Institution: Heriot-Watt University

Unit of Assessment: C19: Business and Management Studies

Title of case study: Limiting the Size of Lorries on UK Roads

1. Summary of the impact

Joint research by the Logistics Research Centre (LRC) and the Transport Research Laboratory Ltd directly influenced the government's decision in 2008 to allow which categories of longer and heavier vehicles (LHVs) onto UK roads. One category out of seven was recommended. This decision was informed by findings relating to impact on the railfreight business and road infrastructure. The LRC subsequently provided advice on cost/benefit of the excluded category (longer semi-trailers) which contributed to the government's decision in 2011 to undertake a ten year trial of 15.6m and 16.6m trailers on UK roads. In 2010-11 the LRC's research on double-deck vehicles was used by the UK government and Freight Transport Association as evidence for opposition to an EU proposal to limit trailer heights to four metres, a measure which would have imposed a significant economic and environmental penalty on the UK.

2. Underpinning research (indicative maximum 500 words)

In 1999 Professor McKinnon was appointed by the Commission for Integrated Transport to conduct a cost-benefit analysis of a proposed increase in maximum truck weight in the UK from 41 to 44 tonnes (on a 6-axle vehicle) with no relaxation of vehicle size limits. Largely on the basis of this analysis, the maximum legal weight of lorries was raised to 44 tonnes in Feb 2001. The economic and environmental effects of this increase were assessed after three years and found to be even greater than predicted by McKinnon in [1]. On the basis of this earlier research, the LRC was invited by the DfT to partner TRL Ltd in an examination of the case for allowing longer and heavier vehicles (LHVs) onto UK roads. The LRC's role was to assess the likely demand for seven different types of LHV and their wider impact on logistical systems and possible displacement of freight from rail to these larger trucks. This involved surveying companies by online questionnaire, focus group discussions and interviews. In addition, a model was constructed to measure the effects on the cost-benefit ratio of restricting the various types of LHV to different road network configurations. The LRC team also contributed to a large 'parametric' modelling exercise undertaken by TRL Ltd. The results of all this work were summarised in [2] Knight, I., Newton, W., McKinnon, A.C., Palmer, A. et al (2008). Subsequent research by McKinnon [5] has reviewed all the main studies of LHVs and concluded that, on balance, they are beneficial in economic and environmental terms. Prof McKinnon and Dr. Andrew Palmer of the LRC were also engaged as advisers to the 'Longer Semi-trailer Feasibility Study and Impact Assessment' [6] undertaken for the DfT (WSP et al, 2010.)

It is possible to increase truck capacity vertically by double-decking trailers in countries, such as the UK, where bridge and tunnel clearances are relatively high. The LRC pioneered research on this subject in 1998 when the logistics firm Christian Salvesen sponsored a study of the potential for double-decking lorry trailers in the UK. At that time, relatively few companies used double-deck trailers, though it was suggested that this technology could yield substantial economic and environmental benefits if widely adopted. A methodology was devised and a spread sheet model constructed to assess the potential for double-decking the UK trailer fleet and predict the resulting costs and benefits. The results were very positive and, when publicised in government and industry circles, stimulated in interest in this technology. In 2010, as part of the EPSRC-funded Green Logistics project, this earlier research was updated and a cost model constructed to allow companies to calculate the net benefits of running these vehicles in different operating environments [3]. While this work was being undertaken the European Commission issued a proposal to impose a 4 metre height limit on new lorry trailers purchased in the EU. As double-deck trailers in the UK typically have heights of up to 4.9 metres, imposition of the 4m limit could have significantly restricted the use of these vehicles. After 2014, it would not have been possible for companies to purchase trailers taller than 4m. McKinnon [4] assessed the likely impact of the proposed EU limit on the cost and environmental impact of road haulage operations in the UK. He estimated that the distance travelled by UK-registered articulated lorries would increase by around 4.5% and annual road haulage costs to UK businesses would rise by roughly £305 million. Switching from double-deck to standard trailers would increase fuel consumption and CO2

emissions by around 60%.

3. References to the research (indicative maximum of six references)

[1] McKinnon, A.C. (2005) 'The Economic and Environmental Benefits of Increasing Maximum Truck Weight: The British Experience' Transportation Research part D, 10, 1, 77-95.

[2] Knight, I., Newton, W., McKinnon, A.C., Palmer, A. et al (2008) 'Longer and / or Longer and Heavier Goods Vehicles (LHVs): A study of the likely effects if permitted in the UK: Final Report' TRL, Crowthorne. (published 3/6/2006 Reference PPR285) Report for the Dept for Transport.

[3] Holter, A., Liimatainen, H., McKinnon, A.C. and Edwards, J. (2010) 'Double-deck Trailers: A Cost-Benefit Model Estimating Environmental and Financial Savings' in Whiteing, A et al (eds) 'Proceedings of the 15th Annual Logistics Research Network Conference' University of Leeds.

[4] McKinnon, A.C. (2010) 'Britain without Double-deck Lorries: An Assessment of the Effects on Traffic Levels, Road Haulage Costs, Fuel Consumption and CO2 Emissions.' Logistics Research Centre, Heriot-Watt University, Edinburgh. http://www.sml.hw.ac.uk/downloads/logisticsresearchcentre/BritainwithoutDouble-deckLorries(finalreport).pdf

[5] McKinnon, A.C. (2011) 'Improving the Sustainability of Road Freight Transport by Relaxing Truck Size and Weight Restrictions' in Evangelista, P., McKinnon, A.C., Sweeney, E and Esposito, E. (eds) (2011) 'Supply Chain Innovation for Competing in Highly Dynamic Markets: Challenges and Solutions' IGI Global, New York.

[6] WSP et al (2010) 'Longer Semi-trailer Feasibility Study and Impact Assessment: Final Summary Report'. Dept for Transport, London.

All references to research available on request

Research grants:

[G1] EPSRC EP/D043328/1 £2,115,625 (PI Dr Whiteing at Leeds University, £465,754 share to HWU) 'Green Logistics' 2006 -2010)

[G2] Department of Transport contract to TRL and Heriot-Watt University for the LHV study, H-W acted as sub-contractor to TRL (c £45,000) FEC £46,139, funded £40,500 project no 113942

4. Details of the impact (indicative maximum 750 words)

The LHV study conducted jointly by TRL and Heriot-Watt formed the basis of the government's decision in 2008 to reject all but one of the seven LHV options considered. On the basis of the research, only the so-called 'longer semi-trailer' (LST) option was considered to merit further investigation. The DfT then commissioned another more detailed investigation of this option (by WSP consultants) on which Prof McKinnon and Dr Palmer were engaged as advisers having modelled the impact of the LST option in the earlier LHV study[S3]. This new study confirmed that there would be significant net economic and environmental benefits in increasing the maximum length of articulated lorries from 16.5 to 18.75 metres. In 2011 the UK government launched a ten year trial of LSTs, licensing up to 1000 for use on UK roads.

The EC amended its proposal to apply the 4 metre trailer height limit uniformly across the EU and decided instead to give individual countries the right to continue running trailers with heights greater than 4 metres. The LRC research is likely to have influenced this decision by alerting EC officials to the fact that the 4 metre limit would have a disproportionate, and negative, impact on the UK road haulage industry and providing UK government officials and trade bodies with important evidence for their lobbying activities. The LRC was the first organisation to quantify the potential economic and environmental costs likely to arise from the imposition in the UK of an EU-wide 4 metre height limit on road trailers (McKinnon, 2010). This highlighted the fact that the UK was

unusual within the EU in having height clearances of up to 5 metres over most of its road network, permitting the operation of double-deck / high cube vehicles. Use of these vehicles permits greater consolidation of loads, particularly of lower density materials, reducing the number of trips, vehicle-kms, energy use and emissions. The LRC paper received significant media coverage in the Scottish press (e.g the Herald and Scotsman), the trade press (e.g. Commercial Motor [S7] and Motor Transport) and radio (e.g. Radio Scotland).

The Department for Transport and Freight Transport Association [S4] used the results of the LRC analysis in documentation that they prepared opposing the imposition of the 4 metre height limit on British road haulage operations. Copies of the LRC paper were also circulated to senior staff in the EU's transport directorate (DG Move). The LRC paper was extensively cited in a House of Commons debate on the subject on the 18th January 2011 led by the MP for Mid-Derbyshire. In her introductory speech she stated that, '*People might think that a reduction of 90 cm will not make much difference, but, as the excellent report by Professor Alan McKinnon, "Britain without Double-deck Lorries", demonstrates, this proposal will have a massive impact on Britain's haulage industry.'*

Subsequent lobbying by the UK government and industry resulted in the EC reconsidering its proposal to apply the 4 metre trailer height limit uniformly across the EU and giving individual countries the right to opt out of the proposed regulation. The LRC research is likely to have influenced this decision by alerting EC officials to the fact that the 4 metre limit would have a disproportionate, and negative, impact on the UK road haulage industry and providing UK government officials and trade bodies with important evidence for their lobbying activities.

5. Sources to corroborate the impact (indicative maximum of 10 references)

Longer and Heavier Vehicles:

[S1] Report of Secretary of State for Transport's decision on LHVs following publication of the TRL – Heriot-Watt study (3rd June 2008): http://www.publications.parliament.uk/pa/cm200708/cmhansrd/cm080603/wmstext/80603m0003.htm

[S2] World Cargo News (2008) 'United Kingdom rejects LHVs' 3rd June http://www.worldcargonews.com/htm/w20080603.455901.htm

Impact on EU Proposal for a 4 metre trailer height limit:

[S3] Economic Adviser at Department of Transport, London will corroborate the process and the application of the research on the policy of double deck vehicles.

[S4] Senior Economist at the Freight Transport Association will outline the impact of the government policies on the FTA, and how they contributed to the process.

[S5] Policy Director at the Road Haulage Association will describe the benefits to their members in increasing the maximum length of articulated lorries from 16.5 to 18.75 metres.

[S6] Department for Transport (2010) 'DfT Note – Evidence on the impacts of restricting the use of double-deck trailers in Great Britain' (unpublished internal paper – copy can be provided on request)

[S7] Trailers (EU Proposals) Debate: http://www.paulinelatham.co.uk/18012011_trailers

[S8] Perry, D. (2010) EC trailer height plan will hit UK with £300m-plus bill. Commercial Motor, 20Oct. http://www.commercialmotor.com/latest-news/ec-trailer-height-plan-will-hit-uk-with-m-plus-bill