



Implementing transport policy through rational design of taxes and charges

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Abstract:

Road users are levied a myriad of taxes and charges. Taxes are levied at all stages from owning a vehicle to operating, maintaining, parking, selling, etc. Some of these are intended to raise general revenue while others are related to the use of infrastructure and correcting externalities. Although the revenues collected from road users far exceeds the government investment in transport sector, the design of charges lacks obvious rationalism and transparency. It is premised in this paper that for the sake of equity, efficiency and transparency, taxes and charges in the transport sector should be designed on a rational basis so as to meet the objectives and goals of an overall transport policy. Road users should be charged for the amount of their contribution to the externalities – congestion, noise, environmental damage, accident risk, etc. The amount of taxes charged should, ideally, be able to meet the cost of amelioration of specific transportation problems.

A system where transport objectives and externalities are related to appropriate charging mechanism is developed. The taxes and charges in road transport are catalogued and anomalies in tax system are examined. The paper covers a major element of a taxation policy in transportation – rational design of different tax regimes and optimal use of the revenues in meeting the overall objectives of the transport policy.

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Introduction

Road transportation is probably the most pervasive of economic activities in any modern society, and is characterised by
massive and expensive infrastructure,
large use of scarce resources,
myriad of taxes and charges, and
externalities which amount to several times of the road expenditure.

In Australia, the amount of resources committed in building and maintaining roads, operating vehicles, paying the wages of commercial drivers and covering other costs such as accidents and environmental pollution comes to about \$80 billion per year or nearly 20% of gross domestic product (Austroads, 1997).

Road users are levied a myriad of taxes and charges. Taxes are levied at all stages from owning a vehicle to operating, maintaining, parking, selling, etc. Some of these are intended to raise general revenue while others may be related to the use of infrastructure and correcting externalities. Although the revenues collected from road users far exceeds the government investment in transport sector, the design of charges lacks obvious rationalism and transparency. It is premised in this paper that for the sake of equity, efficiency and transparency, taxes and charges in the transport sector should be designed on a rational basis so as to meet the objectives and goals of an overall transport policy.

There is a broad consensus on the importance of three national outcome areas – the environment, economic efficiency, and social justice. The commonly accepted goals of a transport policy include congestion management, environmental protection and reducing accidents within the overall context of providing safe and efficient transport systems. Road users should be charged for the amount of their contribution to the externalities – congestion, noise, environmental damage, accident risk, etc. The amount of taxes charged should, ideally, be able to meet the cost of amelioration of specific transportation problems.

A system where transport objectives and externalities are related to appropriate charging mechanism is developed. The taxes and charges in road transport are catalogued and anomalies in tax system are examined. The paper covers a major element of a taxation policy in transportation – rational design of different tax regimes and optimal use of the revenues in meeting the overall objectives of the transport policy.

Community perceptions about the road transport sector

A survey organised by Austroads in 1995 (Austroads, 1997) has shown that the community is confused about taxes and charges. Specifically,

- ❖ the community considers road transport to be very important from economic and social equity perspectives

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- ❖ further increase in expenditure on transport and environmental issues is considered desirable
- ❖ the community underestimates the level of federal fuel tax paid by road users, and overestimates the proportion of federal government taxes returned for road works.

Motor vehicle taxes and charges

For too long, governments and transport authorities have levied taxes to road users primarily as a means of raising revenues. The diversity of the taxes and charges currently levied in certain jurisdictions shows the imaginative character of the architects of new taxation regimes. Taxes are levied at all steps from the desire of owning a vehicle to purchasing, running, maintaining, parking, selling, etc. At each step, there are usually multiple charges. A summary of various taxes and charges levied to the travelling public in particular, and in the movement of people and goods generally, is presented in Table 1.

Several other taxes are also levied but the amount raised is included in the categories listed in Table 1. Examples are weight/engine capacity tax (included in registration), Learner permit fee and Licence test fee (included in Driver licence fees) and Safety inspection fee (included in Registration).

The revenue collected from the taxes and charges levied are not always allocated to the transport sector investment or operations. It is common to lump these revenues in to consolidated income of respective governments. This is a fundamentally flawed approach.

Taxes and charges relating to road transport are levied by the Commonwealth and State Governments. Local Governments do not raise revenues from road users.

As shown in the following sections, the revenue collected from road users in 1995-96 was over \$13.5 billion. It is instructive to examine how this revenue is apportioned and what proportion of this revenue is actually spent on road-related activities. The community perceptions of the levels of taxes and charges raised as well as the amounts clawed back into the road network system should be determined. The community expectations and preferences in this important area of public policy should also be ascertained. Recent surveys have shown that community is confused and ill-informed on these vital issues.

Commonwealth Government Charges

There are two key sources of revenue from road users by the Commonwealth Government. The predominant revenue source is in the form of excise duty on petrol and diesel fuel but not on LPG. The estimated revenue from this source, attributed to motor vehicles, was about \$8.7 billion in 1996-97 (ABS, 1996; Commonwealth Budget Papers, 1996). The other Federal tax is the Federal Interstate Registration Scheme

Table 1: Taxes and charges levied to road users

Stage	Charges/taxes	Levied by	1995/96 (\$mill)	Rationale
Vehicle acquisition	Excise duty	Federal	8,400	Production of fuel as per s.90 of the Constitution
	Sales tax	Federal	33.5	All sectors
	Import duty	Federal	33.5	All sectors
Keeping vehicle	Registration	State	2,000	Administrative costs
	Stamp duty	State	1,090	Administrative costs
	Weight/engine capacity tax	State	inc. in registration	Cost recovery
	Third-party insurance	State	"	Insurance
Operating vehicle	Fuel franchise tax	State	1,500	Production of fuel as per s.90 of the Constitution
	Driver licence fees	State	270	Administrative costs
	Toll charges	State	13.5	Cost recovery
	Payroll tax	State	33.5	All sectors
	Company tax	Federal	34.5	All sectors
Disposing vehicle	Transfer fees	State	inc. in registration	Administrative costs
Others	Federal Interstate Registration Scheme	Federal	29.3	Interstate travel by heavy vehicles

Source: Bureau of Transportation and Communication Economics

(FIRS) which netted over \$20 million in 1996-97. This charge was introduced by the Federal government on 1 January 1987. It is a fee paid by heavy vehicles travelling interstate. The statistics relating to the revenue collected by the Commonwealth Government from motor vehicle taxes and charges over the last ten years are shown in Table 2 and Figure 1.

State Governments

The key charges levied by the State Governments include the vehicle registration fees, stamp duty on vehicle registration, driver licence fees, fuel franchise taxes/fees, road transport & maintenance taxes and tolls.

Table 2 Revenue Collected by Commonwealth Government from Motor Vehicle Taxes and Charges

Year	Petroleum Products Excise	FIRS	Total
1987-88	4160.7	4.2	4164.9
1988-89	4580.3	10.8	4591.1
1989-90	4964.6	17.1	4981.7
1990-91	5561.9	14.5	5576.4
1991-92	6016.2	15.9	6032.1
1992-93	6049.8	17.0	6066.8
1993-94	7117.9	20.3	7138.2
1994-95	7927.1	23.6	7950.7
1995-96	8373.7	29.3	8403.0
1996-97	8699.0	20.3	8719.3

Sources: Australian Bureau of Statistics, Bureau of Transportation and Communication Economics

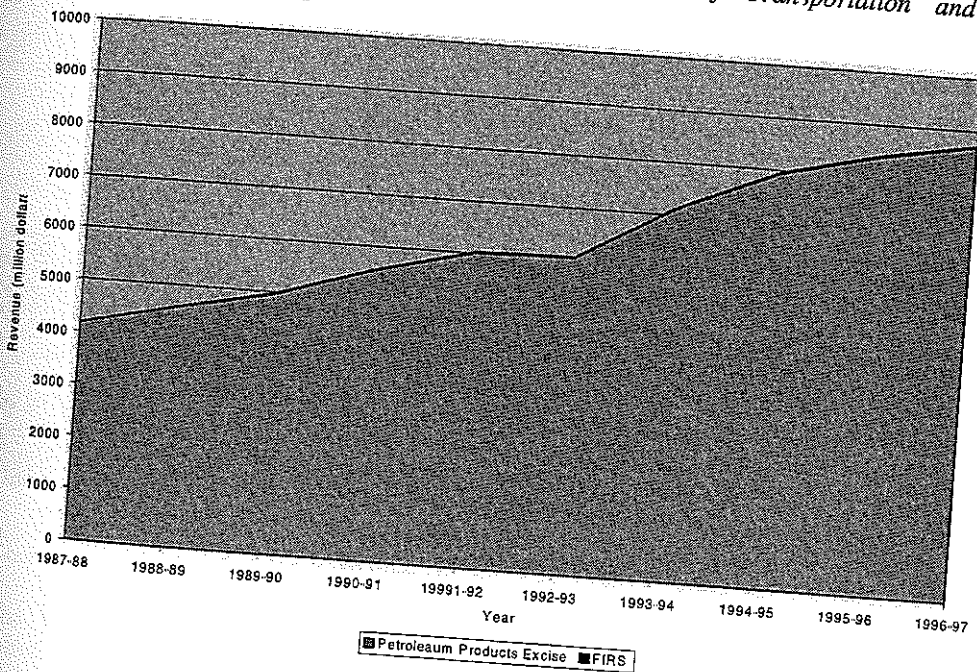


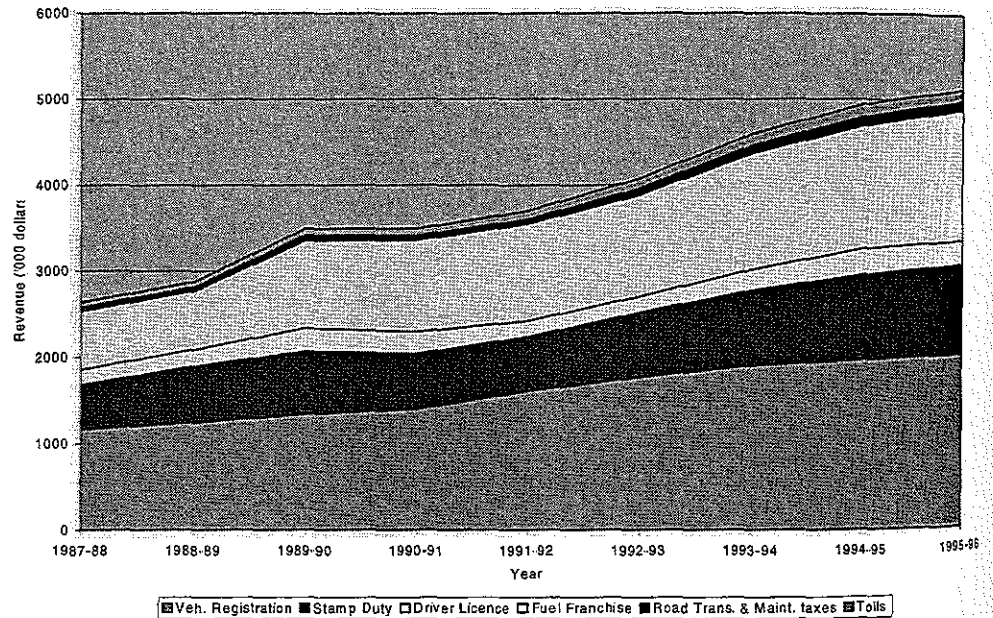
Figure 1: Road revenue collected by Commonwealth government

The State Governments raised over \$5 billion in 1996-97. The revenues collected by the States under various categories are shown in Table 3 and Figure 2. It can be observed that about 60 per cent of road-related State revenue comes from vehicle registration fees and stamp duty on vehicle registration.

Table 3 Taxes and charges levied by State governments

Year	Veh. Registration	Stamp Duty	Driver Licence	Fuel Franchise	Road Trans. & Maint. taxes	Tolls	Total
1987-88	1165.0	516.2	175.0	674.3	45	59.9	2635.4
1988-89	1242.0	650.7	190	680	47	65.4	2875.1
1989-90	1342.0	728.0	268	1016	63	76.4	3493.4
1990-91	1402.0	641.0	251	1061	56	83.4	3494.4
1991-92	1606.0	626.0	184	1128	55	99.8	3698.8
1992-93	1765.0	750.0	187	1174	79	118.7	4073.7
1993-94	1901.0	872.0	240	1346	92	134.4	4585.4
1994-95	1970.0	987.0	299	1427	106	149.5	4938.5
1995-96	2022.0	1050.0	281	1531	101	137.6	5122.6
1996-97	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sources: Australian Bureau of Statistics, Bureau of Transportation and Communication Economics

**Figure 2** Road revenues collected by State governments

In Australia, there are only a few facilities at present on which tolls are collected. Notable examples are the Gateway Bridge and Logan Motorway in Queensland, and the Sydney Harbour Bridge, Harbour Tunnel, and M2 and M4 freeways in New South Wales. In principle, toll roads are deemed to become free when the repayment of construction cost is finished. However, in practice, it is common for the toll to remain in force even after full repayment (although collection of tolls ceased from

Waterfall/Bulli Road in New South Wales in 1995, and on Sunshine Motorway in Queensland in 1996). The additional revenue collected should then be used for building other roads. In case of privately funded toll roads, the company may be allowed to collect tolls at specified rate over a specified period of time after which the road may revert to public ownership.

Road Costs and Expenditure

Road Expenditure

Road expenditure in Australia is financed by all three levels of governments. During 1995-96, the total amount of road related expenditure by all governments was \$6.4 billion. It was comprised of \$1.6 billion by the Commonwealth, \$3.1 billion by State governments and \$1.7 billion by local governments. The revenue collected during the same period was \$13.5 billion, which is more than twice the combined road expenditure by all levels of governments.

It is obvious that road-related expenditure and motor vehicle revenues have no direct linkage. As a matter of fact, the revenue collected by governments from most taxes and charges on motor vehicles is paid into the consolidated revenue accounts, along with income from other sources.

The Commonwealth expenditure on roads is primarily directed towards the construction and maintenance of the National Highway System (18,500 km), and Roads of National Importance as well as the Black Spot road safety program. The data on government funding of road related expenditure are given in Table 4 and also presented in Figure 3.

The ownership and control of the road system lies with the States. The Commonwealth government supplements State expenditure on these roads through general revenue assistance. As is obvious in Figure 3, road expenditure by State governments has more than doubled over a ten-year period whereas there has been insignificant change in expenditure by other levels of governments during this period.

Costs of road transport

The costs inflicted by road transport (users) include the wear and tear of road infrastructure, fuel consumption, emissions and pollution, accidents, congestion etc. Estimates of costs associated with these impacts and externalities have been made by the Bureau of Transport and Communication Economics (BTCE). For example, the costs of road crashes to the Australian community were estimated at \$6.1 billion in 1993. The annual cost of congestion has been estimated at over five billion dollars, with Sydney and Melbourne accounting for over \$4 billion (BTCE, 1995). A number of studies have been carried out in Australia to estimate the costs of road transport, and the data has been compiled by BTCE.

Table 4 Road related expenditure by governments

Year	Government			Total
	Commonwealth	State	Local	
1987-88	1251.9	1473.8	1407.9	4133.5
1988-89	1232.3	1832.3	1427.9	4492.5
1989-90	1358.0	2111.1	1628.3	5097.4
1990-91	1595.9	2557.4	1551.3	5704.7
1991-92	1720.4	2310.2	1569.8	5600.5
1992-93	2177.0	2088.4	1716.6	5981.9
1993-94	1552.2	2440.1	1666.6	5659.0
1994-95	1535.5	2598.5	1710.0	5844.1
1995-96	1601.7	3064.3	1703.1	6369.0
1996-97	1623.7	n.a.	n.a.	n.a.

Source: Australian Bureau of Statistics, Bureau of Transportation and Communication Economics

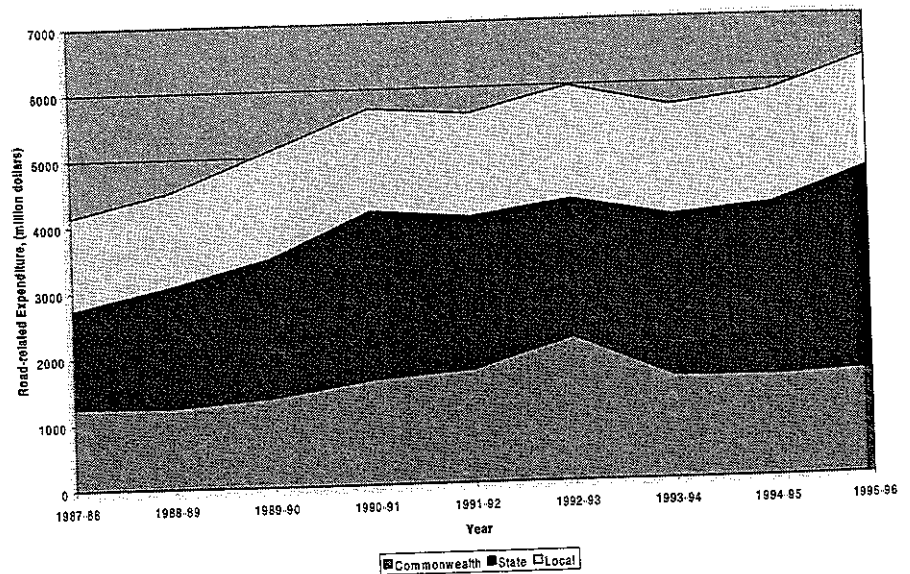


Figure 3: Road-related expenditure by various levels of governments

Transport Policy

The commonly accepted elements of a transport policy include congestion management, environmental protection and reducing accidents within the overall context of providing safe and efficient transport systems. The challenge for road transport is to develop an overall policy to strengthen the economy, conserve energy, protect environmental and aesthetic quality, promote social equity, and make communities more livable. If roads

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are to meet the needs and expectations of the community, then we need to achieve a balance between these somewhat competing goals and develop a transport policy that emphasises the movement of people and goods rather than vehicles.

It is obvious that the entire community is a stakeholder in roads and streets as they play an essential role in the life of the community. In a way, the entire community should pay for the road infrastructure and the impacts of road transport

Anomalies with the current system of transport taxes and charges

1. The major limitation with the current system of levying taxes and charges is that the fuel price rises or fuel taxes do not discriminate between place, time, or vehicle type and do not address transport problems beyond fuel-related pollution.
2. Motorists in urban areas are not paying for the external costs inflicted by them
3. Motorists are not charged on the amount of damage they cause – wear of road infrastructure, congestion, environmental damage, or accident risk.
4. The revenues collected from road users are not earmarked for road expenditure.
5. The amount of revenue collected from road users far exceeds the outlay on road transport.

The framework of the proposed charging policy

1. Road pricing must contribute to an overall transport policy (Kinnoek, 1997). It must be an integral part of a comprehensive transport policy.
2. Road users should be charged for the amount of their contribution to the woes of the transportation sector – congestion, noise, environmental damage, accident risk, etc.
3. The revenues collected must be used to alleviate the problems. The amount of taxes charged should, ideally, be able to meet the cost of amelioration of specific transportation problems for which taxes are levied.
4. Road users should be charged for the social and economic costs of transport, and externalities associated with it
5. Road expenditure should be allocated to public transport mode, as well as to the bicycle facilities on social equity grounds.

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Relating taxes and charges to transport objectives

Taxes and charges should be levied to meet specific objectives of transport policy. For example, if the objective is to discourage car ownership, taxes should be levied on purchasing a vehicle (as is done in Singapore); if the objective is to reduce congestion, those causing congestion should be taxed. This is shown in Table 5.

Relating expenditure to revenue source

The revenue raised from taxes and charges should be earmarked to activities and projects which will ameliorate the transport impact for which the charge was levied to raise revenue. For example, fuel tax should be earmarked for the construction, upgrading, and maintenance of roads, provision of bike facilities, and general road works. The congestion charges recovered from travellers in congested urban environments should be allocated to congestion relieving projects. There is an obvious rationale in levying specific taxes for each impact and externality associated with road transport.

Environment: The increase in exhaust emissions, the high proportion of CO₂ and NO_x from motor vehicles, and the concern with the greenhouse effect justify the introduction of an environmental tax on road users. The tax could be used to provide incentives for improving environment. These can include research into reducing emissions and the introduction of cleaner vehicles.

Congestion: Congestion management can reduce significant costs to the society in terms of saving in travel time, reducing fuel consumption, reducing emissions, and improving safety. It is imperative that congestion management is indispensable and an economic strategy will be well-suited for this issue. However, the design of an efficient and equitable tax regime for congestion management is not easy. Motorists causing regular and predictable congestion only should be charged. Random congestions caused by incidents would have to be exempt. Wadhwa, (1994) proposed a framework for congestion pricing. Charges collected from motorists causing congestion should be used to provide alternative routes and to introduce traffic demand management measures but with due regards to economic and social equity considerations.

Table 5 Relating taxes to transport policy objectives

Objective	Tax / charges
Discourage car ownership in metropolitan areas	Sales and excise taxes; registration fees differentiated by address of the buyer.
Reduce fuel consumption	Fuel excise tax
Reduce congestion	Congestion tax
Improve environment	Environment tax, carbon tax, etc.
Reduce accidents	Vehicle inspection Penalties for speeding, drink-driving etc.

Table 6 Relating expenditure to revenue source

Activity requiring expenditure	Source of revenue	Charged to
Road construction and maintenance	Fuel tax	All motorists
Alleviate congestion	Congestion tax	Road users causing congestion; urban motorists
Improve and maintain air quality in urban areas; introduction of cleaner vehicles	Environmental (pollution) tax	Road users in major urban areas
Minimise noise levels in urban areas	Environmental (noise) tax	Road users in major urban areas
Enforcement and education	Licensing fees	All motorists
Subsidy to public transport	Fuel tax	All motorists
Bike facilities development	Fuel tax	All motorists
Road safety measures, black spot program	Third party insurance, vehicle inspection charges, fuel tax	All motorists

Discussion

This paper has highlighted the anomalies in the system of taxes and charges in the road transport sector. The charges are not related to transport objectives, revenues collected far exceed the expenditure on roads, urban motorists don't pay for the externalities (congestion, and air and noise pollution), and there is no link between charges and the expenditure.

It is premised that taxes and charges should be integrated with the objectives of a comprehensive transport policy. The priority areas of transport requiring funding include better roads, road safety, reduction in vehicle emissions and noise, and ameliorating the effects of trucks - safety, environment, and amenity. Charges should be designed and levied on the motorists causing specific transport impacts and externalities, and the revenues collected should be earmarked to ameliorate these problems.

The framework of the proposed charging policy is presented with a view to alleviating the anomalies in the current system. It is clearly demonstrated how taxes and charges should be related to transport objectives, and, in turn, how the road expenditure should be related to the source of revenue. The target groups for each charge or tax are identified. However, the schedule of charges for each impact or externality has not been developed but is continuing for future research.

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