DETERMINING A GLOBAL SUM FOR TAXATION OF ROAD USERS

By A. Jennings*

INTRODUCTION

The existing structure of vehicle taxation in Britain has grown up haphazardly, and has little economic rationale. This is in spite of the efforts made by economists to introduce economic common sense into a sensitive political area, not least the seminal article by Denys Munby, published ten years ago in this journal, evaluating the Track Cost Report [1]. In the most recent White Paper on Transport Policy [2], the Government expresses its intention of revising the existing framework of taxation to create a system of road charging.

There are two basic stages in the creation of a road charging system:

(i) To determine a global sum for taxation;
(ii) To allocate this global sum among road users.

Little has altered in government proposals to deal with the allocation problem since the approach developed in the 1968 paper on *Road Track Costs* [3] and embodied in the 1968 Transport Act. However, government proposals for determining the global sum for taxation of road users have changed significantly. These changes may be seen as a response to the different economic situation in the seventies from that prevailing in 1968: we now have higher inflation rates, and significant fluctuations about a downward trend in expenditure on roads. Section I of this paper outlines changes in the methods proposed by government for determining the global sum for taxing road users. Section II discusses some of the implications.

SECTION I

The Pay-As-You-Go Method

In presenting estimates of road costs the 1968 Road Track Cost Study [3] used two approaches: the current expenditure (pay-as-you-go) method, and the public enterprise method shown in Table 1. Community costs were excluded as being non-quantifiable, and attention was focused on public road costs, such as capital and maintenance expenditure. As applied in the 1968 Study, the pay-as-you-go method simply involved taking the total public road costs incurred in a given year and attributing it to that year. The public enterprise method involved attempting to re-construct what the public road costs would be if road provision were organised like a nationalised industry, with its own set of accounts prepared on a normal commercial basis.

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TABLE 1
Estimates of Public Road Costs 1965/66

	Current Expenditure £*m*	*Public Enterprise* £*m*
Capital		
New roads and major improvements	179	—
Minor improvements	36	—
Capital charges	—	390
Maintenance	96	96
Cleansing	23	23
Lighting	9	9
Policing	52	52
Administrative	40	40
Accidents	15	15
	450	625

Source: Ministry of Transport: *Road Track Costs* [3].

The government opted for the pay-as-you-go method. It emphasised the weaknesses of the public enterprise method, which involves the very difficult task of estimating a capital value and rate of return for the road network from figures of estimated capital expenditure over many past years, and also the strengths of the pay-as-you-go method considered as a better approximation to long-run marginal cost pricing.

The Pay-As-You-Went *plus* Pay-As-You-Go Method at Public Expenditure Survey Committee Constant Prices

In the Transport Policy Consultation Document [4] the government continued to opt for the current expenditure method to determine the global sum for tax, and defined it as "pay-as-you-go". However, a more accurate description of the approach would be "pay-as-you-went *plus* pay-as-you-go". Thus public road costs are derived from an average of two past years, 1973/74 and 1974/75, and the then current year, 1975/76. In the supporting document to the calculations, it is emphasised that the price base is 1975/76 survey prices, i.e. mid-November 1974 prices (see Table 2).

The Pay-As-You-Went *plus* Pay-As-You-Go Method at Outturn Prices

In a Parliamentary written question on 2 March 1977 (*Hansard*, Col. 252–4) [5], the Secretary of State for Transport was asked to update the estimate of public road costs given in the Transport Policy Consultation Document. The method adopted

TABLE 2

Taxation Revenue and Public Road Costs 1975/76—Great Britain

Vehicle Category	*Vehicle numbers (thousands)*	*Taxation Revenue*						*Costs attributed*	*Revenue to Cost Ratios*	
		VED £m	*Fuel tax £m*	*VAT* £m*	*Total £m*	*Car tax £m*	*Total (includihg car tax) £m*	*£m*	*Excluding car tax*	*Including car tax*
Cars and Taxis: non-business	13,760	400	700	310	1,410	125	1,535	720	2.0:1	2.1:1
business		150	260	—	410	45	455	270	1.5:1	1.7:1
Buses and Coaches	75	3	50†	—	53	—	53	65	0.8:1	0.8:1
Light Vans (under 30 cwt. unladen)	1,085	55	145	—	200	—	200	110	1.9:1	1.9:1
Goods Vehicles (over 30 cwt. unladen)‡	635	160	270	—	430	—	430	540	0.8:1	0.8:1
All Vehicles	15,555	768	1,425	310	2,503	170	2,673	1,705	1.5:1	1.6:1

*VAT included at 17 per cent on non-business petrol consumption.
†Fuel tax rebate on stage services (£37m) not deducted.
‡All but 12 per cent of these (about 75,000 vehicles) are heavier than 3.5 tons gvw.
Source: *Transport Policy, Consultation Document*, Vol. 11, Paper 6. H.M.S.O., April 1976 [4].

TABLE 3

Taxation Revenue and Public Road Costs 1976/77—Great Britain

Vehicle Category	*Taxation Revenue*						*Cost attributed*	*Revenue to Cost Ratios*	
	VED £*m*	*Fuel tax* £*m*	*VAT** £*m*	*Total* £*m*	*Car tax* £*m*	*Total (including car tax)* £*m*	£*m*	*Excluding Car tax*	*Including Car tax*
Cars and Taxis:									
non-business	400	930	100	1,430	140	1,570	780	1.8:1	2.0:1
business	150	355	—	505	50	555	300	1.7:1	1.9:1
Buses and coaches	3	65†	—	68	—	68	70	1.0:1	1.0:1
Light Vans (under 30 cwt. unladen)	55	195	—	250	—	250	120	2.1:1	2.1:1
Goods Vehicles (over 30 cwt. unladen)	160	360	—	520	—	520	590	0.9:1	0.9:1
Total All Vehicles	768	1,905	100	2,773	190	2,963	1,860	1.5:1	1.6:1

*VAT included at $4\frac{1}{2}$ per cent on non-business petrol consumption.
†Fuel tax rebate on stage-services (£50 million) not deducted.
Source: *Hansard*, 2 March 1977, Col. 253 [5].

was "pay-as-you-went, plus pay-as-you-go", using an average of the past years 1974/75 and 1975/76, and the current year 1976/77 (see Table 3). The price basis, however, was changed from survey prices to outturn prices. The cost estimates at "outturn prices" relate to the year in which expenditure is expected to take place, and thus include an allowance for inflation.

The Pay-As-You-Went *plus* Pay-As-You-Go *plus* Pay-As-You-Hope-To-Go Method at Outturn Prices

In a Parliamentary written question on 22 April 2977 (*Hansard*, Col. 172–5) [6], the Secretary of State for Transport was asked to update the estimate of public road costs given in the Transport Policy Consultation Document, to include the effects of the March Budget proposals. The method adopted this time was "pay-as-you-went plus pay-as-you-go plus pay-as-you-hope-to-go", using an average of the past year 1975/76, the current year 1976/77, and the future year 1977/78 (see Table 4).

The price base used was again "outturn prices". The Parliamentary written answer gave no reasons for the new interpretation of "current expenditure" in determining the total tax burden for road users, nor did it give the inflation rates assumed.

SECTION II

The interpretation of the current expenditure approach in the 1968 Track Cost Report [3], taking the one current year's public road costs as the basis for determining the total tax revenue from road users, left relatively little room for ambiguity. In view of sizeable fluctuations in road expenditure (see Table 5), and administrative costs and political difficulties in varying the tax from year to year, some averaging over a period of years may be inevitable. Such factors may account for the shift to three-year averages used in *Transport Policy* [2] and in the Parliamentary answers. Furthermore, E.E.C. proposals for harmonisation of commercial vehicle taxation stipulate a period of five years over which the tax will be fixed [7]. But ambiguity is created by extending the time period over which public road costs incurred by society are used to estimate a charge on road users.

Table 6 shows a summary of the widely different estimates of road costs, and hence of tax revenue, that could possibly be charged to road users. If a constant price base were used, it would clearly be advantageous to the road users to base the estimate of the total sum for a tax on future road expenditure, since recent estimates indicate that expenditure will be falling. This would be advantageous also from the point of view of economic efficiency, since it would approximate more to long-run marginal cost pricing than sunk past expenditure. However, when future years are used an allowance is made for inflation: that is, the tax revenue is related to estimates of public road costs at outturn prices. The key trade-off is whether the anticipated inflation pushing up estimated public road costs will be greater or less than any decline in real expenditure. Latest available estimates indicate that the positive inflationary effect, even using conservative rates, is greater than the negative effect of a decline in real expenditure.

It is of interest that the cost-revenue ratios in *Transport Policy* [2] and the Parliamentary answers [5, 6] appear to be derived from a comparison of the tax revenue

raised in one year from each category of vehicles and an average of public road costs attributable to that category over three years. This could give a very misleading impression on whether or not a particular vehicle category is paying its way. To be consistent, the cost-revenue ratios should be determined from a comparison of the average tax raised from particular categories of road users, and public road costs attributable, over the same period of time.

Road users have benefited from the fact that some of their taxes have not kept pace with inflation. For example, the estimated average vehicle excise licence duty paid in 1977 is £20 less in real terms than the duty paid in 1971. This situation is by no means unique. It could be that H.M. Treasury now hopes to reverse this trend, and to relate tax to future expenditure and future inflation.

Adding an inflationary element to a tax could increase cost inflationary pressures, particularly in a sector such as transport, where costs are so quickly passed on. The tax will also affect inflation through its impact (albeit small) on aggregate demand. This may be illustrated with simple arithmetical examples (see Table 7).

On the assumption of increasing public road costs in Case A, road users in year 1 of the averaging period would be effectively paying a subsidy into the Treasury. The impact on aggregate demand would then depend upon whether, and where, the Treasury spent this amount. With falling public road costs, as in Case B, road users in year 1 of the averaging period receive a subsidy from the Treasury, and the potential addition to aggregate demand arises in year 3. Where there is hypothecation, in Case A people using the roads later in the averaging period enjoy a subsidy from earlier road users, and vice versa in Case B.

The problem arises whether the proposed system of charging road users will improve decisions on the allocation of investment between different modes. The 1974 Railway Act stipulates that capital expenditure on rail infrastructure be charged to the revenue account; and, given the different approaches to rail freight and passenger traffic, the phasing out of the rail freight subsidy can now be realistically pursued. In *Transport Policy* [2] the government requires British Rail to make a full contribution to the cost of providing rail service, including a proper share of the costs of infrastructure. What is included under "cost" is by no means clear, but the approach seems to approximate to the current expenditure (pay-as-you-go) method used in the 1968 Track Cost Study [3]. Since rail takes the one current year of costs and revenue, this circumvents the problems of choosing between constant prices and outturn prices, and of selecting an average of past and/or future years with the current year. However, the different application of the current expenditure method to the two modes must result in some distortion. Co-ordination is further complicated by the fact that there appears to be little or no economic rationale for determining allocation of resources between modes at the Public Expenditure Survey Committee level. In *Policy for Roads: England 1978* [8], it is argued:

> "The scale of new road construction has to be decided by reference not only to the need for roads but also to wider considerations including the overall level of public expenditure, the claims of other programmes (within and outside transport), the uncertainty of projections of future demand, and the need to provide a degree of stability for the construction industry."

It could be that the Minister who shouts loudest in the Cabinet gets the most.

TABLE 4

Taxation Revenue and Public Road Costs 1977/78—Great Britain

Vehicle Category	*Vehicle numbers (thousands)*	*Taxation Revenue*						*Costs attributed* £*m*	*Revenue to Cost Ratios*	
		*VED** £*m*	*Fuel tax** £*m*	*VAT†* £*m*	*Total* £*m*	*Car tax* £*m*	*Total (including car tax)* £*m*		*Excluding car tax*	*Including car tax*
Cars and Taxis:										
non-business	14,990	510	1,175	130	1,815	170	1,985	800	2.3:1	2.5:1
business	—	190	440	—	630	65	695	300	2.1:1	2.3:1
Buses and coaches	79	3	75‡	—	78	—	78	65	1.2:1	1.2:1
Light Vans (under 30 cwt. unladen)	1,181	75	230	—	305	—	305	120	2.5:1	2.5:1
Goods Vehicles (over 30 cwt. unladen) §	629	215	430	—	645	—	645	640	1.0:1	1.0:1
Total All Vehicles	16,879	993	2,350	130	3,473	235	3,708	1,925	1.8:1	1.9:1

*Based on Budget proposals of 29 March 1977.
†VAT included at 6.5 per cent on non-business petrol consumption.
‡Fuel tax rebate on stage services (£60 million) not deducted.
§All but 12 per cent of these (about 75,000) are heavier than 3.5 tons gvw.
Source: *Hansard*, 22 April 1977, Col. 173, [6].

TABLE 5 *Estimates of the Public Costs of the Road System: £ million at 1976 Survey Prices*

	(a) 1971–72	*(a) 1972–73*	*(a) 1973–74*	*(a) 1974–75*	*(a) 1975–76*	*(b) 1976–77*	*(b) 1977–78*	*(a) 1978–79*	*(a) 1979–80*	*(b) 1980–81*
Motorways and Trunk Roads										
New construction and improvement	483	447	494	482	516	460	370	372	425	380
Maintenance	64	88	102	60	70	80	70	76	77	80
TOTAL	547	535	596	542	586	540	440	449	502	460
Local Transport Capital:										
Roads—new construction and improvement	490	495	535	434	363	370	265	209	240	260
Car parks	34	31	29	34	18	—	—	11	11	—
Current:										
Roads—maintenance	482	493	486	464	461	440	420	420	420	400
Car parks	—	—	−1	−1	−2	—	—	−11	−15	—
Other expenditure	6	7	10	11	8	—	—	10	10	—
Local authority administration	119	118	129	147	151	160	150	148	146	135
TOTAL	1,131	1,144	1,188	1,089	999	970	835	787	812	795
Other Transport Services										
Transport research and other services	9	8	8	16	13	8	6	6	6	6
Roads and Transport administration	11	12	12	13	13	12	11	11	11	11
TOTAL	20	20	20	29	26	20	17	17	17	17
Policing and Courts	80	85	90	100	110	110	110	110	110	110
LESS Pedestrians and Motor-Cyclists	(75)	(80)	(85)	(93)	(95)	(95)	(95)	(95)	(95)	(95)
Total Public Road Costs At 1976 Survey Prices (i.e. at November 1975)	1,703	1,704	1,809	1,667	1,626	1,545	1,307	1,268	1,346	1,287

Source: (a) *The Government's Expenditure Plans*, Volume 11, Table 2.6. Cmnd. 6271-11, H.M.S.O., February 1977.
(b) *Transport Policy*, presented to Parliament by the Secretary of State for Transport, Cmnd. 6386. H.M.S.O., June 1977.

TABLE 6

Summary Table of Estimates of Global Sums for Taxation of Road Users

Source	*Years over which Costs Averaged*	*Price Basis*	*Amount £ million*
[4]	1973/74 to 1975/76	*1975 survey prices* (i.e. November 1974)	1,710
[5]	1974/75 to 1976/77	*Outturn prices* (inflation assumptions not disclosed)	1,860
[6]	1975/76 to 1977/78	*Outturn prices* (inflation assumptions not disclosed)	1,925
Alternative Estimates			
(a)	1974/75 to 1976/77	*1976 survey prices* (i.e. November 1975)	1,613
(b)	1975/76 to 1977/78	*1976 survey prices* (i.e. November 1975)	1,493
(c)	1977/78 to 1980/81	*1976 survey prices* (i.e. November 1975)	1,302
(d)	1974/75 to 1976/77	*Outturn prices* (inflation assumed: 1975/76 is 16%; 1976/77 is 12%)	1,853
(e)	1975/76 to 1977/78	*Outturn prices* (inflation assumed: 1975/76 is 16%; 1976/77 is 12%; 1977/78 is 6.25%)	1,899
(f)	1977/78 to 1980/81	*Outturn prices* (inflation assumed: 1975/76 is 16%; 1976/77 is 12%; 1977/78 is 6.25%; 1978/79 is 4%; 1979/80 is 2% and 1980/81 is 2%)	1,879
(g)	1977/78 to 1980/81	*1976 Survey prices* (i.e. November 1975) applying a *discount factor of 10%*	1,041
(h)	1977/78 to 1980/81	*Outturn prices* (inflation assumed as in (f)) applying a *discount factor of 10%*	1,499

TABLE 7

Hypothetical Examples of the Impact of the Tax on Aggregate Demand

		Year 1	*Year 2*	*Year 3*
Public Road Costs:				
Rising A		10	15	20
Falling B		20	15	10
Road User Tax	A			
	B	15	15	15
Road User Transfer:				
+ To Treasury	A	+5	0	−5
− From Treasury	B	−5	0	+5

Furthermore the Leitch Committee Report [9] highlights the distortion at the project selection level, where rail uses largely financial criteria and road uses cost-benefit criteria. The 1977 Transport Policy White Paper calls for more selectivity in road investment, while at the same time requiring unambiguous signals from appraisal techniques ([2], paragraph 255).

If future expenditure is included in estimating the global sum, it could be argued that it should be subject to discounting, as indeed the 1968 Road Track Cost Study ([3], Annex 10) suggested. Applying a discount factor of 10 per cent for the period 1977/78 to 1980/81 shows a substantial reduction in the global sum on both the 1976 Survey Price and the Outturn Price bases. However, since the stated basis of the tax is the cost-responsibility approach and not the benefit-cost approach, it is difficult to see any economic reason for applying a discount factor.

A fundamental question is what the tax is intended to do. The existing presentation by government seems to indicate that the objective of achieving a given revenue requirement is paramount, rather than efficient use of existing and future resources. Hence the use of a lump sum tax, at outturn prices, even though much of the cost is related to vehicle mileage [10]. Also the government emphasises that "the existence of non-quantifiable community costs may clearly justify the gathering of tax revenue from road users over and above the public road costs they cause, as indeed may the fiscal needs of the Chancellor of the Exchequer" [4].

The government seems to be unwilling to grasp fully this opportunity of having a charging system which will signal, however imperfectly, to the individual consumer his responsibility for at least one aspect of his travel costs (namely, public road costs) and will provide a basis for rational decisions on investment. As the Transport Policy White Paper points out ([2], paragraph 183), since social costs cannot be measured in any objective way, "a tax based on them would be no substitute for constructive policies to help people who suffer from the impact of lorries on them and their communities". From the point of view of economic efficiency, it may be desirable to abandon the present approach and to adopt a quite different one: for example, a two-part tariff, with vehicle excise duty related to the Exchequer revenue objective and fuel tax related to public road costs.

One can appreciate that the Treasury may not wish to allow an exception to the principle of non-hypothecation, or to lose control over an instrument of management of demand. But the cost to the community of a confused and inadequate road-charging system is a higgledy-piggledy road expenditure programme, with little or no economic rationale.

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