tax capacity to resolve. Economically sensible policy has taken a backseat to politics.

Congestion is a problem of national economic importance. It requires a national solution. An effective national solution will require a simultaneous attack on vifi. As prominent economist Nicholas Gruen commented in the context of a critique of the Commonwealth Government's attitude to congestion charges and vifi, "we need national leadership – not passing the buck."²⁸

4. Queensland Government and BCC Anti-Congestion Policies

4.1 Summary of Strategies

Queensland Government and Brisbane City Council (BCC) anti-congestion policies for Brisbane are focused on getting single occupant vehicles off radial roads serving major activity centres, particularly the central business district (cbd).

A key strategy is deliberate restriction of capacity of radial roads to frustrate motorists into switching to other modes. The strategy has two elements:

- not building more radial road capacity; and
- conversion of general traffic lanes to transit lanes on radial roads, particularly after provision of by-pass road capacity.²⁹

But, both governments favour provision of by-pass and ring roads to divert cross-city traffic from radial roads to and from the cbd.

BCC's *TransApex* policy refers to a dearth of by-pass and ring-roads as a serious deficiency of Brisbane's transport infrastructure. The policy proposed major inner-suburban by-pass and ring-road/river crossing links.³⁰

The State Government's *South East Queensland Infrastructure Plan and Program 2005-2026 (SEQIPP)* identified three "strategic transport needs" for the greater Brisbane area. They included "orbital road networks that link centres outside the inner city, reduce traffic congestion and provide a sound basis for future traffic management." SEQIPP noted, "by-pass routes for more congested road links and areas are needed."³¹

The Queensland Government's *South East Queensland Regional Plan 2005-2026*, which is complemented by *SEQIPP*, stated, "orbital road networks and new links that

²⁸ Gruen, Nicholas, op cit.

²⁹ Queensland, *Transport 2007: An Action Plan for South East Queensland*, Brisbane: Queensland Transport, April 2001, pp. 6, 13, 20, 24, 74; Brisbane City Council, *TransApex Prefeasibility Report*, Brisbane, March 2005, pp.ix , xiii, 7, 22, 25-26, 29, 38, 41, 51-52; Brisbane City Council, *Transport Plan for Brisbane 2002-2016*, Brisbane, September 2003, pp. 38-46.

³⁰ Brisbane City Council, *TransApex Prefeasibility Report*, op cit, pp. viii-xvi, 36; Brisbane City Council, *Project TransApex*, Brisbane, August 2004; Liberal Party, *Moving Brisbane*, Brisbane, May 2003.

³¹ Queensland, *South East Queensland Infrastructure Plan and Program 2005-2026*, Brisbane: Office of Urban Management, April 2005, p. 13.

connect centres are needed to reduce traffic congestion and manage growth.”³² With respect to the greater Brisbane area, the document advocated investigation of “quality orbital road systems to bypass major road congestion points” and to “support connectivity” of centres within that urban area.³³ Both governments favour a western by-pass of Brisbane.³⁴

But, *TransApex* links and an upgrade of the Gateway Motorway, which is an eastern by-pass road, will be tolled to fund construction and operation. The Queensland Transport and Main Roads Minister indicated that if a western by-pass, if built, would be tolled.³⁵ It is unclear whether or not other Brisbane orbital roads that might be built in future would be tolled.

Tolls and avoidance of improvements to roads serving major activity centres facilitate BCC’s and Queensland Government’s plans to reallocate government funds to provision of heavy public transport subsidies, which they consider essential for combating congestion. Indeed, public transport subsidies constitute the centrepiece of the Queensland Government’s anti-congestion policy. Although the *TransApex* package is the central focus of BCC’s policy for tackling congestion, capital and operating subsidies for public transport are also very important aspects of the policy.

Figures extracted from SEQIPP indicate that around \$6000 million or 60 per cent of proposed government capital expenditure on land transport in metropolitan Brisbane over the next 20 years is effectively capital subsidies for public transport. This includes the proportion of government and private sector road spending to be offset by re-allocation of road space “freed-up” by ring and by-pass roads to dedicated lanes for buses and other high occupancy vehicles.

Queensland Government and BCC budget papers indicate that operating subsidies for public transport are substantial, with the state government alone contributing 31 cents per passenger kilometre to subsidise *Citytrain* operations and 12 cents per passenger kilometre to BCC and private bus operators in the Brisbane metropolitan area.³⁶

The *South East Queensland Regional Plan* proposed to support public transport not only with higher subsidies, but also through:

- concentration of major employment and other trip generating activities around existing and new “regional activity centres”;
- higher residential densities involving infill and redevelopment in existing urban areas around existing “regional activity centres” and public transport nodes and along public transport corridors, facilitating “transit oriented development”;

³² Queensland, *South East Queensland Regional Plan 2005-2026*, Brisbane: Office of Urban Management, June 2005, p. 109.

³³ *Ibid*, p. 115.

³⁴ Queensland, *SEQIPP*, op cit, pp. 13, 40-41; Queensland, *South East Queensland Regional Plan*, op cit, pp.115-117; Liberal Party, op cit.

³⁵ Paul Lucas, Minister for Transport and Main Roads, verbal communication at stakeholder briefing on transport aspects of *South East Queensland Infrastructure Plan and Program*, 27 April 2005.

³⁶ Queensland, *Ministerial Portfolio Statement: Minister for Transport and Main Roads*, 2005-06 State Budget, Brisbane, May 2005, p. 1-35; Brisbane City Council, *Program 7 – Moving Brisbane, 2005-06 Brisbane City Council Budget*, Brisbane, 8 June 2005, pp. 114, 127-128.

- development of new residential areas at densities that support public transport services.³⁷

Both the Queensland Government and BCC support information programmes to induce car drivers to change transport modes.

BCC and the Queensland Government have proposed measures to increase the cost of finding and occupying parking spaces to discourage driving to the cbd. These include restrictions on the supply of on-street and off-street parking in inner-city areas, and levies on off-street parking spaces.³⁸

Both Governments have acknowledged that congestion charges would be an effective anti-congestion device, but shied away from adoption of this measure because of concerns about a political backlash. Further consideration was deferred to ascertain the effectiveness of existing strategies.³⁹

Queensland Government and BCC anti-congestion strategies have been assessed in subsequent sub-sections. Congestion pricing has been analysed in section 5.

4.2 Strategy of Not Increasing Radial Capacity

The Queensland Government and BCC are opposed to increases in road capacity serving major activity centres, particularly the Brisbane cbd. On the basis of the “induced demand” theory, they have formed the view that increasing radial road capacity won’t alleviate congestion.

The induced demand theory indicates that adding road capacity to serve major activity centres would induce greater use of that capacity, quickly restoring congestion, suggesting that such investment is futile, self-defeating and wasteful. The induced demand theory has spawned oft-repeated clichés such as, “You can’t build your way out of congestion” and “Build it and they will come”.

The Queensland Government and BCC have not only adopted these views, but also have jumped to the conclusion that the converse applies, that is, not increasing capacity will help tackle congestion.

The induced demand theory and the conclusions Queensland Government and BCC have derived from it are seriously flawed. The result has been poor urban transport policy.

The induced demand theory neglects benefits provided by additional capacity. Greater use of an expanded road means that benefits have accrued to users responding to the increase in capacity, other drivers representing population increases, and

³⁷ Queensland, *South East Queensland Regional Plan*, op cit, pp.12, 65, 71, 75, 107-108.

³⁸ Queensland, *Transport 2007*, op cit, pp.42-43; Brisbane City Council, *Transport Plan for Brisbane*, op cit, pp. 31-32.

³⁹ Queensland, *Transport 2007*, op cit, pp. 42-43; Brisbane City Council, *Transport Plan for Brisbane*, op cit, p. 31.

travellers remaining on other routes and modes that have become less crowded. Consequently, restoration of congestion levels should not be interpreted as failure.⁴⁰

The induced demand theory fails to recognise the distinction between redistribution of travel movements within an area in the short term, and increases in travel demand in the area in the long-term, such as those arising from attraction of businesses and people to the area. Road users attracted to an expanded road from an alternative route, other travel times, and other transport modes represent redistribution of existing demand in the short term, not additional regional demand. Therefore, users of the expanded road at peak times and those persisting with other routes, times and modes must all be better-off or at least no worse-off than previously.⁴¹

Only attraction of people and businesses to the area and perhaps extra travel by existing residents as a result increased mobility because of the road expansion can properly be described as “induced demand”. Only such long-term effects could conceivably lead to congestion on the expanded road or network congestion as bad as or worse than before the addition to road capacity.⁴² However, the most recent available research indicates that this is highly unlikely.

“Many induced demand studies have suffered from methodological problems that, I believe, have distorted their findings...I contend that most have...typically overstated induced demand effects.”⁴³

Robert Cervero, Professor of City and Regional Planning,
University of California, Berkeley

Robert Cervero analysed effects of 24 freeway expansion projects in California between 1980 and 1994. He found that 6-8 years after motorway expansion 20 per cent of the added capacity had been preserved, 40 per cent had been absorbed by traffic growth arising from population and income growth, 31 per cent had been taken-up as a result of behavioural shifts (redistribution of demand), and 9 per cent because of land-use shifts (genuine “induced demand”).⁴⁴

As well as misrepresenting reality, the induced demand theory ignores the influence of pricing. A properly designed congestion-pricing regime would efficiently ration access to congested roads, offset redistribution and growth of travel following additions to road capacity, and ensure that capital allocated to urban arterial roads and other resources associated with road-use are used efficiently.⁴⁵

⁴⁰ Harvey, Mark and Martin, Lyn, *Road Pricing, Tolls and Anti-Congestion Strategies*, Canberra: Bureau of Transport and Regional Economics, paper to Australian Roads Summit, Sydney, 25 February 2004, fn 1, p. 2; Downs, Anthony, op cit, pp 106-107; Taylor, Brian, “Rethinking Traffic Congestion”, *Access*, No. 21, Fall 2002, p. 13.

⁴¹ Downs, Anthony, op cit, pp.82-84, 104.

⁴² Ibid, pp.84, 104-107.

⁴³ Cervero, Robert, “Are Induced-Travel Studies Inducing Bad Investments?”, *Access*, No. 22, Spring 2003, p. 22.

⁴⁴ Ibid, pp 22-27.

⁴⁵ Ibid, p. 27; Downs, Anthony, op cit, pp. 86-87, 335-338; Harvey, Mark and Martin, Lyn, op cit, pp. 2-4, 6-9; Hau, Timothy, “Congestion Pricing and Road Investment” in Button, Kenneth and Verhoef,

The view that not increasing radial road capacity will relieve congestion is even more flawed than the argument that increasing capacity is wasteful and futile. The apparent rationale is that making driving less attractive by allowing congestion to worsen will induce commuters to switch to public transport.⁴⁶ Undoubtedly, some will switch from driving on busy roads at peak periods to other times, routes and transport modes. That switching softens the pain to some extent. However, it is naive to suggest that letting congestion worsen will reduce it. Anti-car ideology seems to have prevailed over economic logic and commonsense.

“Quixotic endeavours by.....governments to delay the building of freeways and limit the mobility of motorists in order to push them onto public transport reminds me of the opposition of the Duke of Wellington to the introduction of railways. He was opposed to railways, he said, because they would ‘only encourage the common people to move around needlessly’.”⁴⁷

John Cox (2003), transport economist

It is obvious that government opposition to increases in road capacity serving major activity centres is based on flawed theory and ideology. While radial road improvements alone cannot solve the congestion problem, improvements to radial road capacity can play an important role in alleviating congestion, as part of a package of measures of which a congestion-pricing regime is an essential component.

4.3 By-Pass and Ring Roads

A comprehensive system of inner, outer and intermediate ring roads and other by-pass capacity is a critically important element of an effective anti-congestion strategy for the Brisbane metropolitan area, as proposed by RACQ more than 50 years ago.⁴⁸ Such a system would provide alternatives to cross-city traffic, which accounts for about two-thirds of traffic on radial roads to and from the cbd, according to recent Queensland Government and BCC traffic studies.⁴⁹

Both Queensland Government and BCC have acknowledged the importance of by-pass and ring-roads.

BCC is focusing on inner-suburban by-pass capacity. It has already built the Inner City By-Pass. In accordance with its *TransApex* policy, BCC is planning a bridge to extend the Inner City By-Pass and four tunnels involving provision of a mixture of by-pass and radial capacity.

Erik (Eds), *Road Pricing, Traffic Congestion and the Environment*, Cheltenham: Edward Elgar, 1998, p. 41.

⁴⁶ Queensland, *Transport 2007*, op cit, p. 6.

⁴⁷ Cox, John, “Labor stops ‘common people’ people from moving around”, op cit, p. 83.

⁴⁸ RACQ, “Will Brisbane Continue to Suffer Traffic Strangulation?”, *The Road Ahead*, August 1954, p.

14; RACQ, “Brisbane’s Ring Roads of Tomorrow”, *The Road Ahead*, October 1954.

⁴⁹ Brisbane City Council, *TransApex Prefeasibility Report*, op cit, pp. viii, 1, 7, 16.

Unfortunately, the *TransApex* package will still not provide Brisbane with a full inner ring-road system, because some of its components will also double as radial capacity. Another problem is that *TransApex* by-pass roads will have to be accessed from some of the most congested parts of the radial road network, exacerbating congestion on those access roads.

While the *South East Queensland Regional Plan* and *South East Queensland Infrastructure Plan and Program* extolled the virtues of orbital and by-pass roads as a means of alleviating congestion, the plans failed to deliver. The only firm proposals for by-pass roads are a partial upgrade of the Gateway Motorway (an eastern by-pass) and the North-South By-Pass, which is one of BCC's inner-suburban by-pass tunnels. Both will be tolled.

The only other reference to genuine orbital/by-pass links relates to "investigations to improve orbital and by-pass road networks in western Brisbane." This includes a western by-pass, which would complete an outer ring-road system, if properly located. But, if built, it will be tolled.

Neither the Queensland Government nor BCC has plans for an intermediate orbital road network.

*"The RACQ contends that a system of 'ring' roads ranks as one of the most important features of a modern town plan. It is doubted if any city's network could be adequate without such a system. Although conscious of the attendant difficulties of superimposing a system like that on a city already largely developed, it is emphasised that the necessity and urgency of its provision should be realised before it is too late."*⁵⁰

RACQ (1954), *The Road Ahead*

Failure to plan completion of inner, intermediate and outer ring-roads is a major deficiency of the strategy for tackling Brisbane's looming congestion crisis. Tolling of ring-road segments is another serious flaw, as explained in the next sub-section.

The location and capacity of a comprehensive system of by-pass and ring roads is beyond the scope of this paper.

4.4 Toll-Roads

The trend towards making new by-pass and some radial road capacity in the Brisbane area subject to tolls appears to be based on three things:

- the Commonwealth Government's determination to minimise its responsibility for urban traffic congestion and its consequent advice to state

⁵⁰ RACQ, "Will Brisbane Continue to Suffer Traffic Strangulation?", op cit, p. 14.

and local governments to fund congestion-alleviating projects from their own revenue sources or to invite private sector provision of toll-roads;

- BCC's and Queensland Government's plans to reallocate government funds from improvements to arterial road capacity to heavy subsidies for public transport; and
- the assertion that tolls allow provision of roads to be brought forward.

The first factor is a genuine problem. State and metropolitan local governments should tackle it via a concerted political campaign, rather than meekly accept it. If they give-up, the Commonwealth wins. That is unacceptable.

The second position is based on flawed logic, as demonstrated in sub-sections 4.2, 4.3 and 4.5.

The third point is naïve. It is also misleading. Tolls simply make resources available to provide roads. Resources could be made available in three alternative ways to bring forward economically justifiable road investments.

One option is to re-allocate expenditures from other government programs on the basis of social cost/benefit analysis. Then, roads with high benefit/cost ratios would displace government activities with low benefit/cost ratios with a resulting improvement in the allocation of resources. An obvious starting point would be comparative benefit/cost analysis of by-pass/ring-roads and public transport subsidies, because the latter appear to have been based on suspect logic and/or ideology, rather than on economic analysis.

A second option is tax increases. Unlike tolls, these would avoid undermining the congestion-alleviating purpose of the roads (see below), but higher tax rates could cause other adverse economic effects.

A third option is congestion pricing. This would provide the required resources in a much more economically efficient way than taxes or tolls. Governments have chosen to avoid this option despite a very strong case for its implementation, which is outlined in section 5.

It appears our governments have neglected equity and economic efficiency implications of building toll-roads and re-allocating government funds from roads to provision of substantial public transport subsidies. The toll-roads case is discussed in this sub-section. Public transport subsidies are discussed in sub-section 4.5.

Tolls are designed to cover costs of new facilities, including an attractive rate of return on investment. Tolls typically vary with vehicle-type, but not traffic volume.

Tolls are often perceived to be inequitable. There are several reasons for this.

Various motoring taxes already more than fully cover the costs of road-provision. Overall, they also cover external costs of road-use, such as congestion and vehicle

emissions, although tax revenue is less than adequate to do so in congested areas and excessive in other areas.⁵¹

Tolls favour wealthier road-users. Also, tolls are extra imposts on motorists not fortunate to be able to drive in areas with adequate existing road infrastructure, and therefore they discriminate on the basis of geography and history.

A pertinent, important ethical point is that tolls apply to drivers who reduce costs on others by avoiding existing busy roads, and are avoided by those who stay on existing busy roads, adding to congestion and thereby imposing costs on others.

These various equity/ethical objections to tolls could not be easily resolved.

Tolls discourage efficient use of resources. This occurs at peak and off-peak times.

A toll on a new road encourages drivers to stay on existing congested roads. So, the toll undermines the congestion-alleviating potential and efficiency of use of new and existing roads. The higher the toll, the greater is the community welfare loss.

While a toll helps forestall emerging congestion on the toll-road, it simply shifts the problem to un-tolled roads, exacerbating congestion elsewhere.

“Perhaps some indication of the outstanding absurdities that occur in present utility rate (public facility pricing) structures may be worth while in conclusion. For example, in New York a vehicular tunnel was opened a few years ago from the Battery to Brooklyn. Since it is a new facility and undoubtedly much more easy and pleasant to use than the old East River Bridges, it must, forsooth, be made to pay for itself by the imposition of tolls starting at 35 cents, the practical consequence of which is to encourage continued heavy use of the Manhattan Bridge for all trips for which the route is shorter than the tunnel, with the result that the streets near the Manhattan end of the bridge are the scene of some of the worst traffic in the city. Marginal cost considerations would call for the collection of a substantial toll (congestion charge) on the old East River bridges, at least during hours of heavy congestion, and a smaller toll or none at all for the tunnel, even though this might mean that the users of the bridges might be ‘paying for’ the tunnel.”⁵²

William Vickrey (1955), Nobel Laureate in Economic Sciences

⁵¹ Cox, John, *Refocusing Road Reform*, Melbourne: Business Council of Australia, 1994, p. 150; Pender, Howard, *Taxing Cars: Fleecing the Fleet or Subsidising Smog?*, Sydney: Australian Tax Research Foundation, 1999, p. 48.

⁵² Vickrey, William, “Some Implications of Marginal Cost Pricing for Public Utilities”, *The American Economic Review, Papers and Proceedings*, Vol. 45, No. 2, May 1955, p. 619.

BCC plans to change general traffic lanes to high occupancy vehicle lanes on existing radial roads as *TransApex* links are completed.⁵³ The Queensland Government intends to apply the same policy after construction of *TransApex* projects and other orbital roads.⁵⁴ Tolls on new by-pass roads will encourage drivers to stay on facilities with reduced capacity.

At off-peak times, when the social cost of an additional vehicle using a link is zero, a toll will induce some drivers to choose a less convenient alternative. The efficiency of use of the road system is thereby reduced. The higher is the toll, the greater is the resulting welfare loss to the community.⁵⁵

Public Private Partnerships (PPPs), as proposed for BCC's North-South By-Pass, add to shortcomings of toll-roads. The causes are misallocation of risk, and conflict between the congestion-alleviation goal of governments and the profit objective of private operators, both of which adversely affect the efficiency of resource-use.

The main argument in support of PPPs is that they supposedly allow an optimal allocation of activities and associated risks between the public and private sectors in accordance with capacity to manage them, with resulting social gains. This is assumed to result in shifting of risks from the public to the private sector. This argument is dubious in the case of toll-roads for two reasons.

First, responsibility for road design, construction and resulting performance could be shifted to private groups through a design and construct contract that includes performance guarantees. A PPP is not required.

Second, governments are much better placed than the private sector to manage road demand risk. The reason is that the public sector controls the rest of the road network and the public transport network, and is responsible for land use regulation, all of which critically influence demand.⁵⁶

In any event, private entities will participate in PPPs only if adequately protected from and/or compensated for risk. Therefore, they demand agreements protecting them from competition and restricting government anti-congestion activities, because toll-road profitability depends on continuing congestion on competing parts of the road system. Consequently, efforts by governments to shift risks to the private sector through road PPPs mean more congestion on existing roads, and higher tolls to improve returns to private investors, as they seek protection from or compensation for risk-bearing.

PPP agreements impede transition to economically efficient congestion charges and infrastructure provision. The more PPP toll-roads there are in the network, the more difficult the transition. Typical PPP terms of 30 to 80 years create longstanding impediments to effective congestion-alleviation.

⁵³ Brisbane City Council, *TransApex Pre-feasibility Report*, Brisbane, March 2005, p. 7.

⁵⁴ Queensland, *Draft TransLink Network Plan*, Brisbane: Queensland Transport, February 2005, pp. 39, 85.

⁵⁵ Walters, Alan, *The Economics of Road User Charges*, op cit, pp. 15-21.

⁵⁶ Quiggin, John, "Economic Briefing on Public Private Partnerships: New Rationale, Same Old Problems", *The Australian Financial Review*, 8 August 2005, p. 21.

If toll-roads are government-owned, like the Gateway Bridge and its proposed twin, congestion-alleviation could (but not necessarily would) take precedence over high returns on capital. Also, future transition to efficient anti-congestion strategies could be facilitated. But, in the case of PPP toll-roads, such a compromise is inconceivable. PPP toll-roads and efficient congestion-alleviation are incompatible. In this context, PPP could refer to “pursuit of private profit” and “poor public policy”.

The proponents of road PPPs seem to fall into two categories: those pursuing profit opportunities, and others promoting an ideological position. Their arguments are not supported by economic analysis.

Fifty years ago, William Vickrey argued that applying tolls to roads built to alleviate congestion, while allowing free access to congested roads, was an “outstanding absurdity” of public policy. It still is, particularly when PPPs are involved. Vickrey explained that applying congestion charges on busy roads at peak times and using the money to provide toll-free by-pass roads was the appropriate policy.⁵⁷ This policy is discussed in section 5.

4.5 Public Transport Subsidies

Public transport subsidies are central to the Queensland Government’s anti-congestion policy and an important aspect of BCC’s strategy for tackling congestion. The subsidies take three forms:

- operating subsidies for Brisbane Transport and other bus operators servicing the Brisbane metropolitan area;
- capital expenditure on bus-ways, bus lanes, railway lines, buses and railway rolling stock; and
- capital transfers via re-allocation of general road space to buses and other high occupancy vehicles.

The capital items should be treated as subsidies, because the cost is not recovered from users and access is not open. In contrast, motoring taxes fully cover social costs of road-provision and use overall,⁵⁸ and public roads are accessible by all.

Strangely, Queensland Government and BCC policy documents refer to provision of huge capital subsidies (60 per cent or \$6000 million of government investment in Brisbane area land transport over 20 years) and heavy operating subsidies (\$520-\$730 million per year) as a “balanced program of investment between transport modes”⁵⁹ or a “balanced strategy”, even though public transport currently caters for just 7-8 per cent of land trips in the Brisbane metropolitan area.⁶⁰

⁵⁷ Vickrey, William, “Some Implications of Marginal Cost Pricing for Public Utilities”, op cit, p. 619.

⁵⁸ As explained when discussing toll-roads, motoring taxes more than cover the full costs of road-provision, and overall, they also cover external costs of road-use, such as congestion and vehicle emissions. However, tax revenue is less than adequate to do so in congested areas and excessive in other areas. See Cox, John, *Refocusing Road Reform*, op cit, p. 150; Pender, Howard, op cit, p. 48.

⁵⁹ Queensland, *SEQIPP*, op cit, p. 9.

⁶⁰ Brisbane City Council, *Transport Plan for Brisbane*, op cit, p. 9.

Provision of heavy subsidies to public transport is not unique to greater Brisbane. In most United States and many European cities, public transport fares currently cover less than half of operating costs and make no contribution to capital costs associated with public transport. Government subsidies cover the very large gap.⁶¹

Are public transport subsidies economically justifiable? A few arguments warrant consideration.

Economies of scale in public transport have been cited as a justification for subsidies. Efficient allocation of resources requires pricing equal to marginal social costs in all markets, but economies of scale mean that marginal cost is lower than average cost, with the result that losses are incurred if marginal cost pricing is adopted. Therefore, subsidies are required to permit marginal cost pricing.⁶²

While economies of scale associated with operating a fleet are exhausted with just a few vehicles,⁶³ they could derive from large fixed costs and spare capacity associated with lumpy investments in exclusive facilities like railway lines, bus-ways and bus lanes.⁶⁴ But, after analysing various studies of bus and passenger-rail systems, Jose Gomez-Ibanez concluded that such economies of scale are insufficient to justify large subsidies to public transport.⁶⁵

Herbert Mohring identified another source of economies of scale in public transport, which he called “economies of density”. He explained that an increase in demand for service that leads to full capacity induces provision of additional services, which reduces waiting times between services. This reduces the effective marginal cost of public transport use for all passengers. The declining marginal social of public transport use associated with “density economies” justifies subsidies, which according to Herbert Mohring would be “substantial”.⁶⁶ However, the magnitude of subsidies based on economies of density is subject to debate.⁶⁷

An argument derived from the economic theory of the second-best⁶⁸ has been suggested as a justification for additional subsidies for public transport. It starts with the observation that driving in congested conditions is priced below marginal social cost. This occurs because fuel and other motoring taxes are not closely linked to use of busy roads at peak times and associated congestion costs. The argument explains

⁶¹ Gomez-Ibanez, Jose, “Pricing” in Gomez-Ibanez, Jose, Tye, William and Winston, Clifford, *Essays in Transportation Economics and Policy: A Handbook in Honour of John Meyer*, Washington, DC: Brookings Institution, 1999, chapter 4, p. 111; Downs, Anthony, op cit, p. 144.

⁶² Gomez-Ibanez, Jose, op cit, pp. 99-100, 112; Downs, Anthony, op cit, p. 144; Centre for International Economics, *Subsidies and the Social Costs and Benefits of Public Transport*, Canberra: Centre for International Economics, March 2001, pp. 35-36.

⁶³ Mohring, Herbert, “Congestion” in Gomez-Ibanez, Jose, Tye, William and Winston, Clifford, *Essays in Transportation Economics and Policy: A Handbook in Honour of John Meyer*, Washington, DC: Brookings Institution, 1999, chapter 6, p. 188.

⁶⁴ Gomez-Ibanez, Jose, op cit, pp. 100, 112; Centre for International Economics, op cit, pp. 35-36.

⁶⁵ Gomez-Ibanez, Jose, op cit, pp. 112-113.

⁶⁶ Mohring, Herbert, op cit, pp. 188-189; Mohring, Herbert, “Optimisation and Scale Economies in Urban Bus Transportation”, *The American Economic Review*, Vol. 62, No. 4, September 1972, pp. 591-604.

⁶⁷ Gomez-Ibanez, Jose, op cit, pp. 113-114.

⁶⁸ Lipsey, Richard and Lancaster, Kelvin, “The General Theory of the Second Best”, *Review of Economic Studies*, Vol. 24, No. 1, 1956-57, pp. 11-32.

that if it is not possible to implement “first-best” pricing equal to marginal social cost, including congestion costs, the efficiency of resource allocation may still be improved, but to a lesser extent, by subsidising public transport, which is a substitute for driving. The idea is to lower the effective price of public transport patronage relative to car use and thereby induce less road-use at congested locations and times. The size of the “second-best” subsidy would depend on the relative sensitivity of car and public transport use to the effective price of public transport services, the extent of underpricing of car use compared to marginal social cost, and the relative magnitude of car and public transport usage.⁶⁹

The available evidence suggests that in a medium-sized metropolitan area, such as Brisbane, where the sensitivity of car-use to the effective price of public transport services appears to be very low, and car use is relatively high, significant subsidies to public transport to compensate for underpricing of car use are not justified by “second-best” considerations.⁷⁰

One reason why subsidising public transport is only “second-best” is that it increases the attraction of public transport relative to all alternatives. Some increase in public transport patronage will be at the expense of walking, cycling, driving off-peak, and driving on less congested routes. Another reason is that subsidies tend to increase the overall demand for travel, including peak period trips. These effects reduce the efficiency of resource-use.

As economic analysis and overseas experience have shown, public transport subsidies are relatively ineffective and expensive anti-congestion devices. Economic modelling at Resources for the Future indicates that subsidising public transport provides only a tenth to a quarter of the gains to the community from a properly designed system of congestion charges.⁷¹ A detailed study in the United States of capital costs to governments (as distinct from social costs) of moving people by freeway, bus and rail found that freeways on average are 14 times more cost-effective than rail and 8 times more cost-effective than bus transport.⁷² Enormous outlays are required to obtain substantial cuts in the proportion of peak period trips by car.⁷³ Indeed, governments may need to cover all of the operating and capital costs of public transport and pay people an appreciable amount to use the service.⁷⁴

Bigger public transport subsidies mean higher taxes and cuts in government programs. Higher taxes mean greater economic damage from taxation. This varies with the type of tax, but is typically substantial. Cuts in valued government programs mean less efficient use of resources.

⁶⁹ Gomez-Ibanez, Jose, op cit, p. 114; Centre for International Economics, op cit, pp. 15, 33-34.

⁷⁰ Gomez-Ibanez, Jose, op cit, pp. 114-117.

⁷¹ Parry, I.W.H., *Comparing the Efficiency of Alternative Policies for Reducing Traffic Congestion*, RFF Discussion Paper 00-28, Washington, DC: Resources for the Future, June 2000, pp. 16-17.

⁷² O’Toole, Randall, *Great Rail Disasters: the Impact of Rail Transit on Urban Livability*, Denver: Independence Institute and Reason Public Policy Institute, February 2004, pp. 7, 15.

⁷³ Hensher, David, *Urban Public Transport Delivery in Australia: Issues and Challenges in Retaining and Growing Patronage*, Bureau of Transport and Regional Economics Transport Policy Colloquium, Canberra, 3 October 2002, pp.1-3; Downs, Anthony, op cit, pp. 120-122, 138-141, 345-346.

⁷⁴ Mohring, Herbert, “Congestion”, op cit, p. 192.

In any event, the “second-best” argument for public transport subsidies depends critically on the assumption that it is not possible to implement “first-best” congestion pricing that equates to the effective price of car use in congested conditions. But, a reasonable approximation to such pricing is now feasible (see section 5). Therefore, pursuit of “second-best” solutions does not make economic sense.

But, governments afraid of the political problem of selling congestion charges to the electorate, and public transport zealots wanting to shift the masses from cars to buses and trains for ideological reasons are quick to argue that if heavily subsidised, extensive public transport systems had not been built, users of those facilities would now be exacerbating congestion by driving in peak-periods at busy locations.

This simplistic argument has several flaws. First, rather than shift to peak-period driving on the busiest roads, some commuters would shift to other times, various other routes, and alternative transport modes. Second, peak periods would tend to lengthen rather than become more intense. Third, the huge amounts of capital and operating subsidies poured into public transport could have been spent in alternative ways to alleviate congestion. Fourth, governments may have considered congestion charges sooner if they had not been misled into believing or hoping that public transport subsidies would solve congestion.

It seems the oft-repeated cliché used against road-building, “You can’t build your way out of congestion”, applies with great force to provision of public transport facilities. But, its companion anti-road cliché, “Build it and they will come” does not. Heavily subsidised public transport facilities have not attracted sufficient numbers from cars to make a significant dent in congestion.

Proponents of public transport subsidies, including BCC and Queensland Government politicians and advisers, rely heavily on fear of congestion charges and the induced demand theory to maintain their zeal for public transport subsidies. But, both congestion charges and the induced demand theory undermine the case for public transport subsidies.

Ironically, congestion charges would effectively manage induced demand for road space as explained above and in section 5. Also, congestion charges would encourage drivers to switch to public transport boosting its market share and viability.

“Rather than mass transit (public transport) being the solution to congestion, perhaps congestion pricing – a measure often viewed as an alternative to transit – could be transit’s saviour.”⁷⁵

Kenneth Small (2005), Professor of Economics, University of California, Irvine (transport, urban and environmental economics specialist)

The induced demand theory, which is such an article of faith for public transport zealots, is just as applicable to public transport subsidies as to increases in road capacity serving major activity centres. Attracting patronage to public transport

⁷⁵ Small, Kenneth, “Road Pricing and Public Transit: Unnoticed Lessons from London”, *Access*, No. 26, Spring 2005, p. 10.

temporarily eases congestion on radial roads. This could lure passengers back from public transport to driving on these roads, and attract travellers from alternative routes, travel times and modes. So, congestion tends to be restored despite more subsidies to public transport.⁷⁶

Public transport subsidies tend to benefit middle and higher income groups. They favour those who can afford to live in close proximity to the better public transport services and work in the cbd. Subsidised improvements to facilities and services deliver windfall gains to residents near train and bus stations.⁷⁷ Others have to pay through higher taxes and fewer government services.

In summary, public transport subsidies perform poorly in respect of economic efficiency and equity criteria. It seems that public transport subsidies have been based on misplaced ideology and supported by political “spin”, rather than based on evidence and economic analysis.

But, public transport services, as distinct from subsidies, remain an important component of a complementary package of measures to tackle congestion. There are simply more efficient and equitable ways of getting people out of cars on busy roads at peak times than through heavy public transport subsidies.

4.6 Regulatory Changes to Increase Residential Densities and Support Transit Oriented Development

The *South East Queensland Regional Plan* placed considerable emphasis on:

- concentration of major employment and other trip generating activities around existing and new “regional activity centres”;
- higher residential densities involving infill and redevelopment in existing urban areas around existing “regional activity centres” and public transport nodes, and along public transport corridors, facilitating “transit oriented development”; and
- additional capital subsidies for public transport.⁷⁸

The plan also proposed development of new residential areas at densities that support public transport services, but this was given much less prominence.⁷⁹

The *South East Queensland Regional Plan* did not adequately explain how the linked strategies of higher density and additional public transport subsidies would improve “sustainability”, which is supposed to be “the overriding intent of the Regional Plan”.⁸⁰ Also, the plan did not indicate how these strategies would address economic efficiency and equity objectives, which underpin the principle of “sustainability”.

⁷⁶ Downs, Anthony, op cit, p. 121; Taylor, Brian, op cit, p. 13.

⁷⁷ Cox, John, “Labor stops ‘common people’ people from moving around”, *The Australian Financial Review*, 20 June 2003, p. 83; Gomez-Ibanez, Jose, op cit, p. 117; Centre for International Economics, op cit, p. 52.

⁷⁸ Queensland, *South East Queensland Regional Plan*, op cit, pp.12, 65, 71, 75, 107-108.

⁷⁹ Ibid, p. 12.

⁸⁰ Ibid, p. 22.

It not clear from the *South East Queensland Regional Plan* whether or not higher residential densities and larger public transport subsidies are expected to alleviate traffic congestion as a by-product of pursuing “sustainability”. Presumably they are meant to do so, but the document does not suggest how effective they might be.

A major justification offered for higher densities was to support public transport. Higher subsidies for public transport seemed to be considered justifiable to support higher densities.⁸¹ In effect, two potential strategies (means to an end) were converted into objectives (ends) and justified by circular reasoning.

Various studies have confirmed that clustering high-density housing near access points to good public transport services (transit oriented development) and raising the commercial density of central business districts and other major activity centres (regional activity centres) are likely to increase public transport usage. Also, commercial density increases seem to be more important than higher residential densities. The studies also reveal that improving public transport serving residential areas and major activity centres encourages increases in density in both locations.⁸²

Increased demand for public transport arising from higher densities would allow operators to capture economies of scale/density with the result that fares could be lowered or subsidies reduced. Better public transport services would improve the viability of transit oriented developments and regional activity centres.

However, there are important provisos regarding the support and economies that transit oriented developments and public transport facilities can provide to each other.

First, political problems may arise because of local resistance to higher density development in existing residential areas, particularly because density has to be very high to provide a substantial boost to public transport use.⁸³

Second, transit oriented developments must include substantial public-access car parking to widen the catchment of the public transport facilities and commercial activities in the development. To avoid detracting from the residential appeal of the development and its attraction to those wishing to walk to the public transport and commercial facilities, car parking has to be provided above or below street-level access to the facilities. But, this would substantially raise the cost of transit oriented developments.⁸⁴

Third, the issue of who bears the cost of upgrading infrastructure in existing residential areas to cope with substantial increases in densities at transit oriented development sites will need to be addressed. A related problem is the potentially higher cost of upgrading or replacing established infrastructure than provision of infrastructure in “greenfields” areas.⁸⁵

⁸¹ Ibid, pp.12, 65, 71, 75, 107-108.

⁸² Downs, Anthony, op cit, pp. 210-213, 227

⁸³ Ibid, pp. 203, 212, 226.

⁸⁴ Ibid, pp. 203, 211-212.

⁸⁵ O’Toole, Randall, “The Folly of ‘Smart Growth’”, *Regulation*, Fall 2001, p. 25; Wood, Alan, “We’re urban sprawlers, so don’t cramp our style”, *The Australian*, 27 April 2004; Commonwealth of

These conflicts help explain why few effective transit oriented developments have been built elsewhere.⁸⁶

Similar problems might be encountered with high-density regional activity centres in established areas.

Even more problematical is the effect of higher densities on traffic congestion. Key issues are the timing of effects and the amount and location of car-use.

Anthony Downs and Brian Taylor explained that significant metropolitan-wide effects will be achievable only in the long-term, because population growth, which underpins housing demand, and new residential development and redevelopment occur only incrementally.⁸⁷ If governments want significant medium-term effects they will need to force the pace of residential re-development to establish transit oriented developments and expand or establish regional activity centres. Significant short-term effects will not be possible.

Even if a much higher proportion of those involved in transit oriented developments and regional activity centres choose to use public transport than elsewhere, the high density of these sites could mean the number of private vehicles on the road nearby could increase significantly. Therefore, local traffic congestion could intensify.⁸⁸

Anthony Downs' analysis and other United States studies surveyed by Downs indicate that the proportion of residents of transit oriented development sites who choose to use public transport is likely to be less than 25 per cent and may be less than 20 per cent. If so, congestion in the vicinity of these sites would certainly intensify.⁸⁹

Intuitively, one would expect an increase in the proportion of public transport usage associated with high density transit oriented developments and regional activity centres to reduce regional congestion. However, Brian Taylor and Anthony Downs suggested there was doubt.⁹⁰

Moderate density metropolitan-fringe residential developments supported by public transport subsidies could be expected to suffer from higher leakage from public transport to cars, than in the case of transit oriented developments, which are more likely to attract public transport users.

Brian Taylor's analysis of density and congestion in United States' cities indicated that higher density, whether in older, central city areas, or in newer outlying areas increases congestion. He explained, "Put simply, vehicle travel decreases more slowly than population density increases, and congestion is the result."⁹¹

Australia, Productivity Commission, *First Home Ownership*, Inquiry Report No. 28, 31 March 2004, p. 136.

⁸⁶ Downs, Anthony, op cit, p. 212.

⁸⁷ Ibid, pp. 201-203; Taylor, Brian, "Rethinking Traffic Congestion", *Access*, No. 21, Fall 2002, p. 14.

⁸⁸ Downs, Anthony, op cit, pp. 399-401.

⁸⁹ Ibid.

⁹⁰ Ibid, p. 401; Taylor, Brian, "Rethinking Traffic Congestion", *Access*, No. 21, Fall 2002, p. 14.

⁹¹ Taylor, Brian, op cit, pp. 14-15.

It is clear that higher densities cannot have a significant effect on metropolitan-wide congestion in the short term or medium term.

It is inevitable that metropolitan-fringe residential developments will need to be supported by good road links to major activity centres and by-pass road capacity.

Key tools for increasing densities - transit oriented developments and regional activity centres - are likely to create local congestion problems that will need to be resolved by strategies other than public transport subsidies, such as road spending or congestion charges. As explained in section 5, congestion charges would not only alleviate these local congestion problems, but also provide incentives that support establishment or expansion of these sites and public transport services associated with them. Instead of teaming such sites with higher public transport subsidies, governments should be linking them with congestion charges, which would support both the high-density sites and better and more viable public transport services.

4.7 Parking Measures

BCC and the Queensland Government have proposed restrictions on the supply of on-street and off-street parking, and flat levies on off-street parking spaces to discourage driving to the cbd and other inner-city areas. These measures are highly imperfect decongestants for several reasons.

First, parking measures would have no effect on through-traffic, which contributes greatly to congestion. Through traffic may actually be encouraged by reduction of traffic that parks in inner-city areas.⁹² Recent traffic studies revealed that vehicles travelling across the city represent about two-thirds of traffic on radial roads to and from the cbd.⁹³

Second, parking measures would not apply to commercial vehicles delivering and collecting goods and people. These vehicles contribute to congestion.

Third, a vehicle contributing to congestion throughout a long trip pays the same via parking measures as one contributing to congestion over a short distance.⁹⁴

Fourth, the proposed parking measures would not alter the price of parking to reflect the timing of entry to and exit from parking spaces and the consequent effects on timing of traffic volume. Such discriminatory pricing is likely to be possible only in the case of parking spaces owned by BCC.

Fifth, measures designed to reduce the future supply of parking spaces in inner city areas will provide windfall gains to owners of existing parking spaces.

⁹² Smeed, R.J. and others, *Road Pricing: the Economic and Technical Possibilities*, Report of a Panel set up by UK Ministry of Transport, London: HMSO, 1964, p. 11.

⁹³ Brisbane City Council, *TransApex Prefeasibility Report*, op cit, pp. viii, 1, 7, 16.

⁹⁴ Smeed and others, op cit, p. 11.

A “second-best” argument for parking measures might be mounted if it is not possible to implement “first-best” congestion pricing. Then, it may still be possible to improve the efficiency of resource-use, but to a lesser extent, by imposing a levy or restricting the supply of parking, which is complementary to car use.

But, a reasonable approximation to “first-best” congestion pricing that equates the effective price of car use in congested conditions is now feasible (see section 5). In that context, “second-best” measures do not make economic sense.

4.8 Information Programmes to Change Travel Behaviour

The Queensland Government and BCC support various schemes to improve the flow of information to car drivers to allow them to make more informed choices between transport modes. Correcting imperfect information regarding economic alternatives would improve the efficiency of resource-use, provided that the social benefits exceed the social costs of the programs.

5. Congestion Charges

5.1 Relevant Government Views on Congestion Pricing

The Commonwealth and Queensland Governments and BCC have recognised that congestion pricing would be an effective anti-congestion device. Indeed, the Commonwealth Government has recommended that state governments implement congestion pricing.

Paradoxically, both Queensland Government and BCC have deferred investigation of congestion charges, pending consideration of the effectiveness of their current anti-congestion strategies.

This paradox can be resolved. Ways of doing so are discussed below.

5.2 Economic Literature on Congestion Pricing

The concept of congestion pricing entered the economics literature in the 1920s via a debate between two prominent economists, Arthur Pigou and Frank Knight.⁹⁵

In the early 1950s, William Vickrey triggered serious investigation of congestion pricing.⁹⁶ Analysis of the concept gathered pace in the 1960s, with notable contributions by Alan Walters, William Vickrey, Herbert Mohring, and the Smeed Committee (including Alan Walters) established by the Ministry of Transport in the

⁹⁵ Pigou, Arthur, *The Economics of Welfare*, London: Macmillan, 1920, p. 124; Knight, Frank, “Some Fallacies in the Interpretation of Social Costs”, *Quarterly Journal of Economics*, Vol. 38, August, 1924, pp. 582-606.

⁹⁶ Vickrey, William, op cit.

United Kingdom.⁹⁷ Subsequent work by various economists further refined the concept of congestion pricing, assessed its economic efficiency and distributional implications, and critically compared it with other anti-congestion measures.⁹⁸

The outcome of this analytical work over the past fifty years is that congestion pricing would:

- alleviate congestion device in a way that improves the efficiency of resource-use in the economy, providing nett social gains;
- reduce congestion to the optimal level, given the available transport infrastructure and existing land uses;
- improve the effectiveness of future transport infrastructure in dealing with congestion;
- facilitate congestion-alleviating land-use changes;
- be an essential component of an efficient package of measures to tackle congestion.

5.3 Proposed Congestion Pricing Regime

In this paper, congestion pricing and congestion charges refer to pricing regimes designed to alleviate congestion by charging for use of roads whenever and wherever they are congested. The charge varies according to the degree of congestion and approximates to the difference between short-run marginal social cost and average variable cost of road-use.

“The theory of marginal cost pricing suggests that taxes (congestion charges) be levied to reduce demand until traffic flow is at a level where private unit cost (with tax) is equal to marginal social cost.”⁹⁹

Sir Alan Walters (1961), prominent British economist,
seminal contributor to theory of congestion pricing

Such a scheme involves considerable price variability. The charge is zero in free flow conditions and rises with congestion. At any particular time, congestion charges vary

⁹⁷ Walters, Alan, “The Theory and Measurement of Private and Social Cost of Highway Congestion”, *Econometrica*, Vol. 29, No. 4, October 1961, pp. 676-699; Vickrey, William, “Pricing and Resource Allocation in Transportation and Public Utilities”, 1963, op cit, pp. 452-465; Smeed, R.J. and others, op cit; Mohring, Herbert, “Urban Highway Investments” in Dorfman, Robert (ed.), *Measuring Benefits of Government Investments*, Washington DC: Brookings Institution, 1965, pp. 231-291; Walters, Alan, *The Economics of Road User Charges*, 1968, op cit; Vickrey, William, “Congestion Theory and Transport Investment”, *The American Economic Review*, Vol. 59, No. 2, Papers and Proceedings, May 1969, pp. 251-260.

⁹⁸ For useful summaries, see Hau, Timothy, *Economic Fundamentals of Road Pricing: A Diagrammatic Analysis*, World Bank Policy Research Working Paper Series WPS 1070, Washington D.C.: The World Bank, December 1992; Hau, Timothy, “Congestion Pricing and Road Investment” in Button, Kenneth and Verhoef, Erik (Eds), *Road Pricing, Traffic Congestion and the Environment*, Cheltenham : Edward Elgar, 1998, pp. 39-78; Mohring, Herbert, “Congestion”, op cit; Gomez-Ibanez, Jose, “Pricing”, op cit; Harvey, Mark and Martin, Lyn, op cit; Downs, Anthony, op cit.

⁹⁹ Walters, Alan, *The Theory and Measurement of Private and Social Cost of Highway Congestion*, op cit, p. 680.

between locations according to differing degrees of congestion. They change over time at a particular location in accordance with differences in congestion between peak, shoulder and off-peak periods of the day.

This type of pricing regime is a much more sophisticated scheme than the simple, inflexible, area or cordon pricing schemes implemented in London, Singapore and three Norwegian cities. While these operating regimes have been very successful in reducing congestion despite their crudeness and inflexibility, the more sophisticated regime outlined and called congestion pricing in this paper should be considerably more efficient in dealing with congestion and improving the efficiency of resource allocation.

Congestion charges are designed to make drivers confront congestion costs they impose on others, inducing them to change their behaviour accordingly. Changes may include alterations to travel times, routes and modes in the short-term. In the longer-term, behavioural changes may involve workplace and residential re-location. Congestion charges reduce delays, fuel-use, vehicle emissions and crash-risks. They facilitate better road system investments and use, including effective management of “induced demand” generated by new roads in congested areas. As a result, the efficiency of use of human, capital and natural resources is improved.

A properly designed congestion pricing regime would not be directed towards eliminating congestion. It would target reduction of congestion to the optimal level, given the available transport infrastructure. Further reductions would be sub-optimal because the extra social benefits (lower congestion costs) would be less than additional social costs (driving benefits foregone).

The better are the alternatives to previously congested roads when congestion pricing is implemented, the greater is the reduction of congestion, the greater is the nett social gain, and the smaller is the revenue-take. Obvious examples of good alternatives include free-access by-pass and ring roads and quality public transport. Poor alternatives mean much higher revenues, substantially less behavioural change, and a correspondingly lower nett social gain.¹⁰⁰ But, the higher revenues could be used to improve alternatives.

Congestion charges trigger a cycle of higher demand for and performance of public transport.¹⁰¹ There are short term and longer term aspects of this cycle.

The initial shift to public transport induced by congestion pricing facilitates better spatial coverage of and more frequent public transport services. Less congestion means faster on-road public transport services and lower operating costs. The improved services further increase demand for public transport. This cycle allows increased capture of economies of scale/density, allowing lower fares, which attract further patronage. Improving viability arising from greater patronage and lower unit costs means public transport subsidies can be reduced.

¹⁰⁰ Poldi, Franzi and Evill, Brett, *Traffic Congestion and User Charges in Australian Capital Cities*, Report 92, Bureau of Transport and Communications Economics, Canberra: AGPS, 1996, p. 28.

¹⁰¹ Small, Kenneth, op cit, p. 12; Small, Kenneth, *Road Pricing and Public Transport*, Department of Economics, University of California Irvine, September 2003, in Santos, Georgina (ed.), *Road Pricing: Theory and Evidence*, Elsevier, 2004, pp. 133-158, original version p. 2.

The higher costs of driving in busy locations at peak times resulting from congestion charges increase the attraction of residential and business location in areas that are well-served by public transport. Therefore, land values increase in such areas, density increases (zoning regulations permitting) and demand for public transport rises, triggering a further cycle of higher demand for and better service and financial performance of public transport, with improvements to viability allowing further lowering of subsidies.

Revenue from congestion charges and savings from lower public transport subsidies facilitate economic gains additional to those arising from alleviation of congestion. First, cuts could be made to taxes, which adversely affect the efficiency of use of resources. Second, investments could be made in by-pass and ring roads and public transport facilities with high benefit/cost ratios, which would complement inducements to change travel behaviour provided by congestion charges.

5.4 Congestion Pricing and Road Capacity

Economic efficiency would be enhanced by a combination of congestion charges to reduce congestion to the optimal level in the short-term, given existing transport infrastructure, and investment in transport infrastructure over the long-run to provide the optimal level of capacity.

With congestion pricing in place, growing demand for space on existing roads would require rising optimal congestion charges on roads already priced and application of charges on some others previously unpriced. Revenues would rise accordingly.

High revenues relative to the capital invested in existing roads would serve as a surrogate market signal that expansion of capacity may be warranted.¹⁰² But, a final decision to invest in expansion of a road subject to congestion charges or in an existing or new unpriced alternative, like by-pass or ring-road capacity, should be based on detailed social cost/benefit analysis. Ideally, this should ensure that the investment would expand or provide the road in question to the optimal capacity at which the incremental (marginal) investment cost matches the marginal external congestion cost (the incremental saving in travel time value and fuel cost).¹⁰³

Provision of more capacity reduces congestion problems, congestion charges, and revenue initially. Because investment in road capacity expansion is generally, “lumpy”, excess capacity may be provided initially. Then, congestion charges would be zero. But, optimal charges would become positive when traffic growth leads to congestion, and would rise with the degree of congestion.

Intuitively, one would expect that congestion pricing would enable deferment of and lower investment in new capacity.¹⁰⁴ However, a complicating factor is that traffic

¹⁰² Hau, Timothy, *Economic Fundamentals of Road Pricing*, op cit, p. 31.

¹⁰³ Harvey, Mark and Martin, Lyn, op cit, p. 6; Hau, Timothy, *Economic Fundamentals of Road Pricing*, op cit, pp. 28-29, 57.

¹⁰⁴ Harvey, Mark and Martin, Lyn, op cit, p. 7; Mohring, Herbert, “Congestion”, op cit, p. 191;

flows more freely under a congestion pricing regime, with and without the additional investment.

To clarify this matter, the Bureau of Transport and Regional Economics undertook quantitative experiments under a range of realistic assumptions regarding the extent of demand, sensitivity of demand to price, growth of demand, and average variable and social marginal costs. Their findings implied that optimal future investment would be lower and later when congestion pricing was in place, but such a result was not guaranteed. However, even if was not applicable in some circumstances, congestion pricing remained highly desirable on economic efficiency grounds for other reasons discussed above.¹⁰⁵

5.5 Political and Ideological Obstacles to Congestion Pricing

There are two major impediments to a congestion pricing regime. One is political concern regarding acceptability arising from re-distributional effects of congestion charges. The other is bureaucratic opposition based on transport and urban planners' strong ideological preference for "command and control" actions over pricing instruments, and a similarly strong ideological bias against car-use.

The literature on congestion pricing has demonstrated clearly that congestion pricing yields nett social gains. This means that the gains by the nett winners are more than large enough to compensate the nett losers. The key winner is the government implementing the congestion pricing regime. The charges, which are the source of any individual disadvantage from the regime, provide the relevant government with the capacity to ensure that adequate compensation is provided. Therefore, if there are unresolved distributional issues, the government cannot validly blame anyone but itself.

Who loses before compensatory steps are taken?

Timothy Hau has demonstrated that when congestion is so severe that extra vehicles actually decrease the number of vehicles per hour that can use a road, congestion charges provide nett benefits to all commuters before any recycling of revenues, as well as boosting the government's coffers. He observed that such traffic jams occur fairly often, although they are usually limited to the "peak of the peak-period".¹⁰⁶

In less severe congestion, there are three groups of nett losers from congestion charges before any spending of revenues:

- car users who are priced-off to another time, route or mode because their willingness to pay is less than the charge;
- unpriced travellers, who previously used other times, routes or modes to move about, but encounter crowding when joined by some of the priced-off group;

¹⁰⁵ Harvey, Mark and Martin, Lyn, op cit, pp. 7-9.

¹⁰⁶ Hau, Timothy, *Economic Fundamentals of Road Pricing*, op cit, pp. 12-13, 16-17, 56.

- those members of the group who pay the charges and stay on the priced roads, the priced category, who pay more to meet congestion charges than they save in time value and fuel.¹⁰⁷

The only winners before any spending of congestion pricing revenues are:

- those members of the priced category with high time values who save more in time and fuel than they pay in congestion charges;
- the government that collects the revenue from congestion charges.¹⁰⁸

The key to countering political concerns regarding the re-distributional consequences of congestion charges is astute application of revenue. But, it is important to apply it in a way that does not encourage a return to driving on congested roads.

The proceeds of congestion charges could be allocated to servicing loans raised to provide by-pass/ring roads and extra public transport capacity with high benefit/cost ratios that would be available when congestion pricing commences. Provision of these alternatives to driving on previously congested and now priced radials would clearly increase community acceptance of congestion charges in the priced-off and unpriced groups. It would also cut the take from the priced group and further reduce vehicle numbers they encounter on radial roads. Such expenditure measures would discourage commuters from returning to congested radial roads. They would enhance, rather than detract from, the efficiency of resource allocation.

Tax cuts to make room for congestion charges would be an alternative way of compensating various groups adversely affected by congestion charges. But, if state and local governments provide tax cuts, their capacity to provide important complementary transport infrastructure would be diminished, particularly in the context of the serious vertical intergovernmental fiscal imbalance (vifi) problem described in section 3. This would be undesirable on economic efficiency grounds.

Commonwealth Government tax cuts to make room for state/local government would avoid this problem. Such a move could be the clincher for community acceptance of congestion charges.

Lower fuel tax could compensate vehicle owners for payment of congestion charges. This measure would particularly advantage low-income groups. People in these groups are more likely to travel further to work because they can only afford real estate on city fringes. They are also more likely to drive across town rather than to the cbd to work, and to own older, less fuel-efficient cars.

While lower fuel tax could encourage more driving, it would probably not have a significant impact on driving on busy roads at peak times, in the same way that existing high fuel taxes have been ineffective in dealing with congestion. The reason is that there is only a vague and remote link between fuel purchase decisions and choices between driving on busy roads at peak times and the alternatives of other times, routes, and modes.

¹⁰⁷ Ibid, pp. 13-14, 56.

¹⁰⁸ Ibid.

Income tax cuts would be an alternative compensatory measure. These cuts could be oriented to assist those on lower incomes, who are more likely to be priced-off by congestion charges, and less likely to have a high time value. These groups are clearly disadvantaged by congestion pricing prior to any allocation of the revenues.

Commonwealth Government tax cuts to make-room for state or local government congestion charges would not only make congestion charges politically acceptable, but also facilitate improvements to the efficiency of resource-use in four ways. First, congestion charges enabled by this measure would directly alleviate congestion. Second, economically damaging, high-rate taxes would be partly displaced by efficiency-improving charges. Third, resources would effectively be transferred from the Commonwealth to other governments for urban transport infrastructure, correcting Commonwealth neglect of urban congestion by underwriting funding of congestion-alleviating facilities to complement congestion charges. Fourth, the effective transfer of revenue raising capacity from the Commonwealth to other governments would help redress vertical fiscal imbalance and associated inefficiencies.

The combination of “enabling” Commonwealth tax cuts and earmarking of state/local government congestion pricing revenues for servicing transport infrastructure loans might seem like double compensation for congestion charges. However, the benefits of the tax cuts would be widespread, not narrowly focused on major urban areas.

Bureaucratic opposition to congestion charges appears to be based on the ideological biases of urban and transport planners. They tend to have a strong ideological preference for “command and control” actions over pricing instruments, and a similarly strong ideological bias against car-use (at least by other people). Congestion pricing would leave commuters to choose how, when and on which route they travel, and where they live and work. It would also help guide investment decisions. But, planners prefer to control these choices, starting with two basic premises:

- public transport is “good” and cars are “bad”; and
- high-density living is “desirable” and low-density urban form is “undesirable”.

The keys to overcoming bureaucratic resistance to congestion pricing are to counter the concerns of bureaucrats’ political masters, and to explain how congestion charges provide strong incentives that are consistent with the preferences of planners. In particular, congestion charges induce commuters to switch from cars to other transport modes in peak periods, improve usage and viability of public transport, and facilitate higher densities in and around regional activity centres.

5.6 Practical Issues

When William Vickrey proposed congestion-pricing 50 years ago, it was basically a theoretical concept that would have been very difficult to implement in practice, although it may have been practical to implement crude forms of the concept. Subsequently, technology has been quickly catching up with the theory of congestion pricing. Rapid technological advances continue unabated.

A discussion of the available technologies and their application is beyond the scope of this paper. But, the key point is that a sophisticated version of congestion-pricing discussed above is now a practical policy instrument.

Of course, greater technical sophistication yielding precise charging information that changes promptly with changing conditions can mean greater cost, although technological advances are continually reducing these costs. Perhaps more important is the point that the usefulness of greater sophistication can be limited by the capacity of drivers to absorb pricing information that varies quickly with changing conditions. Therefore, compromises are necessary between economic gains yielded by greater sophistication, and economic costs associated with better technologies and information overload for drivers.

The nuts and bolts of practical implementation of congestion pricing are beyond the scope of this paper. However, guidelines on practical issues are available.¹⁰⁹

6. An Effective Package of Anti-Congestion Measures

Decisive action is required to tackle Brisbane's serious and worsening traffic congestion. All three levels of government recognise the importance of such action. But, the Commonwealth Government is determined to avoid responsibility for the problem, and the Queensland Government and Brisbane City Council have adopted anti-congestion policy packages that are doomed to failure.

"The big question is: shall Brisbane's rapidly increasing traffic develop from a tangle to a strangle? In other words, shall Brisbane choke itself to death?"¹¹⁰

RACQ (1954), *The Road Ahead*

What can be done to avoid traffic strangulation in Brisbane?

A properly designed congestion pricing regime is a critically important component of an anti-congestion strategy. It is the critical missing link in the policy packages of the Queensland Government and BCC.

Ironically, both governments have acknowledged the effectiveness of congestion pricing, but avoided it because of concerns about its political palatability. This is puzzling because astute application of revenue from congestion pricing could overcome these concerns and simultaneously improve the effectiveness of this anti-congestion device.

¹⁰⁹ For example, see Vickrey, William, *Principles of Efficient Congestion Pricing*, Columbia University, June 1992 at <http://www.vtpi.org/vickrey.htm>.

¹¹⁰ RACQ, "Will Brisbane Continue to Suffer Traffic Strangulation?", *The Road Ahead*, August 1954, p.14.

Meanwhile, the Commonwealth Government has lectured the states on the desirability of applying congestion pricing, but has not been prepared to cut its fuel or income taxes to make room for it and improve its acceptability to the public. This is symptomatic of the low ebb to which fiscal federalism has sunk in Australia.

But, there is no single measure that is adequate for the task of tackling Brisbane's congestion problem by itself. The key to efficient alleviation of the problem is a package of complementary measures that are workable and satisfy widely accepted economic efficiency and equity criteria.

“...it is extremely difficult to reduce peak-hour traffic congestion permanently. That probably cannot be done by adopting one tactic alone, even at a very large scale. Hence the ‘principle of one hundred small cuts’ states that, just as a woodsman with a small axe can only chop down a large tree with many small blows over a long time, a region can reduce its peak-hour traffic congestion – or at least slow such congestion’s rate of increase – only by applying many different tactics simultaneously in a coordinated manner.”¹¹¹

Anthony Downs (2004), Senior Fellow, Economic Studies, Brookings Institution, transportation and metropolitan policy specialist

The recommended package of measures for tackling Brisbane's congestion, which flows logically from the analysis in this paper, comprises:

- congestion charges applying whenever and wherever roads are congested with charges varying with the degree of congestion;
- offsetting Commonwealth tax cuts to improve acceptability of congestion charges and effectively transfer resources to state and metropolitan local governments to provide congestion-alleviating transport infrastructure;
- a complete network of initially un-tolled outer, intermediate and inner ring-roads and by-pass roads for the Brisbane metropolitan area to take through-traffic (about two thirds of the total) off radial roads to major activity centres and complement congestion charges;
- selective increases in radial road capacity to major activity centres, including removal of bottlenecks;
- increases in road capacity to be:
 - completed before application of congestion charges; and
 - funded via government debt serviced by revenue from congestion charges;
- land zoning changes to improve the viability of public transport and improve efficiency of land-use by -

¹¹¹ Downs, Anthony, op cit, pp. 328-329.

- allowing substantial increases in residential and commercial densities around access points to major public transport corridors and major activity centres, and
 - requiring moderate increases in density in new land developments;
- selective improvements in public transport infrastructure and services to complement congestion charges and land zoning changes;
- investments in roads and public transport to be subject to positive comparative social benefit/cost analyses;
- education programs to improve the flow of information to car drivers to allow them to make more informed choices between transport routes, modes, and times on implementation of congestion charges; and
- scaling-down public transport subsidies as congestion charges, zoning changes, and consequential improvements in public transport services increase viability of the public transport system.

References

- Access Economics, *Melbourne Car Parking Levy – Good Policy or Revenue-Grab?*, report for Property Council of Australia, Melbourne, July 2005.
- Becker, Gary, “Good-Bye Tollbooths and Traffic Jams”, *Business Week*, Industrial/Technology Edition, 18 May 1998, p. 26.
- Brisbane City Council, *Transport Plan for Brisbane 2002-2016*, Brisbane, Sept. 2003.
- Brisbane City Council, *Project TransApex*, Brisbane, August 2004.
- Brisbane City Council, *TransApex Prefeasibility Report*, Brisbane, March 2005.
- Brisbane City Council, *Program 7 – Moving Brisbane, 2005-06 Brisbane City Council Budget*, Brisbane, 8 June 2005.
- Centre for International Economics, *Subsidies and the Social Costs and Benefits of Public Transport*, Canberra: Centre for International Economics, March 2001.
- Cervero, Robert, “Are Induced-Travel Studies Inducing Bad Investments?”, *Access*, No. 22, Spring 2003, pp. 22-27.
- Collins, David, *The GST and Federal-State Financial Relations: A Personal Assessment after Four Years Operation of the Intergovernmental Agreement*, Australian Tax Research Foundation, August 2004.
- Commonwealth of Australia, *A New Tax System (Commonwealth-State Financial arrangements) Act 1999, Schedule 2 - Intergovernmental Agreement on the Reform of Commonwealth-State Financial Relations*, 1 July 1999.
- Commonwealth of Australia, Productivity Commission, *First Home Ownership*, Inquiry Report No. 28, 31 March 2004.
- Commonwealth of Australia, *AusLink White Paper: Building Our National Transport Future*, Canberra: Department of Transport and Regional Services, June 2004.
- Commonwealth of Australia, *Budget Strategy and Outlook 2005-06*, 2005-06 Budget Paper No. 1, Canberra, 10 May 2005.
- Commonwealth of Australia, *Federal Financial Relations 2005-06*, 2005-06 Budget Paper No. 3, 10 May 2005.
- Cox, John, *Refocusing Road Reform*, Melbourne: Business Council of Australia, 1994.
- Cox, John, “Labor stops ‘common people’ people from moving around”, *The Australian Financial Review*, 20 June 2003, p. 83.

Deakin, Alfred, "From our Special Correspondent, Sydney", *Morning Post* (London), 12 May 1902.

Downs, Anthony, *Still Stuck in Traffic: Coping with Peak-Hour Traffic Congestion*, Washington, DC: Brookings Institution, 2004.

Gargett, David and Cosgrove, David, *Urban Transport – Looking Ahead*, Information Sheet 14, Canberra: Commonwealth of Australia, Bureau of Transport Economics, 1999.

Gomez-Ibanez, Jose, "Pricing", in Gomez-Ibanez, Jose, Tye, William and Winston, Clifford, *Essays in Transportation Economics and Policy: A Handbook in Honour of John Meyer*, Washington, DC: Brookings Institution, 1999, chapter 4, pp. 99-136.

Gomez-Ibanez, Jose, Tye, William and Winston, Clifford, *Essays in Transportation Economics and Policy: A Handbook in Honour of John Meyer*, Washington, DC: Brookings Institution, 1999.

Grewal, Bhajan, *Vertical Fiscal Imbalance in Australia: A Problem for Tax Structure, Not for Revenue Sharing*, Centre for Strategic Economic Studies, Victoria University, Melbourne, March 1995.

Gruen, Nicholas, "Welsher's Guide to the Arcane Art of Wedge Politics", *The Courier-Mail*, 18 May 2005.

Hensher, David, *Urban Public Transport Delivery in Australia: Issues and Challenges in Retaining and Growing Patronage*, Bureau of Transport and Regional Economics Transport Policy Colloquium, Canberra, 3 October 2002.

Harvey, Mark and Martin, Lyn, *Road Pricing, Tolls, and Anti-Congestion Strategies*, Canberra: Bureau of Transport and Regional Economics, paper presented to "Australian Roads Summit", Sydney, 25 February 2004.

Hau, Timothy, *Economic Fundamentals of Road Pricing: A Diagrammatic Analysis*, World Bank Policy Research Working Paper Series WPS 1070, Washington D.C.: The World Bank, December 1992, http://www.econ.hku.hk/~timhau/road_pricing.pdf

Hau, Timothy, "Congestion Pricing and Road Investment" in Button, Kenneth and Verhoef, Erik (Eds), *Road Pricing, Traffic Congestion and the Environment*, Cheltenham : Edward Elgar, 1998, pp. 39-78.

Knight, Frank, "Some Fallacies in the Interpretation of Social Costs", *Quarterly Journal of Economics*, Vol. 38, August, 1924, pp. 582-606.

Liberal Party, *Moving Brisbane*, Brisbane, May 2003.

Lipsey, Richard and Lancaster, Kelvin, "The General Theory of the Second Best", *Review of Economic Studies*, Vol. 24, No. 1, 1956-57, pp. 11-32.

- Mohring, Herbert, "Urban Highway Investments" in Dorfman, Robert (ed.), *Measuring Benefits of Government Investments*, Washington DC: Brookings Institution, 1965, pp. 231-291.
- Mohring, Herbert, "Optimisation and Scale Economies in Urban Bus Transportation", *The American Economic Review*, Vol. 62, No. 4, September 1972, pp. 591-604.
- Mohring, Herbert, "Congestion" in Gomez-Ibanez, Jose, Tye, William and Winston, Clifford, *Essays in Transportation Economics and Policy: A Handbook in Honour of John Meyer*, Washington, DC: Brookings Institution, 1999, chapter 6, pp. 181-221.
- O'Toole, Randall, "The Folly of 'Smart Growth'", *Regulation*, Fall 2001.
- O'Toole, Randall, *Great Rail Disasters: the Impact of Rail Transit on Urban Livability*, Denver: Independence Institute and Reason Public Policy Institute, February 2004.
- Parry, Ian, *Revenue Recycling and the Welfare Effects of Road Pricing*, RFF Discussion Paper 99-45, Washington DC: Resources for the Future, August 1999, published in *Scandinavian Journal of Economics*, Vol. 103, 2001, pp. 645-671.
- Parry, Ian, *Comparing the Efficiency of Alternative Policies for Reducing Traffic Congestion*, RFF Discussion Paper 00-28, Washington DC: Resources for the Future, June 2000, published in *Journal of Public Economics*, Vol. 85, 2002, pp. 333-362.
- Parry, Ian and Bento, Antonio, *Estimating the Welfare Effect of Congestion Taxes: the Critical Importance of Other Distortions within the Transport System*, RFF Discussion Paper 00-51, Washington DC: Resources for the Future, November 2000, published in *Journal of Urban Economics*, Vol. 51, 2002, pp. 339-365.
- Pender, Howard, *Taxing Cars: Fleecing the Fleet or Subsidising Smog?*, Sydney: Australian Tax Research Foundation, 1999.
- Pigou, Arthur, *The Economics of Welfare*, London: Macmillan, 1920.
- Poldi, Franzi and Evill, Brett, *Traffic Congestion and User Charges in Australian Capital Cities*, Report 92, Bureau of Transport and Communications Economics, Canberra: AGPS, 1996.
- Queensland, *Integrated Regional Transport Plan for South East Queensland*, Brisbane: Queensland Transport, 1997.
- Queensland, *Transport 2007: An Action Plan for South East Queensland*, Brisbane: Queensland Transport, April 2001.
- Queensland, *Draft TransLink Network Plan, South East Queensland*, Brisbane: Queensland Transport, March 2005.
- Queensland, *South-East Queensland Infrastructure Plan and Program, 2005-2026*, Brisbane: Office of Urban Management, April 2005.

Queensland, *South-East Queensland Regional Plan 2005-2026*, Brisbane: Office of Urban Management, June 2005.

Queensland, *Ministerial Portfolio Statement: Minister for Transport and Main Roads*, 2005-06 State Budget, Brisbane, May 2005.

Quiggin, John, *Untangling the Web of Commonwealth/State/Local Government Funding – What Did Your GST Buy?*, address to Infrastructure First plenary session, Housing Industry Association Home and Building Expo, 26 May 2005, at http://www.infrstructurefirst.com.au/media/Iftranscript_Quiggin.pdf.

Quiggin, John, “Economic Briefing on Public Private Partnerships: New Rationale, Same Old Problems”, *The Australian Financial Review*, 8 August 2005, p. 21.

RACQ, “Will Brisbane Continue to Suffer Traffic Strangulation?”, *The Road Ahead*, August 1954, p. 14.

RACQ, “Brisbane’s Ring Roads of Tomorrow”, *The Road Ahead*, October 1954.

Small, Kenneth, *Road Pricing and Public Transport*, Department of Economics, University of California Irvine, September 2003, in Santos, Georgina (ed.), *Road Pricing: Theory and Evidence*, Elsevier, 2004, pp. 133-158, at <http://www.socsci.uci.edu/~ksmall/roadpricing.pdf>.

Small, Kenneth, “Road Pricing and Public Transit: Unnoticed Lessons from London”, *Access*, No. 26, Spring 2005, pp. 10-15.

Smeed, R.J. and others, *Road Pricing: the Economic and Technical Possibilities*, Report of a Panel set up by UK Ministry of Transport, London: HMSO, 1964, at http://www.trl.co.uk/static/press/Smeed_Road_Pricing.PDF.

Stiglitz, Joseph, *Economics of the Public Sector*, Third Edition, New York: Norton, 2000.

Stone, John, “Howard’s Great Betrayal”, *The Australian*, 18 April 2005.

Taylor, Brian, “Rethinking Traffic Congestion”, *Access*, No. 21, Fall 2002.

Vickrey, William, “Some Implications of Marginal Cost Pricing for Public Utilities”, *The American Economic Review*, Vol. 45, No. 2, May 1955, p. 605-620.

Vickrey, William, “Pricing and Resource Allocation in Transportation and Public Utilities”, *The American Economic Review*, Vol. 53, No. 2, Papers and Proceedings, May 1963, pp. 452-465.

Vickrey, William, “Congestion Theory and Transport Investment”, *The American Economic Review*, Vol. 59, No. 2, Papers and Proceedings, May 1969, pp. 251-260.

Vickrey, William, *Principles of Efficient Congestion Pricing*, Columbia University, June 1992 at <http://www.vtpi.org/vickrey.htm>.

Walters, Alan, "The Theory and Measurement of Private and Social Cost of Highway Congestion", *Econometrica*, Vol. 29, No. 4, October 1961, pp. 676-699.

Walters, Alan, *The Economics of Road User Charges*, World Bank Staff Occasional Paper, No. 5, Baltimore: Johns Hopkins Press, 1968.

Willett, Ken, *Choked by Congestion, But Prescribed the Wrong Medicine*, Brisbane: RACQ, paper presented to International Association of Public Transport Travel Demand Management Seminar, "Transport Solutions for the Living City", Brisbane, 1 September 2003.

Willett, Ken, *Prescribing the Right Medicine for Congestion*, Brisbane: RACQ, presentation to University of Queensland Centre for Transport Strategy Seminar on "Managing Road Transport Demand: Options for the Future", Brisbane, 30 September 2004.

Willett, Ken, *AusLink Land Transport Policy*, Policy Analysis 1/05, Brisbane: RACQ Economic and Public Policy, 14 February 2005.

Willett, Ken, *Submission to Office of Urban Management: Draft South East Queensland Regional Plan*, Brisbane: RACQ Economic and Public Policy, 28 February 2005.

Willett, Ken, "Prescribing the Right Medicine for Brisbane's Congestion", *King's Counsel*, Issue 24, Autumn 2005, pp. 1, 25-27.

Wood, Alan, "We're urban sprawlers, so don't cramp our style", *The Australian*, 27 April 2004.