

# An evaluation of the case for a congestion tax in Australia

by *Prafula Pearce, CTA, Senior Lecturer, and Dale Pinto, CTA (Life), Professor of Taxation Law, Curtin Law School*

**Abstract:** Traffic congestion has become a growing concern in most cities in Australia. A 2014 report by the Economic Regulation Authority (ERA)<sup>1</sup> highlighted the need to implement a congestion charge in Perth. This article examines factors that cause congestion and alternative ways of dealing with congestion in Australia. Specifically, the article examines whether introducing a congestion tax could provide an effective means of resolving traffic congestion in Australian cities. Studies and results from other jurisdictions are examined in order to help inform the policies that Australia should adopt. It is submitted that an inquiry into congestion charges should include a wider investigation, including motor vehicle tax reform, city planning, redirection of revenues and a longer strategic plan. The article also recognises that congestion charging, if implemented, may have other implications for which Australian cities may not be ready.

## Introduction

The submission made by the Committee for Perth<sup>2</sup> to the draft report for the *Inquiry into microeconomic reform in Western Australia* produced by the ERA summarised the concerns pertaining to introducing a congestion tax in Australian cities. The committee said that although transport and congestion are critical issues that affect liveability and productivity, a system-wide, region-wide solution is required after a thorough investigation into the structure of the charge, the capacity of the public transport system to meet increased demand and the availability of transport alternatives. In addition, the revenues received from the congestion charge should be earmarked to improve public transport and walking and cycling infrastructures.<sup>3</sup>

This article examines the criteria that should be adopted in undertaking an investigation to resolve the congestion issue in Australian cities, including the cause of congestion and the alternative ways in which it has been dealt with in other cities in the world. It is submitted in this article that the Australian Government needs to take a stance and show its leadership in this policy area by embarking on long-term planning to resolve the root cause of congestion, including a reform of the existing taxes pertaining to ownership and use of motor vehicles in Australia.

The article is divided into six parts. Following this introduction, the second part explains the root of the congestion problem in Australian cities. The third

part then explores whether introducing a congestion tax could be an answer to that problem, followed by a discussion on wider congestion management measures in the fourth part. The fifth part explains the need for comprehensive taxation measures to combat congestion within Australian cities, followed by a conclusion pointing to the big picture that can take Australia into the next 100 years.

## The congestion problem in Australian cities

The voice of the Australian people in relation to congestion is being heard through many forums. Many Australians are taking longer to reach their journey destinations, thereby incurring social costs in terms of lost time, health costs arising through anxiety and the frustration of being stuck in traffic jams, as well as incurring costs arising through a loss of productivity. A report prepared in 2006 by the Department of Transport and Regional Services for the Council of Australian Governments (COAG) states that the total social cost of congestion in 2005 across the eight state and territory capital cities in Australia was approximately \$9.4b, made up of approximately \$3.4b in private time costs, \$3.6b in business time costs, \$1.2b in extra vehicle operating costs and \$1.1b in extra air pollution damage costs.<sup>4</sup>

As a result of these costs and the pain and suffering caused by congestion, the Australian people are demanding that the Australian Government takes action to reduce congestion. This is evident from the number of inquiries and studies that have

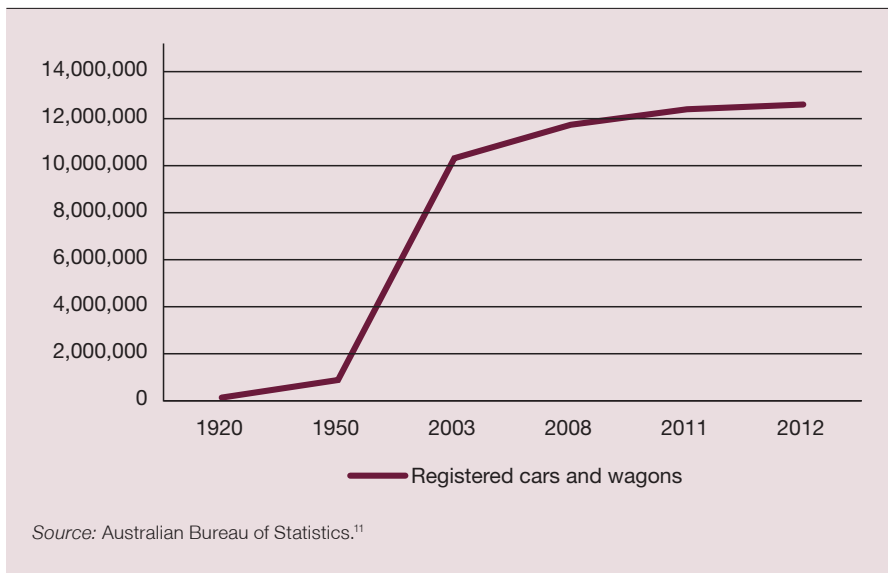
been commissioned and reported where solutions have been explored to deal with the congestion problem in Australia.<sup>5</sup>

Before examining the need to solve the congestion problem, it is necessary to determine the causes of congestion in Australian cities. Australian cities have evolved over more than 10 decades to their present form based on a vast number of factors that include state government land and housing policies and the increase in the ownership of passenger motor vehicles as a means of personal transportation.

A plentiful oil supply and affordable motor vehicles has been the catalyst for the growth in passenger motor vehicles over the last 100 years, both globally and in Australia. The number of passenger vehicles registered per 1,000 population increased in Australia from 250 in 1965 to 465 in 1995.<sup>6</sup> In 2008, there were 555 passenger vehicles per 1,000 population compared with 719 total motor vehicles per 1,000 population.<sup>7</sup> In 2008, the number of registered passenger motor vehicles was 11,803,536, making up 77% of total registered motor vehicles.<sup>8</sup> The total motor vehicle population in January 2011 was 16,368,383, of which passenger motor vehicle population was 12,474,044,<sup>9</sup> whereas in January 2012, the total motor vehicle population was 16,741,644, with 12,714,235 being passenger motor vehicles.<sup>10</sup>

The historical increase in the number of registered cars on Australian roads is shown in Figure 1.

Figure 1: Registered cars and station wagons



Not only has the number of passenger vehicles increased, but Australians are also increasingly relying on passenger motor vehicles as their main means of personal transportation.

In 1995, private road vehicles represented 93% of city passenger transport.<sup>12</sup>

In March 2009, 92% of Australian households kept at least one registered motor vehicle at home. The proportion of households with two or more registered vehicles increased from 51% in 2006 to 56% in 2009.<sup>13</sup> A Senate inquiry on the investment of Commonwealth and state funds in public passenger transport infrastructure and services reported in August 2009 that metropolitan travel measured by passenger-kilometres was as follows: 85–90% by car; 10% by public transport; and the rest by cycling and walking.<sup>14</sup> The most prominent comment in the submissions was the need for improvements to public transport services and for public transport use to be encouraged. A number of recommendations were made, including an investigation into tax incentive options for public transport, and that the government should support behavioural change programs.<sup>14</sup> In 2012, 71% of people in Australia used private motor vehicles to travel to work or full-time study, 16% took public transport, 4% walked and 2% cycled. The most common reasons for Australians not using public transport are: no service available at all; convenience, comfort and privacy; lack of service at

right or convenient time; travel time too long; own vehicle needed; or need to carry passengers, equipment and tools.<sup>15</sup>

Recent reports indicate a peak in motor vehicle use in most developed countries since the early 2000s partly due to increased oil prices.<sup>16</sup> This trend is consistent with the statistics on kilometres travelled by registered motor vehicles in Australia: passenger vehicles accounted for 74.6% of total distance travelled in 2006 compared to only 72.1% in 2010.<sup>17</sup>

Despite the recent peak in motor vehicle use, the overall increased number of passenger motor vehicles and the overall increase in use of passenger motor vehicles for personal transportation has brought about the problem of traffic congestion in Australian cities. This has been further exacerbated by historic underfunding of transport infrastructure development and maintenance, increase in demand pressures created by a rapid growth in population and economic activity, inefficient use of public transport infrastructure and ineffective taxes and road user charges to manage road demand.<sup>18</sup> Lower interest rates and the availability of alternative financial instruments have also increased the rate of car ownership. In order to deal with the challenges created by the growth in the use of passenger motor vehicles including congestion, it is submitted that government action is required and appropriately funded policies need to be put in place.

A congestion tax alone is unlikely to resolve a problem that has been created over a century, particularly as the evolution of Australian cities over that period has resulted in widely sprawled suburbs and centrally concentrated employment opportunities requiring individuals to travel great distances to work and other activities and making public transport expensive to implement effectively. Before examining the wider solutions to combat congestion, the next part explores possible problems associated with the introduction of a congestion tax in Australia.

### Is a congestion tax the answer?

To answer the question of whether a congestion tax is the answer to resolve the congestion problem in Australian cities, it is necessary to understand what a congestion tax is. A congestion tax is a levy charged to a motorist in order to discourage the use of an existing road facility in order to reduce congestion at specific times. It is different from road tolling as road tolls are imposed to raise revenues in order to fund the construction of roads or to maintain the roads.<sup>19</sup>

Thus, by its very definition, a congestion tax is meant to reduce the use of specific roads individually or within an area by imposing a charge for the use of that road facility. Supporters of congestion taxes argue that imposing such a charge would reflect the economic cost of using those roads and such road charging leads to considerable productivity benefits.<sup>20</sup> The basis of this argument is that road capacity should be treated like any other scarce resource and its price should reflect the supply and demand of that resource. For example, the chairman of the Australian Competition and Consumer Commission has been quoted as stating:<sup>20</sup>

“The most efficient way to ration or allocate limited capacity and for businesses and governments to receive the right signals about the need for new infrastructure, is for users to face prices that vary according to the supply and demand conditions at their time of use.”

This reasoning is theoretically sound and can be rationalised as a charge to consumers for external costs of congestion, which then induces them to reduce their activities or use of that road to the socially optimal level, known as the Pigouvian prescription.<sup>21</sup> However, in practice, a charge when applied to control the demand and supply of roads

in a limited area creates a number of problems. First, people still have a need to travel and reach their destination, and therefore unless alternative routes or alternative modes of transportation needs are made available, people will continue to use congested roads despite the extra cost of using those roads. Without suitable alternatives or close substitutes, the demand for the congested road becomes inelastic, especially in the short term. A similar effect is observed in the market for fuel: increasing the cost of fuel by imposing a tax does not reduce the demand for fuel, as the demand for fuel is inelastic in the short term. Car fuel use declines about 1.5% with any 10% increase in the price of fuel.<sup>22</sup>

The next problem is the availability of alternative routes. Research has shown that successful implementation and acceptance of congestion charges requires the following: an initial severe level of congestion; ensuring that a charge is only imposed when congestion is most severe; a captive market, ie that is the only route; application of suitable tolling technology; and strict enforcement of the charging regime.<sup>23</sup>

The problem in Australian cities is to find the only route where a congestion tax should be introduced. If it is not the only route and people still have the need to travel to that area, they may start using alternative routes to avoid the congestion tax, thereby causing congestion on another road or area.

Other alternatives are to provide enhanced public transport services and parking facilities outside the charging area and near transport hubs.<sup>23</sup> However, this requires long-term planning and a source of funding as these facilities would need to be in place before a congestion tax is introduced. Thus, the revenue from the congestion tax cannot be relied on to fund public transport and car parking infrastructure.

Congestion taxes have been successfully implemented in some cities including Singapore and London, however, the success is largely attributed to those places being well supplied with alternative forms of efficient transport. In the case of Singapore, the success is based on the government's long-term policy to control their car population, a wider focus than just reducing congestion. Similarly, the London congestion charge was introduced in 2003 in a 21-kilometre zone mainly to

reduce congestion, increase the use of public transport especially buses, improve journey time for car users and to make the distribution of goods and services more efficient.<sup>24</sup> London congestion in the charging zone successfully fell by 26% as there was capacity for 50 to 60% of displaced car users to switch to public transport.<sup>25</sup>

Many cities have a high standard of public transport, yet suffer from congestion during peak periods. Thus, congestion taxes can be used to smooth demand and increase public transport patronage. In Stockholm, although extra bus services were introduced in August 2005, their use only increased after January 2006 when the congestion tax came into operation.<sup>26</sup> Thus, if congestion tax is introduced in Australian cities after putting in place an effective and efficient public transport system, it may assist in increasing a shift to public transport use and consequently reducing car use.

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*Traffic congestion has become a growing concern in most cities in Australia.*”

Congestion taxes do raise equity concerns as the rich who can afford to pay the tax can buy the convenience of using the road, leaving the less affluent to use public transport which may not be as efficient and may reduce their productivity. A congestion tax may also affect business and private users differently. Businesses that incur the extra cost of the congestion tax may be able to pass on the cost to consumers and therefore the congestion tax may not be the impetus for them to change their behaviour.

The next problem is the cost of implementing the congestion tax itself. Congestion taxes take various forms including: variably priced lanes commonly known as “high occupancy toll” (HOT)

lanes; variable tolls on entire road; cordon charges; or area-wide charges.

A HOT lane is a designated lane that can be either used for free or for a discounted rate by high occupancy vehicles (HOV), such as buses or motor cars with two or three occupants to promote car sharing, or by paying a full charge by single occupant vehicles. Thus, motor vehicles have a choice of using a congested lane and incur no charge or pay a fee and use a HOT lane. HOT lanes are popular in the USA;<sup>27</sup> however, Australia currently does not have HOT lanes that are tolled.<sup>28</sup> Australia does have HOV lanes, which could be converted to HOT lanes. The popularity of HOT lanes in the USA arose out of conversion of underutilised HOV lanes into HOT lanes, or adding capacity to an existing freeway where there is insufficient volume to justify HOV lane.<sup>29</sup> Although private sector involvement is common for toll roads, this is not the case for HOT lanes.<sup>30</sup>

Toll roads are common in many countries and in Australia toll roads have been around since the 1800s. Examples of Australian toll roads include: the CityLink and EastLink urban freeways in Melbourne; and Sydney Harbour Bridge and Tunnel, CrossCity Tunnel and Lane Cove Tunnel. Tolling has a benefit in that it provides funding for an investment in road infrastructure that can deliver benefits. However, the problem with new road projects funded by tolls is trying to resolve a congestion problem with building more roads. The problem is that once cities reach a certain size, having a road network large enough to meet the transport needs of citizens relying on single occupancy vehicles would need too many roads to be feasible given the available land area. Mass transit, walking and cycling are so much more efficient means of transport for the space they take. Once a city is at that size, adding an additional road simply encourages more people to keep driving, worsening the problem. This is evident from comments made by experts, ie transport consultants, engineer and academics on the \$6.8b East West Link in Melbourne. They have stated that the East West Link is not needed; that it will spread congestion around a bit but won't solve it and that a tilt towards a mass public transport system is better.<sup>31</sup>

Congestion taxes in the form of cordon charges and area-wide charges have been successful in cities such as Singapore, London and Stockholm, but these places



are different from Australian cities given the low population density of Australian cities and the related lack of effective public transport systems. The difference between area-wide charges and a cordon scheme is that in an area-wide charge, the charge applies to vehicles circulating within an area or a zone, whereas under cordon charges, the charge is based on the vehicle crossing the boundary. Cordon and area-wide charges can be implemented in small areas within a central business district (CBD). However, in Australia, congestion occurs in more than just the CBDs.

Congestion is common in high streets which may or may not be near CBDs and other major roads including freeways. The administrative cost of setting up cordon or area-wide congestion charges in multiple zones through Australian cities will become very costly to implement and also difficult to administer. Moreover, if successful, the revenues from a congestion tax will decline over time as congestion reduces, in which case the government may not be able to rely on recouping the cost of implementing the tax through future revenue streams.

Thus, congestion charging may work in a small area, but is unlikely to provide a holistic solution on a large scale to the congestion problem in Australian cities and regions with different transport needs and exposed to different state and local government policies.

If a cordon charge or an area-wide charge is implemented in a small area, for example the CBD in Perth, then other issues that should be considered in planning for congestion charges include:

- whether exemption should be granted for service vehicles that need to access roads for delivery;
- solutions for residents who do not have access to public transport;
- assessment on bordering parking facilities and capacity of station parking areas;
- whether the local road network where the traffic is diverted can cope with increased wear and tear; and
- the impact on already established long- and short-term parking bays in the CBD.<sup>32</sup>

In 2014, the West Australian ERA conducted an inquiry into microeconomic reform and congestion charging was included as one of the recommended reforms. The draft report of that inquiry, which was released in April 2014, recommended that a congestion charge for entering the CBD in Perth during morning

and afternoon peak periods should be trialled after taking into consideration the borders of the charging and management system and the capacity of the public transport system to handle the likely increase in patronage.<sup>33</sup> With an effective congestion charge, Perth could save \$1.6b in productivity losses in 2015 in terms of increased and unreliable travel times, pollution costs and additional fuel costs.<sup>34</sup> Building new roads or increasing capacity of existing roads has been ruled out as providing a long-term solution to the congestion problem in Western Australia, but a congestion charge is recommended on the basis that it has proved to be a highly effective solution to traffic congestion problems in cities across the world and is likely to provide incentive to road users to either travel outside of peak periods or switch to public transport.<sup>35</sup> The ERA final report was released in July 2014 and confirms the recommendations of introducing a congestion charge in Perth with the proviso that the establishment of a congestion charge scheme will require significant upfront investment and additional public transport expenditure to manage increases in demand. However, these costs are not considered a deterrent on the basis that international experience suggests a short-term payback period, typically less than five years.<sup>36</sup>

Introducing congestion tax can also be politically difficult due to stakeholder concerns relating to not only equity and fairness, but also privacy. In Australia, the politics of a congestion charge can differ based on whether the charge is

imposed by state and local government or by the federal government applying it to the whole of Australia. This is discussed further in the next part where some wider congestion management measures that have been advocated over the last decade through research and studies undertaken by various government bodies and private institutions are explored.

## Wider congestion management measures

A review of measures advocated in the various studies undertaken in Australia indicates that congestion charging is not the only answer to reduce congestion in Australian cities.

A study commissioned by the COAG in 2006 examined a number of wider solutions, both long- and short-term, to combat congestion in Australian cities as summarised in Table 1.

In 2008, the Australian Government commissioned a review of Australia's future tax system commonly known as the Henry Tax Review. The need for a tax to change behaviour to drive less was recognised in the 2008 report, *The architecture of Australia's tax and transfer system*, and that the current transport taxes in Australia are unlikely to meet Australia's future transport challenges.<sup>38</sup> The report to the Treasurer stated that the existing structure of Australia's fuel tax, annual registration and other road-related taxes is primarily designed to raise revenue. These taxes more than cover the direct costs of providing road infrastructure, but are not capable of providing specific prices that

Table 1: Congestion management measures

Policy area	Examples of policy types
Road supply management	Increased road capacity; enhanced public transport; HOV priority; speed control.
Road demand management – non-price measures	Staggered/flexible work or school hours; household-based travel planning (TravelSmart); ride-sharing.
Road demand management – price measures	Comprehensive road user charging schemes based on area or cordon; select route charging, eg toll roads and HOT lanes; parking price control; fuel taxes; car purchase/ownership taxes.
Alternative passenger transport	Major enhancement of public transport systems; car parking enhancement near public transport hubs; provision of infrastructure for walking and cycling.
Urban land use planning	Changes in development densities; transit-oriented developments.

Source: "Review of urban congestion, trends, impacts and solutions", consultancy report prepared for COAG.<sup>37</sup>

vary according to location or time of use. As a principle for road transport taxes, the report outlined that transport-specific taxes should only be imposed where they improve social and market outcomes.<sup>39</sup>

The conversation on environmental and social taxes that the Australian Government had started in the Henry Tax Review, and the release of the report on *Australia's future tax system review* in 2010, was continued in the tax forum that was organised by the Australian Government Treasury in October 2011, bringing together 180 representatives from the community, business, government, academia and other tax experts to discuss priorities and further tax reform. Some of the opinions voiced at the 2011 tax forum session on environmental and social taxes were: Professor John Freebairn suggested that user-pay fees for roads should be tied to the kilometres travelled per year, the vehicle weight and the state of the road; Harry Clarke argued for comprehensive congestion pricing in Australia by learning from the experiences in other places such as London, Stockholm and the Netherlands; Ian Chalmers called for the abolition of the luxury car tax or its redesign to encourage reduced CO<sub>2</sub> emissions, and showed a preference for alternative options in terms of road broad-user charges and not just congestion charging; Brendon Lyon called for a reasoned and seasoned debate about how to deal with congestion and the infrastructure backlogs in Australia; and Frank Stilwell favoured the use of taxes to change behaviours.<sup>40</sup>

On 13 March 2013, the *Moving Australia 2030* report, being a transport plan for a productive and active Australia, was launched at Parliament House.<sup>41</sup> The report was prepared by the Moving People 2030 Taskforce that was comprised of eight national organisations. The 2030 report states that an additional five million people will live in Australia by 2030 and Australia, being an urbanised country, will have 90% of its population living in cities, towns and near-city regions. This will have a greater impact on congestion, unless policies are set in place now to prevent this outcome.<sup>42</sup> Some of the key recommendations from that report are:

- appoint a dedicated Commonwealth Minister to integrate land use planning and transport at a national level and oversee the implementation of capital

cities planning criteria that are agreed on by COAG;

- reduce congestion in Australian cities by staggering school hours, increasing the span of operating hours and frequency of public transport services;
- conduct congestion tax trials in capital and major cities;
- develop and invest in strategies that include walking, cycling and public transport infrastructure;
- encourage car sharing through car sharing schemes with public transport ticketing; and
- develop a scheme similar to the fringe benefits tax for work-related public transport trips.<sup>41</sup>

In March 2014, a discussion paper developed by Infrastructure Partnership Australia and Deloitte, titled "Road pricing and transport infrastructure funding: reform pathways for Australia", stated that the current road charging regimes in Australia are ineffective and should be strategically reformed. The discussion paper advocates a universal road user charging model (URUC) should be considered to change user behaviour based on the mass of the vehicle, the distance driven, the location of the road and the time of use.<sup>43</sup>

The probable conclusion that can be derived from these studies is that there is a call on the Australian Government to examine congestion management measures and implement policies to combat congestion in Australian cities. In doing so, the Australian Government needs to examine the cause of the congestion problem, ie reliance on passenger motor vehicles for personal transportation, and not just provide a bandaid approach to fixing just the congestion in small pockets. It is submitted in this article that this task should be handled by the Commonwealth Government and not just by state governments. As advocated by the *Moving Australia 2030* report, a dedicated Commonwealth Minister should be appointed with the task of exploring and implementing the solution to the congestion problem at a national level and oversee its implementation via COAG. In finding the right path for Australia, lessons can be drawn from a study of how the Singaporean Government has succeeded in managing congestion in Singapore through sustainable long-term planning.

## Study of Singaporean Government planning to deal with congestion

Singapore's traffic congestion problem has not been dealt with in isolation by just implementing a congestion charge in the CBD. The Singaporean Government chose to deal with the problem by first providing an efficient public transport system which was planned in 1967 through a project commissioned through the United Nations Development Program.<sup>44</sup> Under the plan, emphasis was placed on the need to invest in island-wide transport infrastructure. This has paid dividends as a recent study conducted by a London consulting firm, Credo, has found that Singapore has one of the most cost-efficient public transport networks in the world and the economic cost of transport to an individual commuter is 8.9% of GDP per capita. Copenhagen is stated to be the best performing city overall, with a cost of 8.6% of GDP per capita. The report from that study states that the best performing cities share efficiency, broad coverage, integration and clear planning.<sup>45</sup>

As part of the transport management plan, the Singaporean Government implemented policies to control the vehicle population. In June 1975, Singapore introduced an area licensing scheme covering the most congested parts of the CBD during the morning peak hours between 7.30 am and 10.30 am. The result was a 73% reduction in traffic entering the restricted zone. However, there was a 23% increase in traffic between 7.00 am and 7.30 am. The scheme was further extended in June 1989 to cover evening congestion from 4.30 pm to 6.30 pm. In January 1994, a whole-day licensing scheme was introduced to cover from 7.30 am to 6.30 pm with a lower fee charged for a part-day license.<sup>46</sup> In 1995, the area licensing scheme was replaced by electronic road pricing (ERP) requiring motor vehicle owners to install an in-vehicle unit in the car.

Due to the increasing number of vehicles on the road, the ERP was not considered sufficient to curb motor vehicle population growth. Thus, the Singaporean Government introduced its bold vehicle quota system that was implemented on 1 May 1990.<sup>47</sup> Under this system, the government controls the release of new vehicles on the road by determining the number of new vehicles allowed for registration, taking into account the traffic conditions and the proportion which the vehicle category makes up of

the total vehicle population. The vehicle quota for a given year is then administered through a monthly release of certificates of entitlement (COE). Thus, a Singaporean would need to purchase a COE to obtain the right to purchase a new vehicle. The COE has a life span of 10 years, after which it expires and can only be retained by paying an additional fee. This system restricts the number of vehicles that are on Singaporean roads.<sup>48</sup> The COE payable in Singapore for a popular Australian family car, eg the Holden Epica, also called the Chevrolet Epica, would have been about SG\$63,000 on 9 June 2011.<sup>49</sup>

In addition to the cost of COE, a vehicle owner in Singapore is required to pay a registration fee of SG\$140 and an additional registration fee of 100% of the vehicle's open market value when the vehicle is purchased. An annual road tax is also payable and the amount of road tax is based on the engine capacity of the vehicle.<sup>50</sup>

The lesson from the Singapore system is that effective policy requires putting in place a holistic sustainable transport system and not just a stopgap solution to improve traffic conditions in a limited area. The transport plans need to be updated to take into consideration the factors that may impact its sustainability. The Singapore Land and Transport Authority has released Singapore's 2013 Land Transport Master Plan that takes into consideration transport planning to 2030 and includes the government's land use policy and the economic growth for the country.<sup>51</sup>

Australian cities may benefit from an introduction of an ERP to reduce congestion in the short run. However, the lesson from Singapore is that an overall federal government plan to impose some form of taxation in order to reduce ownership and usage of passenger motor vehicles is required for Australia. The next part analyses the wider taxation measures that the Australian Government should consider to tackle both long-term and short-term solutions to the congestion problem in Australia.

### **Taxation measures to combat congestion in Australian cities**

Broader taxation measures to resolve the congestion problem in Australian cities should hinge on the following defined criteria:

- reduce the number of registered cars on Australian roads and control the use of

cars as means of personal transportation; and

- increase public transport infrastructure and public transport patronage and use of other modes of transport, eg cycling.

The problem should then be resolved on a national basis and this may require changing both state and federal laws by adopting a stick and carrot approach which would require imposing charges to reform behaviour and rewarding people for changed behaviours. A combined Australian reform is required, impacting on both state and federal laws on the purchase of the vehicle, annual road use, and the fuelling of the vehicle, as well as providing incentives to encourage the use of public transport and other modes of transport, eg cycling.

In Australia, both the Commonwealth and the states impose a variety of taxes relating to passenger motor vehicles. The Commonwealth Government levies the luxury car tax (LCT), import tariffs on passenger motor vehicles and fuel excise on petrol and diesel that are uniform throughout the whole of Australia. The Commonwealth fringe benefits tax (FBT) also impacts on the purchase and use of motor vehicles in Australia. The states impose taxes on vehicle purchase, transfer of ownership and annual motor vehicle registration fees, and these taxes vary from state to state. It is submitted in this article that the existing motor vehicle taxes were mainly designed with the specific objective of raising revenue. Instead of having a variety of taxes with no specific objectives other than raising revenue, a comprehensive tax on motor vehicles should be introduced that targets the attributes of a reduction in the purchase and use of motor vehicles which in turn should lead to a reduction in congestion.

A purchase tax similar to Singapore's COE can be designed to reduce the number of registered cars on Australian roads.<sup>52</sup> The design can also incorporate other criteria, such as the reduction of CO<sub>2</sub> emissions, thereby encouraging smaller and lighter cars as well as cars that are not reliant on fossil fuels. A comprehensive user-pay system can also be designed that incorporates these criteria and discourages the use of motor vehicles for personal transportation.

Lessons on the design of a comprehensive user-pay system can be drawn from the Oregon mileage fee designed and piloted by the parliamentary elected Oregon

Road User Fee Task Force. The task force recommended that the new revenue collection system collected at the fuelling station, that would replace the fuel tax and be calculated on road use, directly connects to the burden each user of the road places on the road system. Thus, the amount paid by the road user would be classified as a fee for service, rather than general taxation unrelated to use. According to the taskforce, the new system also paves the way to price congestion and manage traffic during peak periods by creating multiple zones.<sup>53</sup>

Lessons can also be drawn from the seven-year Dutch study that involved innovative thinking on the part of the Dutch Government and recognised the need to change the current policy pertaining to the taxation of motor vehicles. The Government of the Netherlands recognised that there is a problem with sustaining the current number of motor vehicles on Dutch roads, and intended to use taxation as a tool to influence the Dutch people in changing their travel behaviour, minimise road congestion and address environmental concerns. The Dutch study proposed a kilometre charge system measured with the development of a mobimeter.<sup>54</sup>

The Dutch policy was premised on the principle that increasing motoring costs per kilometre mitigates road traffic growth and thereby reduces congestion. Moreover, the pricing policy was intended to raise additional revenue that could be used to build additional infrastructure that would further assist in reducing congestion. Similarly, revenues generated from Australian motor vehicle taxation reform can also be set aside for much-needed improvements to the public transport infrastructure.

Although the kilometre charge system was not implemented in the Netherlands, many lessons can be learnt from the study for Australia, including the fact that without a strong political will, long-term planning in the area of motor vehicle taxation and road user charges, although necessary, may not be achievable. It may be due to political reasons that no country in the world has yet succeeded in implementing a comprehensive user-pay system to charge motorists a fee based on the kilometres driven. However, there have been calls on the Australian Government to reform the current road charging regime with a universal charge based on the mass of the



vehicle, the distance driven, the location of the road and the time of use.<sup>55</sup>

Different considerations can be given to the criteria on which the charge is based. For example, the luxury energy tax (LET) designed by the co-author of this article (Pearce) in her PhD thesis, "Using tax and regulatory measures to reform choice and usage of motor vehicles for personal transportation in Australia for the sustainability of oil", premised the allocation of progressive LET points on the vehicle weight, engine capacity, engine power and CO<sub>2</sub> emissions. The accumulated LET points were then proposed to be taxed at four taxing points being: the purchase of the vehicle; annual registration; fuelling; and the disposal of the vehicle, by applying a set rate at each taxing point.<sup>56</sup>

In addition to the above policy changes, federal government tax incentives can be implemented in both income tax and FBT that would favour the use of public transport. Examples of countries that encourage the use of public transport via generous tax treatment include: Belgium, France, Germany, Poland and the Netherlands. In these countries, employee paid public transport expenses are deductible, whereas in Canada, the cost of public transit passes may be eligible for a non-refundable tax credit.<sup>57</sup> Switzerland permits a deduction of €579 to employees for cycling to work and a full deduction for public transport costs.<sup>58</sup>

## Conclusion

There are many ways to deal with congestion and introducing a congestion tax or building more roads is likely to be a bandaid solution. The overwhelming body of international evidence suggests that building bigger and wider roads actually makes traffic worse. Targeted infrastructure upgrades, the use of vehicle management and information technologies, and improving the use of road networks by public transport vehicles, ie buses and trams, can assist in reducing congestion.<sup>59</sup> Priority lanes can be allocated for buses for effective public transport and a free flow of traffic can be enhanced by appropriate traffic lights, appropriate traffic speeds and appropriate parking controls and designated clearways. Noteworthy lessons from the Stockholm congestion charging scheme include: investment in road and public transport will not necessarily eliminate congestion; congestion charging will reduce, but not eliminate the need

for other transport investments; there are many ways for drivers to adapt to a congestion charge, such as using another mode of transport, change of route, change time of travel or cancel discretionary trips such as leisure and shopping.<sup>60</sup>

Further, the Australian Government needs to take a long-term view in reforming its motor vehicle taxation system. The government needs to set the scene and show commitment and long-term planning to resolve the root cause of congestion, ie reduce reliance on passenger motor vehicles for personal transportation. The reformed motor vehicle tax system should provide the opportunities and the required revenues to redesign and modernise the Australian public transport infrastructure. Many changes can be made, for example, if micro-light cars are encouraged for local area travel and public transport is encouraged for medium to long-distance travel, then car parking at the transport hubs will need to be changed.

Multi-storeyed or underground car parks may be required to cater for the increase in need for parking. Car parks could be automated or even robotised for convenience, including a provision for reserved and prepaid parking spots. Many countries in the world are introducing smart car parking stations with computer controlled parking levels, where the driver enters the car park and the car is automatically parked using automated conveyor belts and lifts. When the driver returns and requests the car via the parking meter, the car is automatically brought back to the driver. A very good example of such a car park is in Wolfsburg, Germany, where a 10-level car park is fully automated with six entry and exit lanes.<sup>61</sup>

A rapid public transport system would enhance its usability. An increase in light trains may be necessary to join one suburb to another, and there could be an opportunity to install a limited number of high speed trains like the trains used in China, Japan and some European cities. The public transport system can be modernised with a range of different services instead of one type of service that fits all. There could be a provision where a person could pay extra to reserve a seat in a particular suburban train. In this way, the person is assured of a seat, and the train service can be converted from cattle class to jet class.

The message from this article is that a new way with broader and forward-looking

thinking is required to reduce congestion on Australian roads and the solution should not be restricted to just the introduction of a congestion tax.

**Dr Prafula Pearce, CTA**  
Senior Lecturer  
Curtin Law School

**Dr Dale Pinto, CTA (Life)**  
Professor of Taxation Law  
Curtin Law School

*Fellow, Tax Law and Policy Research Group  
Monash University*

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