The Lorry Road User Charge: A Critique

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Birth of the Lorry Road User Charge (LRUC)

Budget speech 2002:
‘Hauliers from overseas should pay their fair share towards the cost of using our roads. I propose to go ahead with a road user charge for lorries that is distance-based with offsetting tax cuts for the UK haulage industry.’

Guarantee of tax neutrality:
‘The Government remains committed to ensuring that the UK haulage industry does not pay any more as a result of a new charge and will at the same time introduce offsetting tax reductions for the industry.’

Road Haulage Association:
‘..if we really can arrive at a long term solution that will deliver road price per km for all, including our Continental friends, and a reduction in fuel duty to compensate all, geared to ensure that the overall tax burden does not increase, then 2002 really will go down in history as the most momentous year since denationalisation. Perhaps ever.’
Economics of the LRUC

Fuel Duty + VED → 15p / km charge

Distance travelled by foreign trucks on UK roads (2003): 924 million
Total revenue = £139 million
= 4% of total LRUC revenue

Distance travelled by UK trucks on UK roads (2003): 22,159 million
Total revenue = £3,320 million
= 96% of total LRUC revenue

Current taxes on UK lorries:
VED = £280 million
Fuel tax = £3,040 million
Total = £3,320 million

UK charge - VED = £3,040 million
Fuel tax rebate = £3,040

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‘We have decided to make the charge simple at first to ensure that it can be successfully implemented as soon as possible.’
John Healey and John Spellar, 2002
Electronic Road Tolling for Trucks

**German Maut:**
- Use of GPS and black box on truck
- Only autobahns
- Trucks > 12 tonnes
- Fixed charge by road / time of day
- Net increase in revenue hypothecated for transport
- Collection cost = 20% of revenue

**UK Lorry Road User Charging (LRUC):**
- Use of GPS
- All roads
- Trucks > 3.5 tonnes
- Variable charge by road and time of day
- Tax neutral: tolls to be offset by fuel duty rebates
- Collection cost?

**German Logistics Trade Association:**
‘…..one of the biggest industrial / political flops since the war.’

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Scope of LRUC: vehicle numbers and road length

- All vehicles over 3.5 tonnes: 433,000
- All lorries over 12 tonnes: 246,000

Kilometres

Motorways | Motorways + trunk | All roads
---|---|---
3477 | 50142 | 391653
## Possible Cost of the LRUC Scheme

### Annual Operating Cost

<table>
<thead>
<tr>
<th>% of revenue</th>
<th>£50m</th>
<th>£75m</th>
<th>£100m</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>£380</td>
<td>£405</td>
<td>£430</td>
</tr>
<tr>
<td>15%</td>
<td>£550</td>
<td>£575</td>
<td>£600</td>
</tr>
<tr>
<td>20%</td>
<td>£680</td>
<td>£705</td>
<td>£730</td>
</tr>
</tbody>
</table>

### Additional charge (pence / km) to recover operating cost

<table>
<thead>
<tr>
<th>% of revenue</th>
<th>£50m</th>
<th>£75m</th>
<th>£100m</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>1.6</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>15%</td>
<td>2.4</td>
<td>2.5</td>
<td>2.6</td>
</tr>
<tr>
<td>20%</td>
<td>2.9</td>
<td>3.1</td>
<td>3.2</td>
</tr>
</tbody>
</table>

+ Capital cost of creating the system, purchasing and installing on-board units (OBUs)

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Foreign Vehicle Activity in the UK

Average trip length = 644 km  12 trips per annum = 7,728 km
At least 60% of foreign vehicles in the ‘occasional user’ category
Eligible for ‘low use OBU’ - covered by a separate microwave system

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Case for Distance-based Taxation

• Closer correlation between km-taxes and environmental costs
• VED insensitive to distance travelled
• VED reductions since 2000: VED % of lorry tax: 1998 14% 2003 8%
• Increase in relative importance of fuel duty: more distance-related
• Distance-based taxed could be achieved more simply
• Planned functionality of LRUC only justifiable if the charges are to be varied by:
  - road type
  - time of day
  - geographical location
• Ideal of varying charges in line with marginal social costs
Environmental Case for New Charging Regime

• Cut overall level of lorry traffic:
  – tax neutrality → no net increase in haulage costs
  – distance-based taxation creates greater incentive to cut empty running and raise vehicle load factors

• Promote the use of cleaner vehicles:
  – VED reductions for vehicles with RPCs: limited leverage
  – tightening Euro-emission standards

• Reduce impact of lorries on sensitive environments
  – ‘second generation’ development of LRUC
  – need for detailed evaluation of environmental costs at local level
Five-fold Improvement in Truck Productivity since 1953: tonne-kms per vehicle per year

Source: Dept. for Transport ‘Transport Statistics Great Britain 2003’

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Decline in Empty Running: 1970-2002

Had empty running remained at the 1973 level:

- annual road haulage costs would be £1.3 billion higher
- an extra 1.05 million tonnes of CO2 would be emitted annually by lorries

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Average Payload Weight: lorries over 3.5 tonnes

Includes empty running

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Average Payload Weight on Laden Trips: 1970-2002

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Variation in Vehicle Fill

Transport KPI Survey in the Food Supply Chain 2002

% of maximum utilisation

vehicle fleets

Mixed | Primary | Secondary | Tertiary

deck area utilisation | weight utilisation | average deck area utilisation | average weight utilisation

69% | 53%
Greening of Logistics

Tightening Emission Standards

Decline in vehicle emissions

Reduction in vehicle noise levels

Source: DfT

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‘Stress’ Maps for 2000 and 2016

% of trunk road with serious congestion 14% (1996) 26% (2016)

% of traffic using ‘stressed’ road links 26% (1996) 46% (2016)
Traffic Congestion Trends

Predicted increase in average transit times 2002-2006 (Trafficmaster)

<table>
<thead>
<tr>
<th>Route</th>
<th>1990-1997</th>
<th>2002</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>London - Leeds</td>
<td>186</td>
<td>213</td>
<td>+ 14.5%</td>
</tr>
<tr>
<td>Birmingham - Bristol</td>
<td>102</td>
<td>116</td>
<td>+ 13.7%</td>
</tr>
<tr>
<td>Oxford - Southampton</td>
<td>74</td>
<td>85</td>
<td>+14.8%</td>
</tr>
<tr>
<td>Cambridge - Ipswich</td>
<td>56</td>
<td>67</td>
<td>+ 19.6%</td>
</tr>
</tbody>
</table>

Trafficmaster Congestion Index

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Contribution of Freight Traffic to Congestion

Financial Times: 13th December, 1999

Composition of traffic on UK roads (PCUs)

Source: Dept. for Transport

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Growth of Night-time Delivery

% of Lorry-kms Run between 8pm and 6am

<table>
<thead>
<tr>
<th>Year</th>
<th>1985</th>
<th>1996</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of lorry-kms</td>
<td>7</td>
<td>18</td>
<td>23</td>
</tr>
</tbody>
</table>

70% of supermarket vehicle fleet operate over 24 hours (IGD)

40% of grocery chain stores subject to a night delivery curfew

if half of curfews relaxed:

- 10% fewer vehicles
- 63 million fewer vehicle-kms per annum

Strengthening case for relaxation:

- tightening vehicle noise standards
- porous asphalt road surfaces
- conversion to CNG fuel

Constraints:

- production / distribution cycles
- night delivery curfews
- working time directive

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Rescheduling Trips to Avoid Higher Tolls

- Longer journeys: complex rescheduling within drivers’ hours regulations and WTD
- Likelihood of ‘parking-up during peak periods’
- Short trips: reschedule start times

% of Tonnes Lifted

<table>
<thead>
<tr>
<th>Distance Range</th>
<th>% of Tonnes Lifted</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25 km</td>
<td>70%</td>
</tr>
<tr>
<td>25-50 km</td>
<td></td>
</tr>
<tr>
<td>50-100 km</td>
<td></td>
</tr>
<tr>
<td>100-150 km</td>
<td></td>
</tr>
<tr>
<td>150-200 km</td>
<td></td>
</tr>
<tr>
<td>200-300 km</td>
<td></td>
</tr>
<tr>
<td>&gt;300 km</td>
<td></td>
</tr>
</tbody>
</table>

70% of road freight moves less than 100km

Source: DfT

- Logistical cost trade-offs in rescheduling production and distribution activities
- Hauliers forced to absorb higher charges within slim margins

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‘Actions taken specifically as a result of congestion in the past two years’

- Changed routes
- Altered delivery times
- Introduced telematics
- Changed truck type
- None

Source: Lex Transfleets / FTA survey 2002
Time Utilisation of Trailers / Rigid Vehicles

idle (empty & stationary) 28%

maintenance/repair 7%

awaiting unloading/loading 4%

pre-loaded, awaiting departure 15%

on the road daily rest 2%

running on the road 28%

loading/unloading 16%

2002 Transport KPI Survey
Variation in the Vehicle Time Utilisation

53 FLEETS

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Other
Running
Idle

Mixed Distribution
Primary Distribution
Secondary Distribution
Tertiary Distribution

2002 Transport KPI Survey

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Transit Time in Context

Results of process mapping

Value-adding time =
5.9% of total manufacturing time
(Warwick Manufacturing Group, 1995)

Opportunities for Time Compression

Source: Taylor and Hines, 2000

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Promoting the Diffusion of Telematics

The LRUC ‘will help to bring the latest technology into the cabs of the UK’s lorries, where it can be a valuable aid for the haulage industry, offering fleet management and navigation services.’ (John Healey and John Spellar, 2003)

- real time fleet management
- dynamic re-routing of vehicles
- confirmation of delivery times
- enhanced security

CST/Cranfield survey of 122 European hauliers
A Worthwhile Spin-off Benefit of LRUC?

- Will the OBU be compatible with systems already installed in thousands of lorries?
- Is it necessary for government to incentivise the uptake of this technology?
- Already evidence of ‘over-selling’ - increasing scepticism about the true benefits.
- Under-estimation of the system changes required to exploit the telematics.
- Operators need more guidance on installation and use.
Alternative Ways of Reducing the Impact of Congestion

- modal shift
- freight-only lanes on motorways
- better traffic management: network-based telematics
- expand road infrastructure
- reduce car dependency
- relocate to Denmark.....
% of Road Links Congested for more than 1 Hour per Day

Source: European Centre for Infrastructure Studies, 1997
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