



Occasional Paper Number One, May 2004: **BEYOND CONGESTION CHARGING**

Introduction

Many people in transport regard the replacement of fuel tax by variable, pay-as-you-drive road charges as *the* transport issue of the decade. What other policy, they ask, promises to bring supply and demand for roads into balance, provide revenue to expand road and rail capacity, and make cars and lorries pay for the damage they cause to the environment?

This discussion paper goes much further. It takes for granted the potential benefits of variable road charges and looks at their wider institutional implications. These are very considerable. Road charging may be expected to turn the Highways Agency into a service provider, change the status of drivers and transform the road system from a political football into a regulated, self-managed trust. It could also be a step along the way to external speed control and eventually driverless cars.

None of this is an immediate prospect. The road to such a future is littered with political, legal and technological potholes. But with the Department for Transport already studying the feasibility of a national scheme of variable road charges, the Independent Transport Commission wants to promote debate about charging's longer term implications.

In an ideal world Alistair Darling, the Transport Secretary, would be leading such a debate but with an election looming and the Press quick to label the government as 'anti-motorist', he is understandably reticent.

Never mind. Just as in the period when the life-saving benefits of seat belts were becoming clear, but belting up was viewed by some with fear and loathing, so now, with road charging offering the prospect of an end to congestion, all of us ought to start debating its pros and cons and its wider implications. I am therefore grateful to Simon Linnett, one of my colleagues on the Commission, for setting out in this paper some blue skies thinking. The ideas he puts forward are his own and do not represent the view of the Commission. However all of us share his aim which is to contribute to a debate on how better to manage Britain's roads in the future.

*Patrick Brown
May 2004*

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BEYOND CONGESTION CHARGING

Simon Linnett

Technology is not the issue

This paper ignores technical aspects of road charging and presumes that, in time, a country-wide, satellite or road-side beacon based system can be delivered. It therefore examines how charging might be combined with other services and how it might change the provision of road services. It derives from this proposition an argument that, to meet the demands that charging would put on them, highway authorities will have to change. This paper looks at several issues.

The opportunities to extend a charging mechanism into other areas of highway management.

Methods of charging and ... of paying charges.

The implications for what might be offered by the providers of road space.

The implications for the Highways Agency and local highway authorities.

The paper ends with a summary of its key messages.

Expanding charging

It makes sense to extract the maximum use from any system used to charge road users.

The cost of the technology could be defrayed by using it for several purposes.

If drivers were aided to use the roads at slack times it would increase the use of the investment.

Offering “driver-friendly” services might make road charges more acceptable to those who fear them.

What sort of additional services might be popular?

The top priority would probably be a distress signal that went automatically to the police in any crash occurring at, say, more than 20 mph.

A planning service that would enable drivers to design their journeys (as is already possible in some top-of-the-range cars) and estimate their cost.

A real time information service for traffic flows, congestion and crashes that would help drivers to avoid frustrating, costly and environmentally damaging snarl ups.

A speed monitoring service that would issue drivers with warnings. Might it even be designed to impose charges for significant breaches of speed limits? Assuming that this would reduce the incidence of crashes and the resulting disruption, it would be of wide benefit. Speed management would, of course, also smooth traffic flows, increase capacity and postpone the onset of congestion.

A real-time parking service that would show drivers the location and availability of space at their destinations.

The first generation technology should be designed, as far as possible, so that these and other services could be added in the future. It should thus perform, if possible, as a common carrier.

Methods of charging

Fuel tax is a practical form of revenue: it is understood; it is simple to collect and varies with fuel consumption. This has several consequences.

Fuel tax increases with vehicle size. Just as bigger houses pay more council tax so heavier, more powerful cars pay more fuel tax. This fairness is a good principle.

The tax encourages manufactures to make, and buyers to buy, fuel efficient cars which, given concerns about climate change, is valuable.

Fuel tax should also promote more economical driving and, therefore, lead to greater safety. Drivers certainly know that slowing down saves fuel: this emerges whenever it is in short supply.

Dispensing with fuel tax and its advantages should therefore be approached with caution. It may be preferable to reduce it and combine it with a variable road use charge that would generate the same overall revenue. What might be the goals of such a combined regime?

It should retain the “fairness” of fuel duty and, like today’s registration tax disc, vary with the weight, power and environmental damage of vehicles.

It should vary with the characteristics of the road being used.

And it should vary according to the level of congestion.

It is assumed that a large part of the road network, possibly the majority by distance, would, for much of the time (perhaps, all of the time), be free of congestion charges. A complex algorithm would be required to determine how much to charge, but the following principles are put forward for discussion.

Charges should be set to reduce all forms of traffic congestion. If charging is to have benefits then they must be delivered.

All costs, including damage to the environment, should be reflected in the charges. Charges should, furthermore, reflect the efficiency of the road. Driving on motorways would, by implication, cost less than on other roads because, given their high capacity, their cost per vehicle kilometre is low.

Driving on urban roads would, following the same principle, cost most because, per vehicle kilometre, they are costly to maintain and operate and, because, any noise or other pollutants emitted on them, affects large number of people.

Fuel tax would be set to represent the minimum cost of driving in Britain. It would, therefore, need to cover, for normal uncongested roads, the return on capital investment, repair and maintenance, environmental costs, policing and road safety.

Varying levels of sophistication can be envisaged for charging. At the highest level of development drivers setting out early in the expectation of avoiding rush hour traffic and of paying a low price would clearly feel aggrieved if a crash or other unexpected event led to them paying a peak rate. Likewise, a driver who had booked (see below) a rush hour journey at high cost but, again due to the unexpected, ended up being late would have grounds for complaint. In such circumstances, rebates might be appropriate.

Above all, the method of charging should be transparent and fair.

Paying road charges

Having established some principles for how charges might be designed, it is worth asking how drivers might pay them. Again, a number of methods can be contemplated. The satellite-based lorry charges due to be introduced in Britain in about 2008 will vary with the size of the vehicle and the distance travelled. Let us go beyond this to assume that future 'network managers' might sell road travel in ways similar to train and plane journeys.

Some drivers would, no doubt, want to book regular journeys well in advance. Why should not **season tickets** be bought at the same time as, and be part of, the windscreen registration disc? Such a system is being introduced in Norway.

The concept of **yield management**, under which a lower price is paid for journeys booked early or at unpopular times is well established amongst low cost airlines. Why not apply it also to road travel?

A corollary of yield management would be to charge to **reduce congestion** and so maximise use of the roads.

Finally it is worth asking whether there might be **tradable road slots**. These would enable travel companies to buy road capacity wholesale and, for instance, sell car journeys that could include rail travel and even hire cars. Looking even further into the future, might not a driver who had booked a slot to Brighton on a Bank Holiday, and who saw the weather deteriorating, trade it with someone else on the internet?

All this presupposes a payment mechanism which, like London Underground's "Oyster" card can record journeys and be pre-loaded with money via bank telling machines. If such cards were designed to cover all forms of travel they would open the door to buying complex, multi-modal journeys with a single action. This is the concept of the "Octopus" card in Hong Kong.

Will civil libertarians regard this as a trip too far? Before they do they might bear in mind that today's drivers, by their registration plates, constantly declare the location of their cars. Concepts like the 'Oyster' go further but, by generating high quality information on travel behaviour, also increase the scope for planning and good management.

The offering

Let us recap on what might be offered to drivers by a network manager.

Travellers could book slots on the roads at specific times. This might come with obligations on both sides: for the driver it would be necessary to set off when planned or pay a penalty: the network manager would need to ensure that drivers had reasonable journeys or refunds.

Travellers would pay in ways that would make it easy to go by all forms of transport.

A "pay-as-you-drive" service should be available for those who are not price sensitive and want to "show and go".

Discounts could be offered to those without time constraints or who, though disability or age, were highly dependent on their vehicles.

Above all else the payment system should cater for the widest possible range of needs.

What does this mean for the Highways Agency and other road providers?

Changing from the convention of funding road investment from general taxation to financing it from travellers has many implications for highway authorities.

Such institutions would no longer be mere providers of road space. They would be selling journeys with commitments to reliability. They would be parts of a service industry.

Given the importance to people of being able to move easily between bus and taxi or to park & ride, transport providers would need to be interdependent. But how might this be achieved? The railways have a regime which allows one company to pay for delays caused to the services of another. This suggests that, on a much smaller scale than road travel, such systems can be made to work. But should there be a single national road network manager which would 'generate' journeys (not road space) and, in turn, hire the necessary road space from the Highways Agency, local highway authorities and even, say, the operators of PFI bridges? Other utilities do not provide much guidance. In the energy field different suppliers sell electricity (much of which they also generate) via a grid owned by others. But flows of electrons and fluids are far from resembling the movement of people, and linking up passenger journeys, at least on the Trunk road network, calls for something similar to central despatch at the National Grid. Network managers would be taking on significant risks. How much would people want to travel? Would they still go in severe weather? What would be the fall out from serious crashes? How reliable would the technology be? This is a very different business from the current model of "build it and wait for the drivers to turn up". Managers would accordingly need full authority to manage traffic on their networks.

What is emerging in this scenario looks increasingly like a service that would benefit from private sector skills and disciplines. It follows that any study of the feasibility of charging should consider alternative ownership structures. The prospect that, for the first time, the roads will be creating revenue that depend on performance is an added reason.

Finally, depending on how the charges are set and how Government hypothecates the revenue, it is likely that surpluses will be generated. If they are there must be a case for allocating them to the network managers. Such funds could be used, for instance, to pay for noise barriers thereby making it acceptable to increase speed limits, to build by-passes in tunnels rather than on the surface and, of course, completely new road, rail or bus capacity.

Interestingly, as the Highways Agency moves towards giving its highway building contractors greater responsibility for the subsequent use of the road, it is already moving in the direction of this model.

Conclusions

Road user charging must be seen as much more than a method of raising money; more, even, than a way to reduce congestion. It is potentially the lynchpin of a new era in driver behaviour, traffic management and highways finance. Of course there will be costs. Of course there will be losers. But the advantages shine through them.

Ancillary user services should be developed and piggy-backed onto any charging technology.

The benefits of fuel duty should be kept. If new, though not necessarily additional, charges are introduced, let them be designed to allow complementary traveller services and to encourage changes in behaviour that would be to the general good.

Charging could change fundamentally the relationship between drivers and highway authorities.

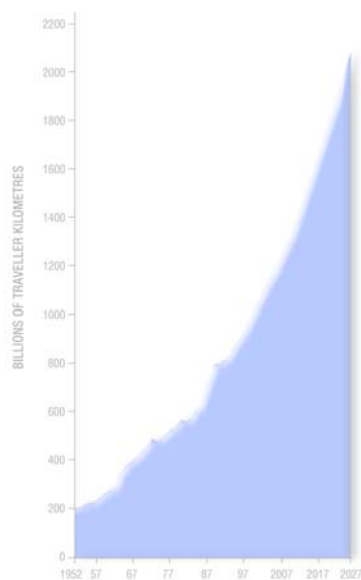
- Drivers would pay for a right to a journey.
- They would be encouraged to plan trips.
- They would be compensated if their reasonable expectations were not met.

Highway authorities would become “network managers” - a service industry and not a provider of road space.

How should the revenues from charging be used? And how could highway authorities could be best re-designed to take on new responsibilities and duties? These are key issues.

Note

The potential of variable road charges to reduce congestion was set out in the ITC's paper 'Transport Pricing: Better for Travellers' www.trg.soton.ac.uk/itc. No one should underestimate the added potential that could come from looking '***beyond charging***'.



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