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ROAD PRICING AND PARKING RESTRICTIONS - BREAKING THE LINK?

INTRODUCTION

Road pricing has been in place in Oslo since 1989 and was introduced in central London in February 2003. Though the two capitals vary greatly in scale and the scope of possible measures, they share substantially many of the same challenges.

In this paper, produced jointly by Colin Buchanan & Partners, London and Asplan Viak, Oslo, we consider and compare developments over recent years, focussing particularly on road-pricing and parking as means for break the link between economic growth and traffic growth.

Road pricing

Increases in disposable income give travellers have more choice. The cost structure of transport is changing – fuel, tickets, traffic flows and travel times, parking fees etc. – but travellers in European cities generally have more choice between travel modes today that they did 15 years ago.

Much effort is currently being put into understanding and adapting road pricing for use in Europe. The economics are relatively clear. If the charge is set high enough and the price structure is communicated effectively, road pricing will influence individuals' travel choices. At some point, additional costs will outweigh the benefits of car usage for most people. However, as a proportion of car-users find other, cheaper means of transport and leave more space on the roads, this will result in giving road travel a higher value than before. A proportion of motorists will subsequently find that they can travel faster and will be willing to pay the price. The initial effects in traffic reduction can then be expected to be partly outweighed by new additional traffic.

Visibility is important. Use charging with toll booths creates a visible cost for road users providing more of a physical barrier than hidden electronic devices that charge the same. The success of road pricing in influencing travel choice is at the same time dependent on reliable and appropriate information, so that travellers can make decisions about the choice of route and travel mode *before* the start of their journey. As an example, we have suggested developing an information service for cell-phone subscribers, to provide travellers with up-to-date and route-specific information on possible transport delays, which could be accessed prior to departure.

ROAD CHARGING AND PARKING IN THE OSLO REGION – A COMPROMISE WITH LITTLE EFFECT ON TRAFFIC

Introduction

The Oslo Toll Ring was introduced in 1990. The Oslo toll system is similar in principle to road tolls elsewhere, enabling the government and the main road users to share the costs of new infrastructure. In Oslo however the entire city was cordoned with toll booths on all access roads.



The Oslo toll-ring, showing manual toll booths and automatic gates on the E-6 motorway.

Income generated from the Oslo toll ring has been used to fund infrastructure projects, including motorways, tunnels, a light rail extension and bus facilities. In 2000 the charge was increased to raise additional funds for suburban rail investments. The toll booths will, according to the original plan, be removed in 2007.

In view of their success in generating income, together with increasing concern at traffic growth in the city, the transport authorities are now considering a replacement scheme after 2007, both to fund additional infrastructure as well as to regulate traffic in the busiest periods.

Increasing the toll ring charges is however very controversial. Widening the scope of parking restrictions in central and edge-of-centre areas is therefore also seen as necessary to counteract traffic growth. To achieve this however, conflicts of interest need to be resolved between policy makers and the major parking companies.

We will describe and evaluate the present developments in road pricing and parking in the Oslo-region, with a look into the future: what is possible and what is likely to happen.

The Oslo toll-ring

The Oslo toll-ring was introduced as a means of funding investment in an urban highway programme. Regulating traffic was not an objective of the toll ring. The tollbooths were operational in February 1990, at the same time as the new city-centre bypass tunnel was opened (the "Oslo-tunnel"). The charge was NOK 10 (about €2.00 at current prices) for each vehicle heading towards the city centre. Bulk purchase of magnetic-strip subscriptions or punch cards was also possible, enabling automatic passing for regular users.

There was an initial drop in the number of cars and lorries that passed after the toll-ring was introduced. The initial reduction in traffic was however due at least as much to the slump in economic activity in the early 1990's as to the introduction of the toll-ring. Since the first years, the flat charge has kept pace with inflation and road traffic has increased, though less proportionately than employment growth in Oslo.

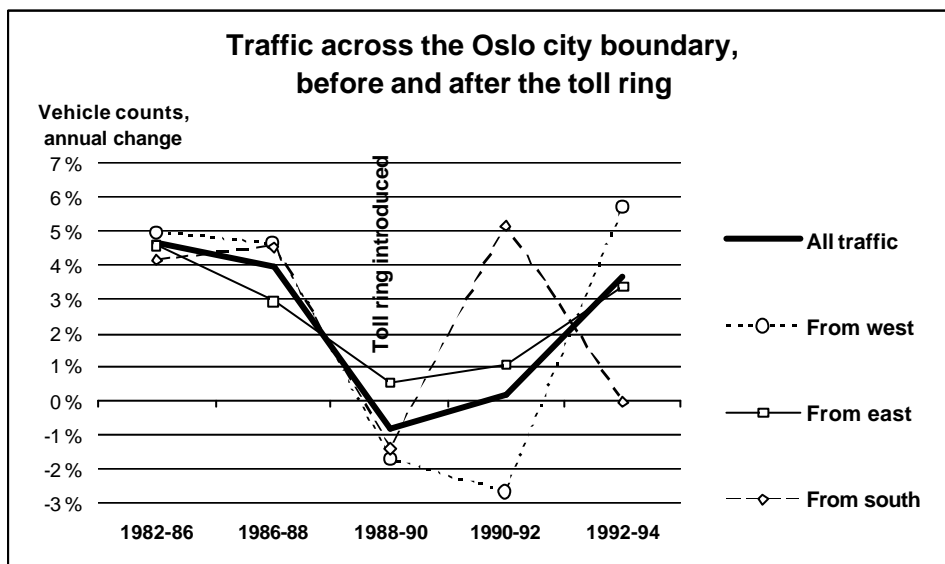


Figure 1
Reductions in traffic
at the time of the
toll ring

Effects on traffic

Following the first two years of the toll-ring, road traffic has increased substantially along all the main suburban highways. Much of this increase in traffic has been stimulated by large-scale road improvements, which have been achieved precisely through the funding mechanism provided by the toll-ring. The present toll-ring cannot be seen as a means to reduce or contain traffic-flows; not only is the charge too low, but the income generated has been invested in more road space, leading to increased traffic.

Political consensus and popularity

The toll ring was introduced in Oslo on the basis of a broad consensus between the main political groupings and between Oslo city, the surrounding county and the national government. As a fund-raising project the scheme has been widely accepted by the general public, following initial

scepticism from road-user organizations. Increased charges by 20% in 2001 were also generally accepted, although attitudes to the scheme have become more negative in most recent years.

To achieve the local political support that was needed, the toll-ring was planned to have a lifespan of 18 years, from 1989 to 2007. We are now however at the stage of defining the next generation of the Oslo toll-ring. There is now tentative political support for extending the toll-ring in principle. We are currently seeking new and less intrusive technology and may be asked to review which areas should be included within the toll-zone.

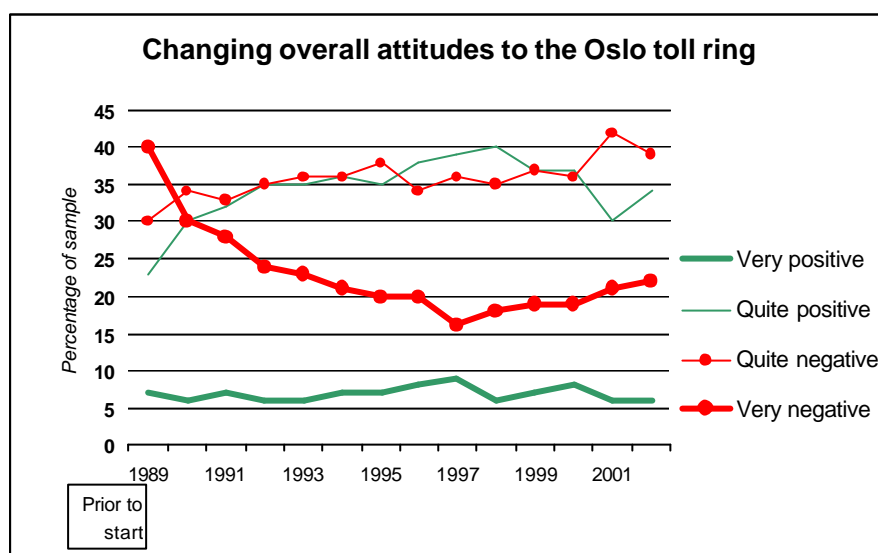


Figure 2 A fine balance between popular support and opposition

A study of peak-hour increases in the toll charge¹

Oslo City Council has examined the possible effects of increasing the charge of road pricing during peak hours, so that car journeys would be more expensive than at present during the rush hour and cheaper or free outside working hours. The Institute of Transport Economics (TØI) has estimated the effects of a range of alternative time-structures for an increase in toll-charges, using a computer-based model for road traffic and public transport.

The TØI study indicates that changes in the detailed time spacing of the higher charge would produce only small changes in the effects on traffic and social benefits. The average toll charge in 1998 was € 1.12 per crossing for inward traffic only. The research proposal has recommends increasing the charge to between €3 and €5 during peak hours, €1.50 during the rest of the day and no charge between 10 pm and 6 am and at weekends.

The overall net social-benefit of rush hour charging is estimated to be around €25 millions. The main measurable benefits would be increased mobility and reduced journey times. Peak hour charging could lead to reductions in travel time averaging 3 ½ minutes, or 14 %, for motorists across the city as a whole. Travel times for journeys that specifically cross the toll ring could be reduced by up to 7 minutes.

¹ Based on work at the Institute of Transport Economics, TØI-note 1155/2000, Odd I Larsen & Tor Normann Hamre)

In addition, cost savings would be made on reduced fuel consumption and reduced staffing at the toll booths. Additional and less measurable benefits would be air quality improvements and traffic safety.

Seen in a wider regional perspective, the expected effects on traffic of peak hour charging would be small. The total traffic in the Oslo-region is currently about 6 billion vehicle-kilometres per year; introducing rush-hour charging with the toll-ring is estimated to reduce the total traffic by only about 3%, traffic inside the toll-ring by 4%, while 7% more passengers than today would be expected to use public transport than with the current toll-charge.

Car parking as an instrument for traffic-planning

The influence of parking on travel-choices

A number of studies have been carried out to examine the links between growth and travel patterns in the Oslo-region. A survey was carried out in 1996, to document the link between travellers' decisions and a range of factors, including work place parking. This study focused on the Oslo-south corridor.

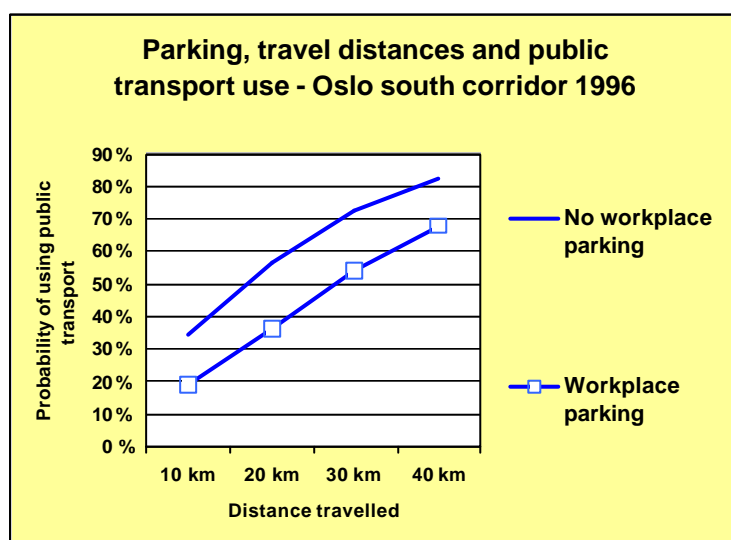


Figure 3 Use of public transport in journeys to work

Calculations based on a study of the Oslo south corridor, TØI 1996

This survey has enabled us to link the total travel time and parking provision, with decisions of how to travel to work (Figure 3). The shortest journeys to work have a low percentage using public transport on average, increasing to more than 50% for longer distances. Access to free parking space at or near the workplace has a strong influence on travel patterns, increasing the proportion that uses public transport by as much as 20 percent, or the equivalent of an adding a further 10 km to the journey!

Local government as a car-park authority

Local authorities can develop and follow up parking policy through the planning legislation. The Planning Law provides for general strategic parking guidelines, as well as site specific legally binding parking requirements.

Parking norms have so far been used to ensure that minimum needs are met by developers and landowners. This has led to extensive parking provision in most towns. Only recently, maximum

threshold parking levels have been introduced in a few town centres, as a means of reducing the total parking space and discouraging car use in the long term.

In addition to planning legislation, the Road Traffic Law provides the means for immediate action. Local authorities can charge fees and decide on the charging regime for publicly owned parking space. The aim of parking legislation has always been to maintain order and mobility in local traffic. In the example shown below, we can see how parking policies have typically prioritised motorized access to town centre traders as well as access for groups with special needs.

Table 1: Goals and means in local government parking

Goals
<ul style="list-style-type: none"> ✍ Reduction in parking-related accidents ✍ Adequate traffic flow for all road users ✍ Good vehicle-access to towns' functions, especially for handicapped, shopping, local services and traders ✍ Improved local environment for residents and businesses near the roads
Mechanisms
<ul style="list-style-type: none"> ✍ No-parking zones with clear regulations and signing. Pedestrian areas and road-crossings are given high priority ✍ No-parking in bus-lanes, pedestrian areas, pavements ✍ Effective and short-term parking in town centers, for circulation of customers and increased access. ✍ Parking spaces reserved for disabled people and freight. ✍ Parking schemes in residential areas, for safer and cleaner living spaces. ✍ Signing and information to road users. New technology and payment schemes should be user-friendly and easy to use. Parking advice and service should be easily accessible.

Source: Stavanger Parking Company's web site

Parking fees also provide a valuable source of income for hard-pressed local government finances. Some authorities have therefore become more involved in private parking companies, leading to some concern over the influence this could have on following up longer term public policy.

The Government's role

Whilst local government is traditionally concerned with developing access to trading and services towns, the government is concerned mostly with parking as a means to regulate traffic and achieve environmental improvements in larger towns. National studies and policy have emphasized these aspects since the 1970's. In its White Paper no 37 (1996-97), the former government encouraged local authorities to develop *comprehensive* parking policies in the towns, while the government's role would be *to improve the legislation, removing unnecessary obstacles to an effective use of parking policy as a local tool to achieve environmental goals*. These signals are even clearer in subsequent green papers and transport plans, though more radical proposals for using parking-policy to achieve environmental goals have usually been watered down in their passage through parliament.

The government's role has, in practice, been limited to a purely legislative one, producing government advice notes relating to the planning and highways legislation. The principle of delegating responsibility to locally elected members is important and there are many conflicting goals between governing bodies. The large number of privately owned parking facilities complicates the picture still further. Any effective parking policy must be feasible for the companies involved, who fall outside the current public sector legislation.

Private parking

As a response to increasing traffic and demand for parking, we have seen a significant growth in the private parking sector over the last 30 years. Most of the private parking is managed by a small number of companies, including some multinationals. These companies all operate under legislation for private businesses.

Most Norwegian towns have more private parking than public car parks. The companies offer their services to both private and public landowners and clients. Private car parks are typically located at or near transport-termini, major institutions, shopping centers and vacant land in town centers. Parking fees are set according to market-assessments. A public sector clients' policy can be an important factor in the local market for car parks and will in practice often have a strong influence on the fees charged in public car parks that are privately operated.

New legislation?

Looking ahead, a possible new range of parking schemes was suggested in the recently published background paper "*Strategic analysis for counties and urban areas*", which is currently under consideration for the national transport plan review (2006-2015). Here is emphasized. The report emphasizes the need for a coordinated view on public and private parking and recommends changing the law to enable the regulation of privately owned parks. It also argues for changes in tax regulations relating to work-place parking (currently a tax-free benefit) and employer-subsidies for public transport (currently a taxable income) and that we generally improve our understanding of parking as a key instrument in transport planning.

A new politics for transport in key regional developments

Gardermoen - Oslo's new airport

Gardermoen is the new national airport, opened in 1998. The airport is 45 km from Oslo centre. There was a clear objective set at an early stage in the planning, that 50% of air-passengers should use public transport. A new high-speed shuttle train was completed at the same time to serve the airport and a comprehensive bus-service was established. To achieve the 50% objective it was calculated that parking provision should be kept to a low level – about 2,000 lots. Parking is however an important source of income for the airport, so that the parking provision ended up being about twice the recommended capacity and has since been enlarged further.

Fornebu - redevelopment of Oslo's former airport site

The former national airport at Fornebu is a key site for redevelopment, 10 km from the centre of Oslo. The site is located in Bærum, Oslo's largest neighbouring local authority. When the airport was closed down, an area covering about 3 km² was released, which the council hoped could be developed to meet the increasing local housing demands. The sites owners, the government and Oslo City Council, hoped to maximise their gains from the sale of land. A heated debate ran for over 5 years between Bærum on the one side and Oslo city together with the government on the other, over the number of houses that could be developed the Fornebu site.

One of the criteria for high density build in Fornebu was that the area would be served by public transport, with a higher proportion of using rail or bus than in other areas with a comparable location.

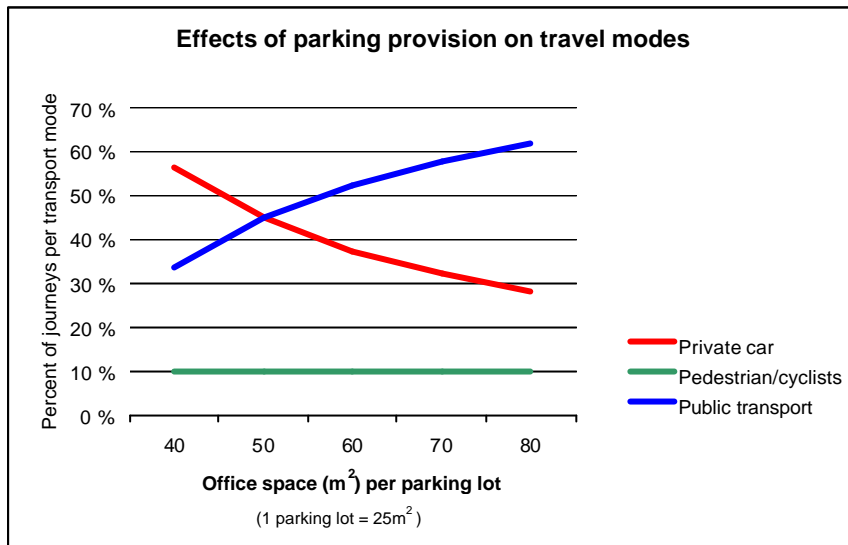


Figure 4 Work-place parking restrictions influence travel modes.

Planning studies recommended a light rail rather than buses to serve the new redevelopment area, as the main access road will have little free capacity. The studies concluded in addition that the traffic development should be constrained by parking requirements that were more restrictive than elsewhere in Bærum. Calculations of the effects of alternative parking requirements were presented as part of the plan (see figure 4).

The planning committee agreed to a plan based on a more moderate reduction in parking than that which was proposed. The site has yet to be fully developed but we anticipate that the level of parking provision will lead to congestion problems and insufficient demand for the public transport service to run economically.

Bjørvika - planned redevelopment in Oslo's harbour

Bjørvika is part of a former industrial and port facility in central Oslo, near the main railway station and public transport interchange. Norway's major traffic routes currently dominate the site. The site will be redeveloped to provide new space for city functions, including employment, housing and culture, including a new national opera house. A precondition for redevelopment in the harbour area is that the present through-traffic will be removed, with the help of a new relief-road.

The new development (estimated 500.000 – 700.000 m² floorspace) will, however itself generate new traffic. Applying the current parking requirements in Oslo central areas, Bjørvika will soon fill up with cars, creating similar congestion-problems and poor environment as in neighbouring side streets.

CONGESTION CHARGING IN CENTRAL LONDON AND WHERE NEXT?

Malcolm Buchanan, Managing Director, Colin Buchanan and Partners.

A long gestation

1. The economic theory underlying road user charging was first proposed by a Frenchman, Dupuit in 1844. The concept was that the users of a transport system (in Dupuit's case canals) should be charged a marginal cost as and when they used it and that the revenues should be invested in improving the system up to the point at which the marginal benefits of so doing equalled the marginal costs incurred.

2. In the UK the idea that road tax revenues should be invested in improving the road system endured about fifteen years after the arrival of the car until the Road Fund grew so large and tempting that it was "raided" by the chancellor of the exchequer, one Winston Churchill, in the 1920's. Since then, and unlike some other European countries, it has been normal practice for UK governments to use road related taxes as general revenue and to re-invest only a small part of them in better roads. Small wonder then that the UK has the highest number of vehicles per km of motorway in Europe (8040 cf 3170 in Sweden).

3. Although, indeed because successive UK governments thus completely failed to establish any relationship between what vehicle users were prepared to spend on driving and what was invested in roads, the economists such as Vickrey and Roth who, after the war, began to apply Dupuit's theories to "Paying for Roads" (see Gabriel Roth's book of that title) usually took it for granted that road pricing revenues should be invested in improved roads. But in the mid-sixties the Smeed Report on Road User Charging saw pricing primarily as a means of controlling traffic in busy areas at busy times of day/week. The use of the revenues was regarded as a separate issue.

4. Over the last forty years since the Smeed Report, there have been many studies of road pricing in London and a good few in other cities. In London the studies were almost unanimous in their successive conclusions that a charge to enter Central London would prove to be a good and highly cost-effective policy. The conclusions written in 1988 by my own company's chief economist, Kingsley Lewis, at the end of a joint study with MVA, provide a good example of the sort of prediction made:

"Charging (£5) for entry to Central London, on its own, produces a net social benefit of between £345m pa and £433m pa, and a financial gain of £295m pa. The extension of charging to Inner London is less efficient; net benefits are reduced, but revenue is increased. Both options are progressive in their effects and produce substantial environmental and safety benefits. "

5. This particular prediction was made using the London Area Model (LAM) developed from the GLTS data and describing Greater London as comprising about sixteen zones, with the networks between and within them being represented by simple speed /flow curves - a refreshingly simple model able to produce a forecast which has proved remarkably accurate.

The need for clear objectives

6. The discussion of road user charging has already highlighted the need for clear objectives. The discussion of Oslo by Asplan emphasises this. Is road pricing aimed at reducing congestion or raising revenues? Or both? And if it is about raising revenues, does it matter what these are spent on?

7. The conventional wisdom in London on this matter seems to be that the revenues should be invested in better public transport alternatives to the car. But if road pricing really reduces congestion, won't the buses go that much faster and produce better public transport without the need for the two hundred extra buses deployed in Central London at the introduction of Congestion Charging?

8. We, in the UK, have always understood the conventional wisdom in Oslo to have been that the revenues should be divided between improving roads (something which Asplan argue cancels out the benefit of congestion charging), better public transport and environmental improvements. Clearly there is scope for confusion on such matters with the potential to dilute the benefits of the scheme as a whole.

9. The answer to the question of what objectives should be is that they should simply reflect as far as possible the general objectives of transport policy. Road user charging and congestion charging should be judged not according to whether they raise revenues but according to whether they contribute significantly to the general objectives of transport policy. In the UK this is somewhat hard to assess because, since the 1998 White Paper, the stated objectives have overlapped and been muddled and the attempts, in advice notes, to get a clear and unambiguous evaluation procedure have not really produced one.

10. However, if we go back to basics and list the objectives of transport policy as being:

- To increase accessibility in terms of reducing journey times and costs
- To reduce accidents
- To improve the environment
- To conserve scarce resource
- To achieve the equivalent for freight
- To be progressive
- To contribute to planning objectives
- To achieve all this at a minimum cost to the public purse

then the evaluation of road user charging becomes much clearer.

11. To start with the issue of what the revenues are spent on becomes irrelevant or at least peripheral. If it is an objective of transport policy to achieve its other objectives at a minimum cost to the public purse, then a policy which raises net revenues is a good one, provided it does not achieve this at the cost of greater disbenefits elsewhere in transport. Raising revenues by increasing fares, for example, is generally a poor policy, because though it raises revenue it usually does so at a greater cost in terms of reduced accessibility, something usually reflected in fewer passengers. A strength of road user charging is that it can raise revenues AND increase accessibility by reducing congestion. Moreover it is generally progressive (since the poorer people are on the buses) and the reduction in traffic will tend to reduce accidents (subject to any increase caused in the use of mopeds and motorcycles) and improve the environment. There is therefore a prima facie expectation that road user charging will be a good and effective policy.

12. A complication on this matter in the UK is that the long hard battles over the "ring-fencing" of road user charging revenues for transport expenditures, though worthily intentioned, carry the qualification that if there were no cost effective policies on which to spend the road user charging revenues, then road user charging itself could be made a poor policy. If the revenues had to be spent on wasteful schemes, then road user charging itself would be made a wasteful policy. In this sense therefore "ring-fencing" is a doubtful policy.

13. Apart from this concern, the only likely question marks over the success of road user charging in Central London are its effect on shopping and business and any increased accidents attributable to more use of mopeds and motorcycles. Regarding the first, although the charge will increase accessibility overall, particularly for those on buses, it increases the price of driving into Central London and could therefore cause people to shop or do business elsewhere. It could therefore conflict with important planning aims such as maintaining a vigorous and vital city centre. There is as yet no evidence regarding the second concern.

The Central London Congestion Charging (CLCC) scheme

14. CLCC was introduced after lengthy studies and consultations, and despite last minute legal challenges and hostile press coverage, on 17 February 2003. The scheme covers the area within the Inner Ring Road or roughly the area within the 12 main rail termini. The area is about 6km East/West and about 4km North/South. It has a resident population of about 250,000? but a supplementary daytime working population of about 1.1 million. The whole area was already subject to tough and expensive parking controls.

15. Those who enter Central London in the morning peak period do so overwhelmingly by public transport. In 1999 the observed mode shares were:

- Rail 78%
- Bus 8%
- Car 12%
- Other 2%

16. It follows from these figures that if CLCC reduced the number of cars entering Central London by 20% and if all these were to transfer to public transport, the increase in the use of public transport would amount to only about 3% In other words despite the widespread fears of the public transport system being unable to cope, the effects of CLCC would barely be noticeable. It was a recognition of this that prompted TfL to proceed with CLCC on 17 February, even though the Central Line, the main East/West underground line running through the charged area was closed on 15 February, following a mechanical failure and remained closed for the first four weeks of CLCC.

17. The CLCC is in operation from 0700-1830 daily from Monday to Friday. The cost of entering the charged area is £5, which may be paid either in advance or up until 10pm on the day. Payment may be made by cash or credit card at on-street outlets, by phone, internet or as a text message. Late payments rise to £10 by midnight and a penalty of £80 is incurred thereafter. This is reduced to £40 if paid within two weeks, but increased to £120 if not paid in four.

18. Exemptions or major discounts are available to:

- residents of the charged zone
- the disabled
- the drivers of cars using alternative energy sources

- powered two-wheelers
- recovery and breakdown vehicles
- vehicles with more than 9 seats.

19. The means of enforcement is by numberplate reading and recording. Numberplates are compared with the list of those who have paid that day, and the owners of defaulting vehicles are then traced via the Vehicle Licensing Office in Cardiff. All numberplates of non-defaulting vehicles are deleted from the records.

20. Despite the relatively small percentages of cars entering the CLCC area, the numbers before CLCC were claimed by TfL to be the equivalent of about 25 lanes of motorway. Within Central London this traffic was formerly estimated to spend 50% of its time in queues, with the cost of this congestion being estimated at £4-6M per week. In readiness for the anticipated problems on the boundaries of the CLCC, about £100 m was invested in traffic management schemes. The revenue raised from the CLCC is to be added to the expenditure programmes of TfL.

Early results of the CLCC

21. At the time of writing the CLCC has been in operation only 3 weeks. It is therefore too early to form a full assessment of its effects and the following paragraphs will be updated at the conference in May. It is however clear, that unlike most traffic management schemes, the effect of CLCC in deterring traffic from entering Central London can be expected to decline rather than increase. Introduction of the scheme was accompanied not only by some confusion as to how payments could be made but also by warnings from TfL that the introduction would be traumatic and things would take six months to settle down. Taking account of the additional complication that the scheme was introduced during the school half-term, it is hardly surprising that its initial effect was a dramatic reduction in traffic entering the charged area and no significant problems at the boundary.

22. The actual statistics for the first three weeks may be summarised as:

Week	1	2	3
Reduction in traffic in charged area	20-25%	20%	17%
Entry payments/day	93k	97k	98k
Penalties issued	34k	30k	25k

23. These suggest a pattern of increasing payments and compliance with a slow erosion of the amount of traffic deterred from driving to Central London. However within the charged area there have so far been no instances of serious congestion - a major achievement.

Where next for road user charging?

24. With road user charging having apparently painlessly and comfortably achieved the effects predicted over 40 years ago, attention is already turning to which towns will be next to try it or whether perhaps a nation-wide system will be introduced. In a country which boasts traffic problems almost everywhere, it is not surprising that speculation is rife.

25. However, the enthusiasm to try road user charging elsewhere is soon likely to be tempered by the recognition that Central London is unique in its public transport accessibility - no other city having a public transport system giving such excellent access from every direction and all distances, and no other city centre having such a large proportion of its workforce (86%) arriving by public transport. On the other hand it is at least possible to serve city centres and other major trip attractors,

such as airports, by public transport and road user charging could provide the funds to do so much better than today. More city centre schemes and equivalent schemes at other major trip attractors, which can be served well by public transport, are therefore likely.

26. In the suburban and extra-urban travel markets, where the car dominates and public transport is no match for it, it seems likely to require a new form of public transport, capable of providing a good alternative to the car to make road user charging acceptable. Though this may seem a vain hope, it is unlikely to remain one for long as the second industrial revolution increasingly infiltrates public transport in the crude and essentially nineteenth century forms we currently know it.

COMPARISONS AND CONCLUSIONS

1. Our joint experience proves that calculations and models of transport costs and travel patterns are more or less correct – road pricing and parking restrictions do detract road users. People do adapt their travelling patterns to new situations in predictable ways. We await the longer term effects of the CLCC with much interest.
2. There is much controversy over the introduction of restrictions over road users, even in city-centre areas. The introduction of road pricing in cities is still perceived as charging more for something which was previously free – or already paid for through road taxes, fuel taxes etc. Starting a road pricing scheme requires clarity and resolve in agreeing the objectives and reaching decisions.
3. The benefits of congestion relief are tangible - both as a result of less traffic and improved infrastructure. Alternative forms of access to vital and dynamic city-centres need to be provided, to offset any possible loss of customers and spreading of activities.
4. City size appears to be an important factor. In large cities such as London, the effects of congestion relief are highly significant, at the same time as the public transport service has a large carrying capacity and already carries by far the largest number of passengers. In many smaller cities, such as Oslo the public transport service into the centre may often be good, yet there is little support for increasing the road charges enough to reduce the numbers of cars.
5. Road charging has to be seen in the context of other transport policies and strategies. Restrictive parking provision at centrally located workplaces would have a major effect, though this can be more difficult to enforce and is often equally unpopular. More importantly, improvements in public transport should go hand in hand with efforts to deter cars, so that there is both a push and a pull influencing peoples' choices.
6. Together with Rome, London and Oslo make up the small group of European capitals which to date have set up schemes for charging road users who drive into the centre. Much will depend on the success these schemes are seen to have. There is a chance that this experience marks the beginning of a range of new perspectives towards urban transport. Not only can public transport benefit from additional funds for modernisation, but the real social costs of road traffic in cities are becoming more widely understood.