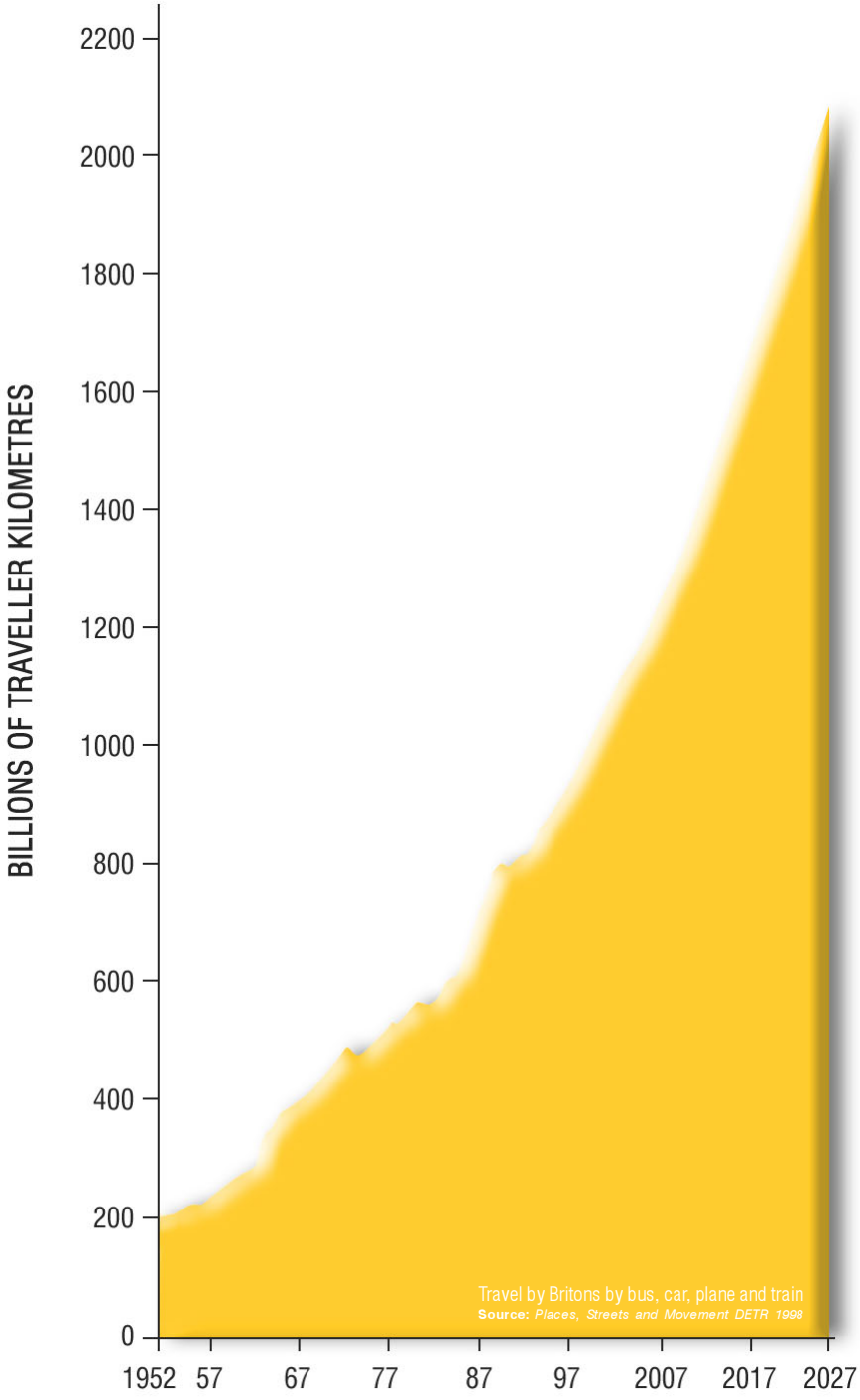
Transport Pricing: Better for Travellers



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INDEPENDENT TRANSPORT COMMISSION

TRANSPORT PRICING: BETTER FOR TRAVELLERS

How can the British Government move towards a system of taxation, pricing and investment in road and rail transport that would be good for travellers, the economy and the environment? This assessment of research by Stephen Glaister, Professor of Transport and Infrastructure at Imperial College and his colleague Dr Daniel Graham throws light on this important question.

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Foreword by the Chairman: Sir Patrick Brown

This, the second major piece of research commissioned by the ITC, breaks new ground. It raises fundamental questions about the way travel in England is governed (and will no doubt be applicable to Wales and Scotland). No-one is to blame for the problems the report identifies; I know only too well how difficult it is for Ministers to take decisions in the full knowledge of all the consequences. Now, however, Professor Glaister and Doctor Graham have created a tool for Ministers to use in devising a long-term strategy for a transport system that would be rational and fair. I hope those in Government and local government will consider carefully the implications of this report.

It remains for me to thank my colleagues on the Commission, our distinguished consultants Professor Glaister and Doctor Graham, our generous benefactors the Rees Jeffreys Road Fund, the Joseph Rowntree Foundation and, particularly, the Esmee Fairbairn Foundation.

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1 From Theory into Practice

Charging drivers to use busy roads at busy times is today's paramount transport policy issue. After more than forty years of debate, London's Mayor has, with remarkable speed, turned theory into practice. The reaction of the Prime Minister hints at the political side-effects. He said, 'I think it was an experiment that a lot of people were dubious about, frankly including me, and I think he deserves credit for having carried that through. We have got to work out what its implications more widely are now.' (1) Alistair Darling, the Transport Secretary, having already called for a national debate on road charging, responded by inviting transport experts to a seminar on June 10th.

This report, which aims to make a major contribution to that debate, is underpinned by research by Professor Stephen Glaister and Dr Daniel Graham. Both offer new insight into pricing as a tool of transport management. The Glaister/Graham report (2) is at www.trg.soton.ac.uk/itc and at www.cts.cv.imperial.ac.uk .

Last year the Independent Transport Commission (ITC) published its assessment of work by Professor Sir Peter Hall and Dr Stephen Marshall of the land use effects of the 10 Year Plan. (3) In it the Commission noted 'tension' between the goal of an urban renaissance and investment in radial transport infrastructure. Later this year the Commission will publish work by Professor Marcial Echenique on the future of the suburbs and fringes of England's largest cities. (4) The Glaister/Graham findings have the greatest relevance for both topics.

2 The Last Ten Years

The last ten years have seen growing realisation that, so long as incomes, car ownership and car use continue to increase, expanding road capacity will not, by itself, satisfy demand at peak times and in busy places. Investment in transport and road user charging need to be ***combined***.

Evidence of this shift in thinking is indicated by the Transport Act 2000, which gave local authorities powers to introduce road user charges; the conclusions of 'multi-modal studies' for South Yorkshire, the M25 and elsewhere; the House of Commons Transport Committee report on multi-modal studies; and the RAC in its report 'Motoring Towards 2050'. These and other items indicate steadily widening support, amongst politicians, consultants, MPs, motoring organisations and officials, for the use of pricing as a traffic management tool. Forthcoming events such as the opening early in 2004 of the M6 relief road (Britain's first tolled trunk road) and the introduction in 2006 of mileage-based charges for heavy goods vehicles (possibly collected via GPS technology), will expand understanding of how charges affect driver behaviour and the technology of charge collection.

Meanwhile, a combination of rising incomes, under-investment in infrastructure and patterns of land use that are geared to car-ownership, all point to difficult times ahead. The Freight Transport Association, for instance, warns that, as a result of unreliable travel conditions, the long-standing fall in lorry numbers could turn and begin to rise. Equally indicative of the problems ahead is the support being given by the Transport Secretary to opening motorway hard shoulders to peak traffic.

The prospects are no better on the railways where some commuter services are grossly overcrowded and rising maintenance costs are eating into funds earmarked for adding capacity. For the Commission, which believes that travellers should be able to expect 'reasonable journeys', these are not good omens.

3 The hypothesis

The hypothesis underlying Professor Glaister's work is that, in Britain today, there is no rationale to the costs of using transport nor in the relationship between the costs of driving and using public transport. What travellers and hauliers pay is the result of a mix of history and political decisions in which the potential to use pricing as a tool of efficient transport management was not considered. The case for making use of this tool was recently set out by the House of Commons Transport Select Committee:

> *'Improvements in technology and public transport alone will not solve our congestion and pollution problems. The only effective way of achieving a sustained cut in congestion appears to be to introduce some road user charging on our busiest roads during peak periods.' (5. Para 191)*

The value of the Glaister/Graham model is that it covers cars, lorries and public transport and begins to show where charging is most needed, what its effects on travel might be, and at what level it might be levied.

As Professor Glaister writes, 'Conscious use of pricing policy would, for the first time, make the connections between demand, price, investment, revenues and capital funding, something that is taken for granted in almost every other field of industrial activity.' (2)

Addressing this issue requires changes to the structure of transport pricing. Compared with today, vehicles using roads at congested times and places need to pay more; those travelling at unbusy times and places need to pay less.

4 The Glaister/Graham model

The Glaister/Graham model is a sophisticated and complex tool in the results of which the Independent Transport Commission has great confidence. Yet, as a model of a far more complex reality, it has to be acknowledged that it contains omissions and simplifying assumptions. Neither walking nor cycling is covered, nor is the effect of charging on changing travel times or otherwise modifying patterns of living. Land use effects, such as changes in the location of homes, jobs and shops, are also omitted. Other characteristics of the model are that it probably exaggerates the charges needed to produce results while its identification of rural areas is broad brush and covers a wide range of environments.

Even the maps, meaningful though they are, only indicate how traffic volumes and speeds might change when averaged over 24 hours.

Furthermore, the costs put on damage by noise and air pollutants are inevitably uncertain. Professor Glaister has used external costs defined by recent research for the Department for Transport. But estimates do not exist for costs such as the severance of communities by road traffic and the loss of tranquillity in open country due to road and rail noise. Finally, the effects of pricing changes on bus and rail travel are less well validated than those on the use of cars and lorries.

Yet none of these problems, which are meticulously spelt out by the consultants, invalidates the use of the model. It can be used to ask 'what if?' about long term policy options and, as never before, get a sense of their likely outcomes for travel. The Commission believes that such tools should play a part in defining all future transport policy including updating the Ten Year Plan.

5 The scenarios

The Commission asked Professor Glaister and Dr Graham to compare travel under prices and taxes prevailing in 2003 with a range of policy packages. All of them:

- Show how changes in travel costs would affect travel
- Provide a basis for reviewing transport investment
- Show the costs and benefits of changes in prices and their effects on traffic and travel
- Provide a means to reconsider transport policies.

Four of their twelve scenarios are considered here. The first shows the consequences of doing nothing. The other three ask what if fuel tax and public transport subsidies were removed? What if congestion and pollution charges were added to today's fuel duties? And what if the revenue now collected as fuel duty was restructured and collected as congestion and pollution charges?

A. *'Driver's despair'*

This scenario compares travel conditions in 2010 with those in 2000 assuming no changes in the capacity of road and rail networks.

Under this 'do nothing' scenario the economy is assumed to grow at 2.5 per cent a year for 8 years leading to an overall growth in road traffic of 20 per cent. Motorists and hauliers would encounter more congestion and increasingly unreliable journeys. Travel by public transport would increase too and railway finances would improve but the state of the environment would decline. Treasury revenues would rise by £4.9bn at 2003 prices.

The implications of such changes are shown graphically in Map 1 where blue tints mean higher and red tints mean lower speeds. In this scenario red indicates an average fall of up to 6 per cent in speeds on roads in Greater London, the other big cities, the suburbs and the motorways while blue means little or no change in Cumbria, Norfolk, Devon and other rural counties. Rising congestion would, of course, tend to choke off traffic growth in the cities but in the rural counties of the North and South West it could grow by up to 22 per cent. Professor Glaister observes that, given the prospect of falling oil prices and more fuel-efficient vehicles, Ministers are expecting travel conditions in locations under stress to become even more difficult.

B. *'Market prices reign'*

What if fuel tax was abolished and subsidies for bus and rail travel were reduced?

Under 'market prices reign' travel is treated like most goods and services and subject only to VAT. An attempt is made to avoid subsidies to public transport by increasing bus fares by 20 per cent and London rail commuter fares by 80 per cent. Driving costs would fall and road traffic would escalate – as would congestion. Treasury revenue would fall by £20.4 bn.

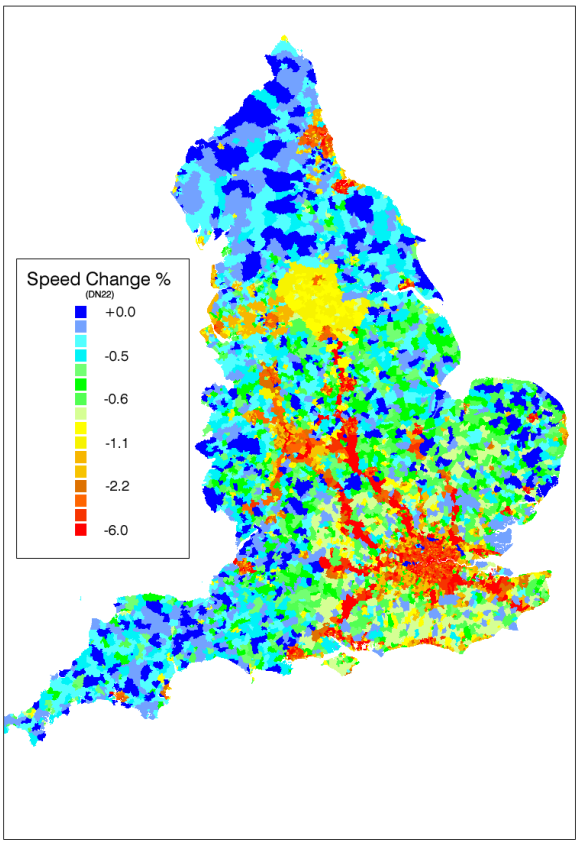
The model suggests that conditions under market prices would be even more extreme than those created by doing nothing. Speeds in the big cities and motorways would fall by up to 8.5 per cent and traffic would grow by up to 32 per cent in the rural North and East.

C. '*Cutting congestion: going green*'

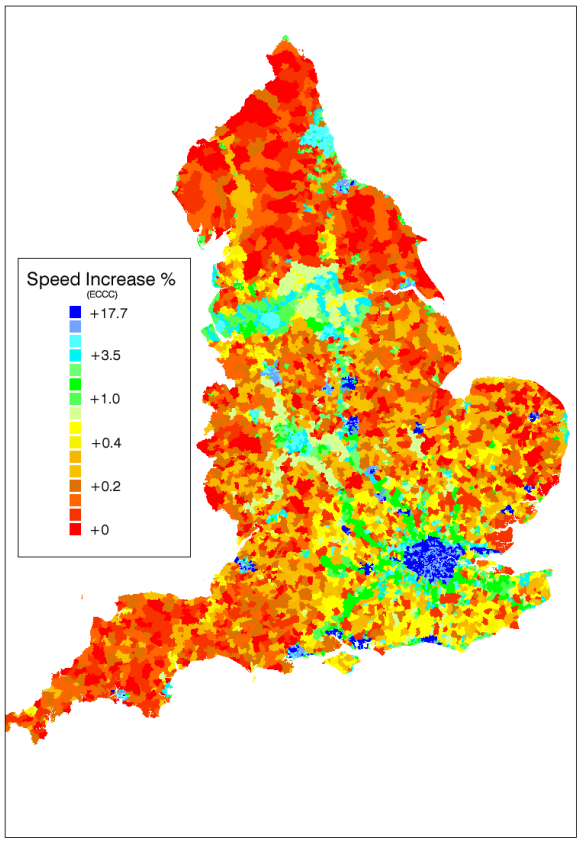
What if, in addition to today's motoring taxes, drivers paid congestion and pollution charges?

Under 'cutting congestion: going green' drivers of cars and lorries would pay fuel duty as they do now, but they would also pay, by the kilometre, and varying by type of vehicle and location, charges related to the delays their journeys caused other travellers and damage to the environment. Car journeys would be fewer and shorter. Driving would be much easier. Congestion would be greatly reduced. Use of telecoms might increase. City living would be less dominated by road traffic. Rural travel would be more expensive.

Map 2 shows that 'going green' has profoundly different effects from 'doing nothing'. Blue and green tints dominate Greater London and other cities, the suburbs and the motorways indicating that, with traffic flows reduced, speeds would rise from between 1 and 17 per cent. Speeds in the rural counties, where congestion is light or non-existent, again show little change.



MAP 1: DO NOTHING FOR TEN YEARS - EFFECT ON TRAFFIC SPEED



MAP 2: ADD ENVIRONMENTAL AND CONGESTION CHARGES - EFFECT ON TRAFFIC SPEED

D. *' Fair Charges?'*

What if subsidies were partly removed from public transport and all the money now collected in fuel taxes was converted into road use charges reflecting congestion and pollution costs?

Under 'fair charges?' all drivers would pay to use the roads in proportion to the contributions of their vehicles to congestion. They would pay environmental charges at all times but at higher rates in towns and cities than in the country. (The value given to environmental costs includes estimates for casualties and climate change.)

Drivers at busy times and places would pay more: and even with environmental charges those on little used rural roads would pay less. Traffic speeds would accordingly rise in the cities and their suburbs and throughout much of the London Home Counties but in rural counties and in the most rural parts of the London Home Counties there would be little change.

Car use in and around cities would decline - as it has already due to congestion charging in Central London. Delays and environmental damage would be reduced. In rural districts, by contrast, driving would increase on the relatively uncluttered roads. Bus travel would grow but increased fares would reduce rail travel.

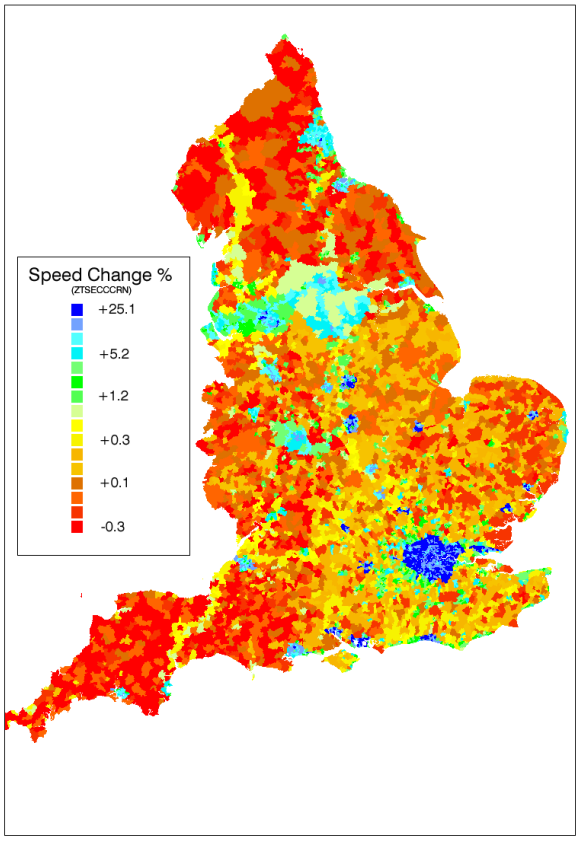
Throughout the country traffic would grow by 4 per cent but environmental savings are estimated at £320m a year and Treasury revenue would rise by £2.4 bn. Professor Glaister says that, in all the scenarios in which he used low estimates for the costs of environmental damage, this one gives 'the best overall net benefit…' (2)

- As is shown by the blue and green tints in Map 3, average driving speeds would rise by up to 25 per cent in Greater London, Brighton, Southampton, Oxford and Norwich. In Bristol, Birmingham, Manchester, Leeds, Newcastle and many other cities they would rise by at least 5 per cent. All suburban districts would also see some increase in average speeds. Rural counties would see little change.

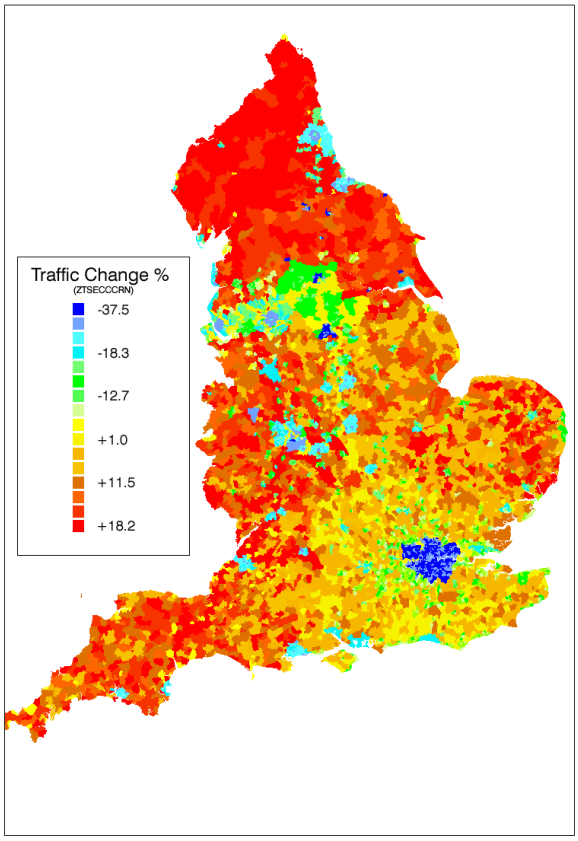
- Map 4 shows the corresponding changes in traffic volumes. In all cities blue and green tints show how traffic would decline by up to 37 per cent. In the suburban parts of the Lancashire and West Yorkshire cities traffic would decline by 12 per cent. Rural parts of the South East would see little change but traffic would grow by up to 18 per cent in rural Northumberland, Cumbria, Shropshire, Devon and Cornwall.

- Reducing subsidies by about half would cause rail travel to decline by 30 per cent but bus travel would still grow by 13 per cent.

An important aspect of this scenario is the cost assigned to environmental damage by road vehicles. Glaister & Graham drew from a range of values calculated by Sansom et al. (6) for DETR and in this case used a value at the bottom of the range. In other modelling runs they used higher values. As Professor Glaister says, much turns on where, between the two extremes, 'the "correct" environmental charges lie'.



MAP 3: EFFECTS ON ROAD SPEED



MAP 4: EFFECTS ON ROAD TRAFFIC FLOW

REMOVE FUEL DUTY. ADD CONGESTION AND LOW ENVIRONMENTAL CHARGES. ADJUST UPWARDS TO ACHIEVE EXISTING EXCHEQUER REVENUE

6 Analysis

Professor Glaister and Dr Graham have shown how transport taxation, pricing and investment could be reshaped in ways designed to benefit travellers, the economy and the environment. It is clear from their work that the benefits of such a reshaping would far outweigh those of reducing or increasing fuel tax.

Their model is a tool that can show where road use charging is most needed, what its effects on travel might be and, for given objectives, at what level it should be levied. It can also show the effects of reducing subsidies for public transport. This is an unprecedented achievement.

One key finding is that, given current levels of investment in roads and railways, a combination of continuing economic growth and falling motoring costs will prompt people to seek to travel more and consequently encounter increasing delay and discomfort. This suggests that doing nothing is not an option.

What should be done? Perhaps the consultants' most important insights flow from the question: 'What would happen if the taxes motorists now pay were collected in ways designed to reduce congestion and damage to the environment?' (Scenario D – 'Fair Charges?'.) The answer is that people would drive less at busy, congested times in cities and on crowded motorways. They would go more by bus and train at the same times and in the same places. Bus and railway revenues would rise but (assuming subsidies were reduced) rail travel overall would decline. In uncongested country districts, the cost of motoring would fall but the extent of the fall would turn on the value put on damage to the environment Road haulage would become more efficient.

The ITC believes that if Government wants to improve travel conditions, policies to restructure transport pricing as set out in 'Fair Charges?' point a way forward. Converting some or all of today's road fuel taxes into congestion and environmental charges could solve some of the problems that have dogged road and rail transport for generations, provide a guide to where investment is needed and create a framework within which transport could become self-financing. Professor Glaister's work also suggests that if the introduction of charging is deferred until after 2010, demand to build new roads will be even greater than today.

Much remains to be done. The 'Fair Charges?' scenario is only a beginning and many issues require more work. By what steps might government convert today's fuel tax into road use charges that would solve problems? Should implementation be left to local authorities or is a national scheme needed? How long would it take to get a national scheme up and running? Where should a start be made – in the cities or on the motorways? Should some or all of the country be covered? And what technologies would give value for money?

The effect of pricing changes on land use is another vital issue. Would higher motoring costs in and around the big cities, coupled with less traffic and (in time) higher quality public transport, retard or accelerate an 'urban renaissance'? And if, by contrast, the cost of rural motoring was reduced, would it cause unwanted development in country towns and villages? Would road user charging, which would be more costly in the south than elsewhere, be more effective than previous regional policies in promoting economic revival in the north?

Social effects and, in particular, social exclusion need to be considered too. Those without cars would benefit from improved bus services but changes to motoring costs could limit the mobility of low income car-owners. How should such people be helped? Finally how would the behaviour of drivers be affected by widespread road user charges? Answers to such questions are vital to making a new structure of transport pricing both consumer-friendly and cost effective.

7 Conclusions

The Commission's conclusions are:

General

- The pricing of travel in Britain is in a muddle. What many people pay bears no relation to the real costs of their journeys.
- Given the practical limitations to road-building, the country faces a choice between worsening congestion and road use charging. Delay over the introduction of charging will make things worse.
- The approach to pricing analysis demonstrated by Professor Glaister and Dr Graham merits further development and should be essential part of official transport policy-making.

Changing the structure of pricing

- Changing the structure of transport pricing would benefit travellers, the economy and the environment. It is a far more important issue than the total amount paid to the Exchequer.
- Road use charging would increase travel by bus and train more effectively than relying only on investment in public transport.
- Under present motoring taxation, those who drive in cities and on congested motorways are undercharged while those who drive in rural districts are overcharged.
- The land-use effects of any changes in transport pricing need careful study. The value put on the environmental impacts of traffic will determine what drivers pay to use uncongested rural roads.

Charges and investment

- In places suffering severe environmental impacts and persistent congestion, road use charges would need to be substantial but in many places lower rates could reduce congestion and make journeys easier.
- If transport was moved towards being financially self-supporting, a steady flow of investment for infrastructure could be assured.
- Charging for road use, which could redistribute traffic to other roads and other times, would reduce the need to invest in new road capacity.
- In some places it would be better to invest money in increasing road or rail capacity than have high charges.

Where and when?

- Traffic congestion is a local and regional rather than a national problem. It follows that much could be achieved by tackling hotspots which may include entire cities and metropolitan regions.
- The exception to this rule is London where road traffic problems are found everywhere within the M25 and extend into the Home Counties.
- The under-pricing of transport in the South-East may be a significant factor in the overheating of the economy there.

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