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Weekly Economics Briefing

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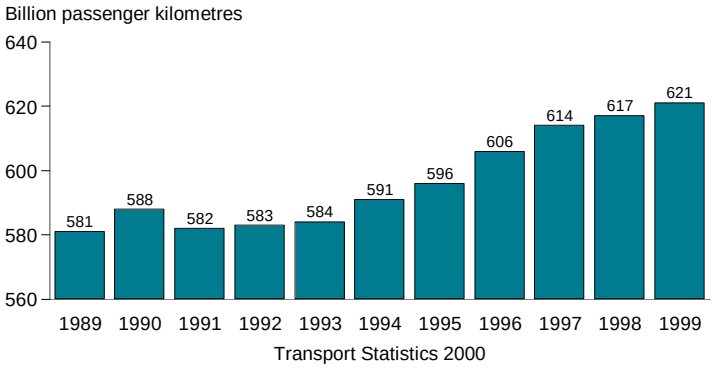
REVISION SPECIAL ON ROAD TRANSPORT

PASSENGER TRANSPORT BY CARS, LIGHT VANS & TAXIS



Transport Statistics 2000

ANDREW OSWALD ON ROAD PRICING

Our country needs road pricing. Like many other nations, Britain is grinding to a halt. Widespread road tolls would be good for firms, for people, and for the environment. The money raised could be spent in useful ways – such as reducing other taxes.

Something has to be done if our children and grandchildren are not to be overwhelmed by jams and concrete.

Andrew Oswald
Professor of Economics
Warwick University

Britain's congested roads are costing the economy billions of pounds per year in external costs. The long term growth in the use of private motoring ahead of alternative modes of transport and the rising volume of freight carried on major roads is an issue of major importance for the government, industrial organisations and the millions of motorists caught up in queues and slow moving traffic every day of the year.

In 1998-99 there were 24.5 million cars and light vehicles on our roads. Last year 85% of total passenger kilometres were taken using our roads. There has been a 41% expansion in average car mileage per person per year since 1985-86.

What factors explain the sustained growth in car ownership and use? What are the externalities arising from the apparently inexorable growth of private motoring? Can road pricing provide a solution to congestion in our major towns, cities and motorways? How successful have other approached to traffic management been in the UK? And can we learn any lessons from overseas as the UK seeks to control and manage ever higher volumes of traffic? This revision briefing considers some of these issues.

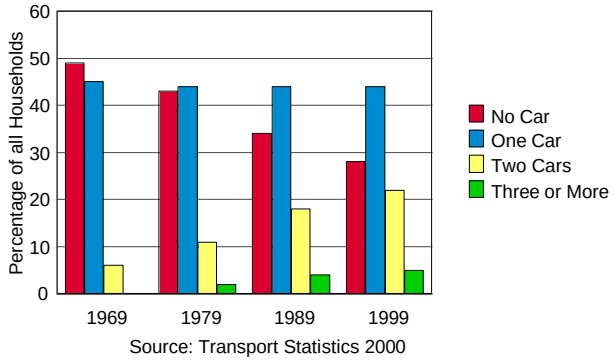
UK Road Traffic By Type of Vehicle

Billion vehicle km

	1990	1992	1994	1996	1997	1998	1999
Cars and taxis	335.9	338.0	345.7	362.4	370.9	375.6	380.1
Motor cycles etc	5.6	4.5	4.2	4.2	4.1	3.9	4.6
Larger buses and	4.6	4.6	4.7	4.8	4.9	4.9	5.0
Light vans	39.9	41.2	42.5	45.1	45.6	48.1	49.2
Goods Vehicles	24.9	23.8	25.5	26.0	27.1	26.7	28.1
All motor vehicles	410.8	412.1	422.6	442.5	452.5	459.2	467.0

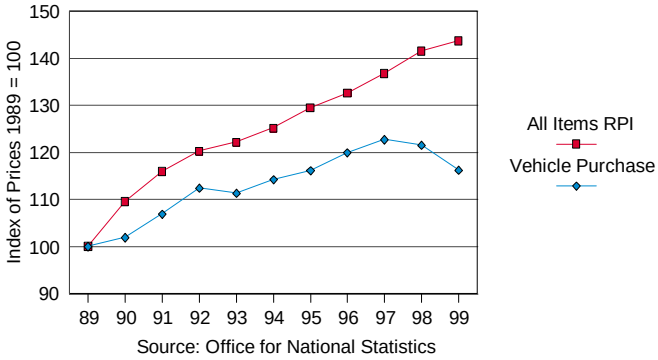
TRANSPORT TRENDS

HOUSEHOLDS WITH REGULAR USE OF CAR(S)



Source: Transport Statistics 2000

FALLING REAL COST OF VEHICLE PURCHASE



Source: Office for National Statistics

The Growth of Car Ownership and Car Use

The top chart shows that the percentage of households with no access to a car has fallen considerably over the last thirty years—from 49% in 1969 to just 28% in 1999. Conversely the percentage of households owning and using two cars has jumped from 5% in 1969 to 21% now.

Several factors explain the year on year increases in private motoring shown in the table below. It should be pointed out that transport as a sector has enjoyed sustained growth over recent years—a reflection of the cyclical strength of the economy.

Car ownership has expanded because of:

- Rising real incomes—new car ownership has a high income elasticity of demand, so as people enjoy growing post tax real incomes their demand for private transport increases. The income elasticity of demand for public transport is lower.
- Social factors that have resulted in changing journey requirements—including an increase in average travel to work distances, the growing number of children transported via the "school run" and the development of out-of-town shopping and leisure facilities
- Under-investment in mass transport—leading to a bus and rail system that is undermined by delays, poor quality services and rising real fare levels
- A fall in the relative costs of car ownership —new and second hand car prices are now falling and (until recently) the real cost of petrol has also remained fairly low. In contrast the relative prices of alternative forms of transport have increased over the last ten years.

The proportion of all passenger kilometres accounted for by cars, light vans and taxis has remained fairly stable at 85% over the last decade. Air travel has become more popular but although the growth rates in the second half of the 1990s are impressive, only 1% of passenger mileage is done through domestic and international airlines.

Rail has likewise seen an expansion in traffic since 1994—but the proportion of all passenger kilometres remains the same in 1999 as it was a decade earlier.

Billon passenger kilometers per year

	Buses and Coaches		*Cars, Vans and Taxis*		*Motor Cycles*		*Pedal Cycles*		*All Road*		*Rail*		*Air*		*All Modes of Transport*	
		%		*%*		*%*		*%*		*%*		*%*		*%*		*%*
1989	47	*7*	581	*85*	6	*1*	5	*1*	639	*94*	39	*6*	4.9	*0.7*	683	*100*
1990	46	*7*	588	*85*	6	*1*	5	*1*	645	*93*	40	*6*	5.2	*0.8*	690	*100*
1991	44	*6*	582	*86*	6	*1*	5	*1*	637	*94*	39	*6*	4.8	*0.7*	681	*100*
1992	43	*6*	583	*86*	5	*1*	5	*1*	635	*94*	38	*6*	4.8	*0.7*	678	*100*
1993	44	*6*	584	*86*	4	*1*	4	*1*	636	*94*	37	*5*	5.1	*0.8*	678	*100*
1994	44	*6*	591	*86*	4	*1*	5	*1*	643	*94*	35	*5*	5.5	*0.8*	684	*100*
1995	44	*6*	596	*86*	4	*1*	4	*1*	648	*94*	37	*5*	5.9	*0.9*	691	*100*
1996	44	*6*	606	*86*	4	*1*	4	*1*	658	*94*	39	*6*	6.3	*0.9*	703	*100*
1997	44	*6*	614	*86*	4	*1*	4	*1*	666	*93*	42	*6*	6.8	*0.9*	715	*100*
1998	45	*6*	617	*86*	4	*1*	4	*1*	671	*93*	44	*6*	7.0	*1.0*	722	*100*
1999	45	*6*	621	*85*	5	*1*	4	*1*	675	*93*	46	*6*	7.3	*1.0*	728	*100*

EXTERNALITIES FROM ROAD USE

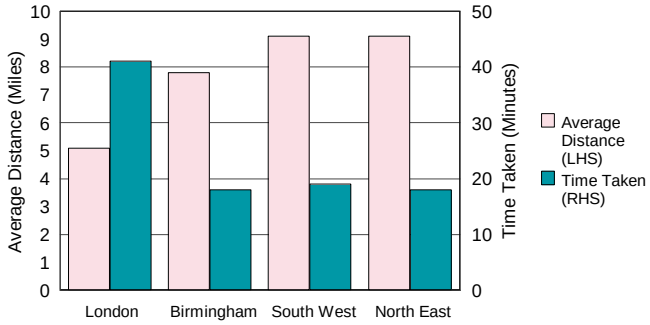
EXTERNALITIES FROM ROAD USE

It is widely recognised that the private use of scarce road space creates external costs which the road user (be they individual or commercial users) rarely take into account. The main problem comes in trying to assess the full monetary value arising from congested roads and motorways. For there are missing markets when it comes to valuing some of the environmental consequences of ever increasing volumes of traffic on our road network.

Some of the negative externalities arising from road congestion are listed —the list is not exhaustive!

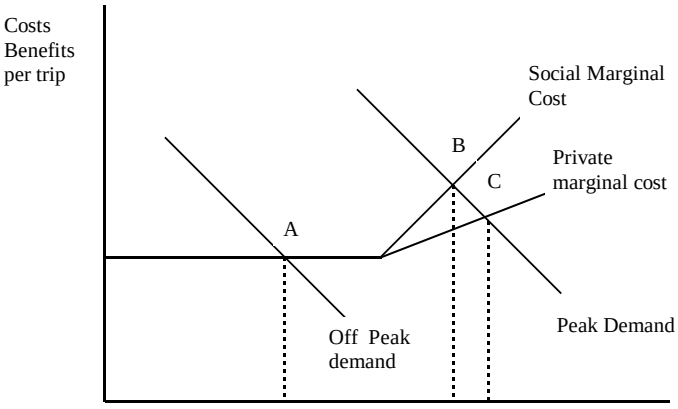
- **Pollution**: The transport sector is the 3rd largest source of greenhouse gas emissions and road transport accounts for 94% of CO2 emissions from this sector. Recent studies have highlighted the link between pollution from car fumes and thousands of premature deaths each year. The environmental impact is worsened by the loss of land and natural habitat to new road developments
- **Road congestion externalities:** More traffic on the roads reduces average speeds and increases journey times. This adds directly to the costs of transporting goods and leads to higher retail prices for consumers.
- **Competitiveness:** Traffic congestion damages the competitiveness of UK businesses and has a negative effect on labour mobility and the tourist industry, The National Economics Research Association estimated in 1996 that the total annual cost of road congestion to the British economy was in excess of £7 billion. Other estimates put the figure much higher than this.
- **Employment costs:** Many businesses suffer from employees arriving late for work and some have to employ extra staff to beat the effects of congestion. Being stuck in a traffic jam represents a deadweight loss of time and can lead to lower productivity (as measured by output per person employed)
- **Additional costs from accidents** and **higher maintenance costs** from wear and tear of the road system. One might add to this the external costs created by delays to emergency services
- **Reductions in fuel efficiency:** Delays caused by increasing levels of congestion reduce the fuel efficiency of vehicles and create an increased risk of even greater air and noise pollution,
- **Social exclusion effects:** Many people cannot afford a car but traffic congestion itself creates problems for buses and other modes of road transport—this can lead to people without access to their own transport becoming increasingly isolated within their own community

GO THE DISTANCE - BUT AT WHAT SPEED?



Source: Centre for Economic and Business Research (2001)

Recent research from the Centre for Economic and Business Research published in January 2001 found that commuting by car is cheaper in rural areas than in cities. The CEBR study found that total daily running costs for a car user in London came to over £21. This figure included the costs of fuel consumption, urban parking charges, depreciation of vehicles, maintenance, tax and insurance. The congestion created in city areas has the effect of reducing average speeds and lengthening average journey times. It also increases fuel consumption (lower fuel economy rates). The CEBR report found that the daily running costs in the South West and North East regions came in a touch over £12 per day. Rural commuters achieved average speeds three times as fast as in London and 50 per cent faster than in Birmingham.



At off peak times, a given stretch of road is un-congested. Each motorist faces a private cost for a given journey that includes the variable costs of running the car + the value of time spent making the journey. However as demand for road space increases, extra cars joining this road in a given time period reduces the average speed of other road users. Journey times increase and other externalities are created. There is now a divergence between social and private costs. But the motorist will normally only consider the private costs and benefits arising from their journey. At peak times, the private optimum demand for the road space (at C) is somewhat higher than the social optimum (traffic flow at point B)

THE ECONOMICS OF ROAD PRICING

ELECTRONIC ROAD PRICING

AN IDEA WHOSE TIME HAS COME?

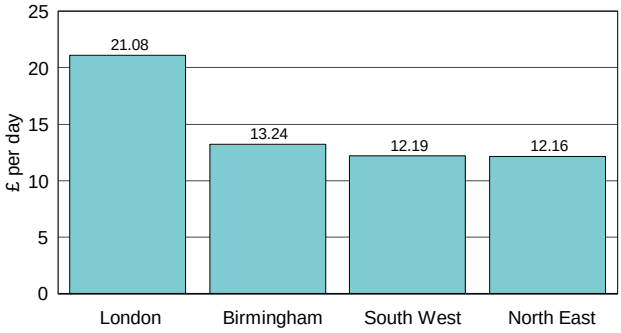
For many years, motorways and major trunk roads in the UK have been regarded as public goods—available to motorists free at the point of use. Motorists have "paid" through vehicle excise duty, VAT and fuel duty—but there has been no explicit attempt to charge motorists for each journey made on a particular stretch of road at specific times. **Road pricing** represents a charge on the personal or commercial use of scarce road space. It seeks the change the relative price (cost) of using a car on designated routes and specific times. If introduced on a large scale it would be a more targeted (and flexible) approach to reducing traffic congestion than simply higher duties on fuel or changes to road tax.

THE CASE FOR ROAD PRICING

- Road space should be rationed by the price mechanism. Motorists benefit directly from a good road system and reduced congestion should be something that people are willing and able to pay for
- The current system of rationing road space (queuing of traffic) in economically inefficient . Road pricing will improve traffic flow and lead to an improvement in the allocative efficiency of road transport
- Motorists should pay for some of the external costs that they generate through the use of their car. Variable road tariffs and tolls can reflect these costs
- Road pricing is flexible - charges can vary according to times of day, weight of vehicle, types of user
- Foreign users of UK road space can be excluded from taking a "free-ride" and adding to congestion
- Revenue from road pricing can be "ring-fenced" to finance improvements in the road system and also promote and expand alternative systems of mass transport
- The technology for introducing and implementing electronic road pricing is now in place
- Road pricing schemes can be designed to achieve a degree of fairness (equity) between road users, to be convenient and easy to understand, reliable, efficient and difficult to avoid

Road pricing schemes have been introduced with some success in several countries. Singapore is a clear example of this. The authorities in Singapore have built a system around an **area licence scheme for vehicles** and **electronic road pricing**—toll levels are reviewed every three months and can therefore adjust to take into account changes in traffic flow and specific areas and times when congestion is at its worst.

DAILY RUNNING COSTS FOR COMMUTERS

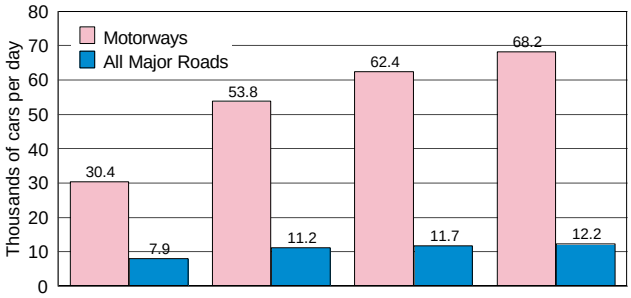


Source: Centre for Economic and Business Research (2001)

POSSIBLE PROBLEMS AND PITFALLS

1. Costs of introduction and implementation and the need to constantly upgrade the technology
2. Possible diversion of traffic to routes not covered by electronic road pricing
3. Distributional impact on low-income groups—e.g. the exclusion of the marginal car user
4. Households may switch to older cars—more damaging to the environment
5. Can mass transport systems cope with the expected increase in passenger demand following ERP?
6. Road pricing cannot hope to perfectly internalise the external costs of motoring—fuel taxes may be a more appropriate way to correct for the environmental externalities of car use

DAILY FLOW OF MOTOR VEHICLES ON ROADS



Source: DETR Transport Statistics 2000

There was a sharp rise in average daily traffic flow on Britain's motorways in the 1980s. The rate of increase has slowed down in the last ten years but the projections are for further increases in the current decade. Traffic flow has also increased on other major roads—in 1999, traffic flow was 50% higher in built up rather than non-built areas. Data from the DETR finds that over half the journey speeds monitored on non-urban motorways and dual carriageways were in excess of the specified speed limits.

ALTERNATIVES TO ROAD PRICING

PASSENGER TRANSPORT PRICES (1981 = 100)			
MOTORING COSTS	**1991**	**1998**	**2000**
Vehicle Tax & Insurance	220	335	400
Purchase	144	174	158
All motoring costs	163	224	236
FARES			
Bus and Coach	198	278	299
Rail	201	278	294
Retail Price Index	***185***	***227***	***237***

THE M4 BUS LANE

Since June 1999, six kilometres of the eastbound M4 has been reserved for the exclusive use of buses, coaches and taxis. The main aim of the Bus Lane was to reduce the journey time of these vehicles *without* significantly affecting other vehicles. The changes to this stretch of the M4 included lower speed limits for some sections in a bid to improve overall traffic flow.

IMPACT

Research published in recent weeks has found that bus journeys have enjoyed an average reduction in journey times of 3.5 minutes at peak traffic period. But the lower speed limits has raised journey times by 1 minute during off-peak periods.

There has been a 1.8% per cent increase in the total time spent by vehicles when travelling on this stretch of road - but an external benefit has been a marked reduction in traffic noise levels and carbon emissions at off-peak times. 7% of vehicles on the M4 carry 21% of the people who use this motorway. Have the benefits outweighed the costs?

CHANGING THE BEHAVIOUR OF MOTORISTS

If the government is serious about reducing the growth of traffic on major roads at peak times, then what are the alternatives to a system of road pricing?

Command and Control Approaches

Various traffic management options have been introduced in towns and cities in the UK overseas. Policies include the **compulsory bus lanes** (see the left hand box on the M4 Bus Lane) and **lanes for high occupancy vehicles**. Some authorities have opted to **ban motor vehicles** from certain areas and introduced sweeping restrictions on **parking** and expansions in **pedestrianized areas**.

Developments in technology might now allow governments to introduce satellite speed control systems for cars on major roads!

Market Measures / Economic Instruments

Successive British governments have used the tax system to control the externalities arising from car use and seek to limit the expansion of the car economy. The **fuel duty escalator** was in place from 1993-1999—leading to sharp rises in the **real duty on fuel**. Labour has also introduced changes to vehicle excise duty and reforms to company car taxation favouring cars engines with greater fuel efficiency. Brown also announced last autumn cuts in the duty on ultra low sulphur petrol.

Changing the relative costs of motoring can be a painful process and the effects are subject to long time lags. The British love affair with their cars will take some changing—most people are pessimistic about the prospects for the UK transport sector over the next ten years. The dominant view that traffic congestion is likely to get a lot worse before it gets better.

WEB SITES ON ROAD TRANSPORT

HIGHWAYS AGENCY (UK)
www.highways.gov.uk/

FRIENDS OF THE EARTH
www.foe.co.uk

ONE MOTORING (SINGAPORE)
www.onemotoring.com.sg/main/default.asp

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BUDGET SPECIAL 2001

The Weekly Briefing next week will focus on the macroeconomics of the Chancellor's Budget Statement together with a summary of his main fiscal policy announcements.

The Briefing will be posted direct to subscribers on Friday 9th March

Weekly Briefing
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