

# 7. OWNERSHIP

# Readings for Lecture 7

- Reform of the Railway Sector and its Achievements - Network Industries Quarterly - Vol 18 - No 4 (December 2016)
- Preston, J., & Robins, D. (2013). Evaluating the long term impacts of transport policy: The case of passenger rail privatisation. *Research in Transportation Economics*, 39(1), 14-20.

# Learning Outcomes

- The reasons behind public ownership
- The main motives behind a general movement towards reform of public ownership

# 7.1 Basics

# Discussion question – to heat up

1. What do you see as the main advantages and disadvantages of public ownership in transport markets?
2. What do you see as the main advantages and disadvantages of involving the private sector in the provision of public transport services?
3. What are benefits and risks of privatization?
4. In what sense can it be said that the government controls the means of production for the airline industry?

# Introduction

- Due to many market imperfections, transport markets usually cannot be left entirely to market forces to resolve economic transport issues.
- In most cases, therefore, they need some form of external intervention in order to correct for market failures

# Government control

Government control of transport markets can be achieved through one of two measures:

- Regulation - control through direct command; i.e. telling operators what to do
- Ownership – the transport authority can own the assets and the means of production. The market is brought into public sector and thus it does not have to operate along market principles

# Reasons for public ownership

- Eradicate wasteful competition
- Military significance
- Public goods
- Essential to the economy
- A large employer
- Key industry
- High project development costs



# Reasons for privatization

- Increasing discontent with the model of public ownership
- Changing macroeconomic environment combined with social change
- The desire to introduce competition into the provision of transport services

## 7.2 Japan

# Introduction

- In rail system – passenger traffic dominant
- Honsu island geography
- Freight rail marginal – due to sea traffic
- HSR Shinkansen – starting from 1964 on Tokyo-Osaka line
- Highly successful – leading to build up of further lines with lower commercial potential
- 1980s – high indebtedness of JNR , overemployment

# 1986 Reform

- Sack of management
- Horizontal separation (JR Freight)
- Geographical separation (JR East, JR Central a JR West - commercialization, JR Hokkaido, JR Shikoku a JR Kyushu - subsidies)
- Yardstick competition – comeptition on the edges only
- Indebtness – partial bail-out, partial transfer to JR East, Central and West
- Privatization of JR East, Central and West in 1990s

# Japan rail

Japan Railways (JR) system is made up of six regional JR companies, each distinguished by colour.



Indicates main Shinkansen line



# Results

- Between 1987-1991: traffic + 20%; employment down from 280.000 to 160.000
- Labor productivity: +68% between 1985-88 and another +25% between 1988-98
- JR East, Central and West – profitable +3 bn income taxes per year (5 bn subsidies to JNR before reform)
- JR Freight and JR JR Hokkaido, JR Shikoku a JR Kyushu – stable traffic, operational subsidies
- Better quality and responsiveness to customers

# Assesment

- Successful reform/privatization
- Main goals: to decrease indebttness and bigness of JNR
- No competition!
- More efective structure and incentives

## 7.3 New Zealand



# General characteristics

- Rail primarily oriented towards freight traffic
- In passenger traffic there is important commuting to Wellington and Auckland and a few intercity connections
- Until 1993 vertically and horizontally integrated structure in state ownership
- Strong intermodal competition and worsening economic results

# Nez Zealand rail map



# 1993 privatization

- NZ government in 1993 sold its railway for 400 million USD to a consortium of private investors
- In the years after privatization, profits rose, however not enough to cover costs of capital
- Freight traffic rose steadily

# Problems

- Private owners had increasing problems with operations of passenger rail transport and in 2002 sold commuter rail network back to government
- Financial problems were increasing and in 2004, private owners sold back rail infrastructure to NZ state for 1 USD
- NZ government agreed to infrastructure investment, however bitter disputes over the level of infra charges emerged
- This led to complete purchase of remaining rail enterprise by NZ government for 690 million dollars. What was considered to be highly overpriced purchase

# Lessons

- Very problematic privatization in New Zealand (and very similar case in Tasmania) shows dangers of rail privatization involving passenger transport
- Passenger rail transport in developer countries is usually not very profitable, however politically sensitive

## 7.4 Estonia

Based on Lust, A. (2017). Broken rails: the privatisation of Estonian railways. *Post-Communist Economies*, 29(1), 71-89.

# Reform

- In 2000–2001, Estonia sold the passenger carrier and a portion of the track to domestic businessmen posing as a British strategic investor, and the main freight carrier and most of the track to an American-led consortium.

# Passenger and freight

- The passenger carrier continued to receive government subsidies but closed several rail lines, which led to protests by passengers.
- The freight carrier earned large profits from the transit of Russian oil to Europe, but invested its money in buying used American locomotives, rather than rebuilding the track.



# Final part

- Both companies laid off about half of their workforce, provoking the first private-sector strike in Estonia since the collapse of Communism.
- In 2006, a new government bought back the freight services and track at more than twice the sale price, an expensive lesson in the perils of privatisation.

# Train frequencies



## 7.5 Britain

# Introduction

- British rail reform – probably the most complex and complicated one
- Vertical, horizontal and geographical separation of the industry (1993-1997)
- Fragmentation of former British Rail into more than 100 companies
- Competition and privatization on all levels

# Discussion question

- Can you see any drawback/problem with such reform strategy?

# Privatization

- Privatization of the infrastructure manager (1996)
- Privatization of freight operators (6 companies) – subsequently merged into 2
- ROSCOs – rolling stock private owners – leasing to franchisee
- Passenger operations - franchising

# Franchising

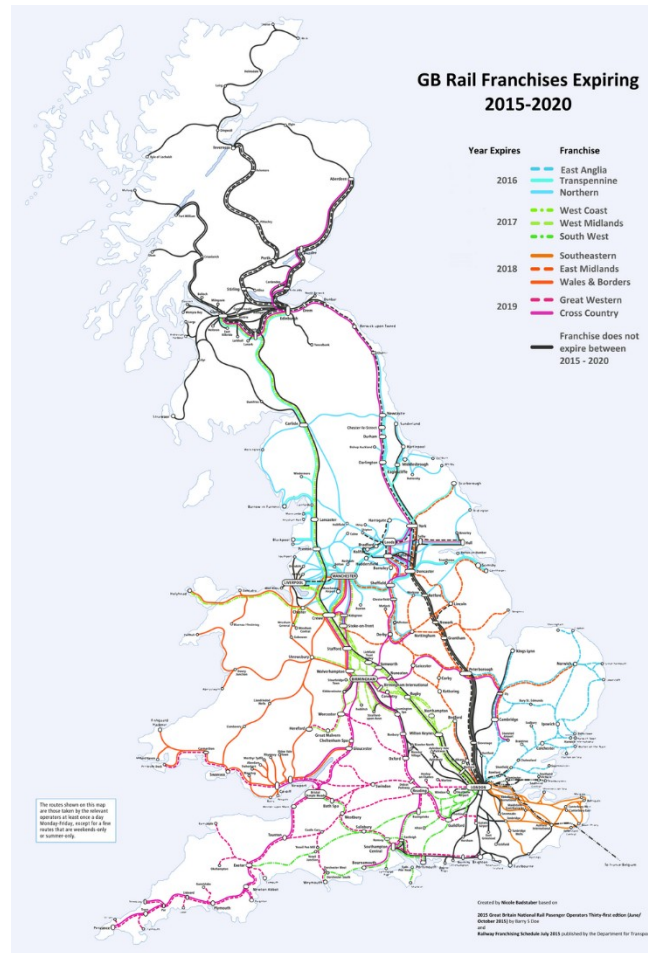
- 25 regional franchisee
- Private firms bid for the right to operate it (competition for the market)
- No British Rail in these tenders!
- Limited role of open access (competition on the market)
- First, second and third round of franchising (1996, 2002, 2010)

# Discussion question

- Why do you think open access was not granted higher role in British rail reform?



# Map of franchisee

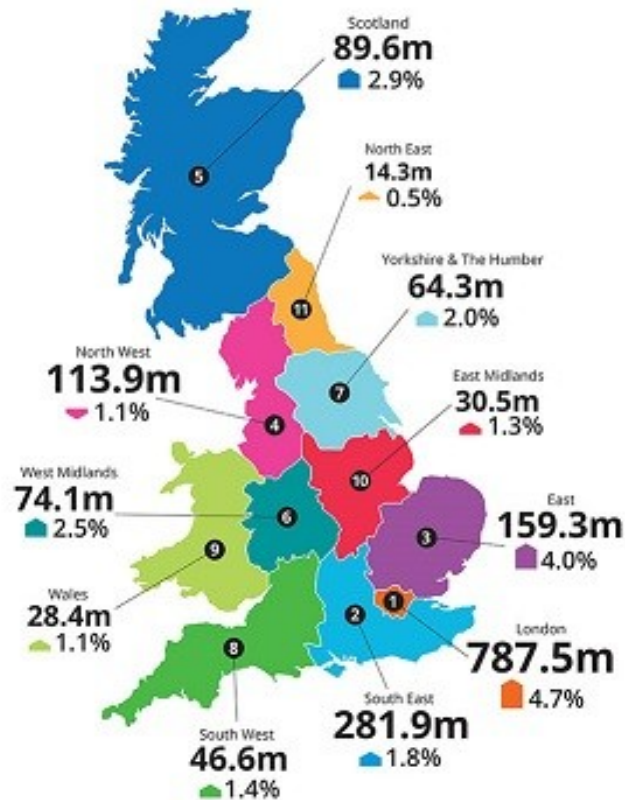


# Regional Usage

## GB Rail - Regional Usage

TOTAL NUMBER OF JOURNEYS IN GREAT BRITAIN 2012 - 2013

Compared to 2011-12, the total number of journeys has increased by 3.3%. Journeys between different regions increased by 2.7% and the number of journeys within each region increased by 3.6%



# Hatfield

- Fatal accident in October 2000
- Due to broken rail (bad maintenance?)
- Railtrack panicked and introduced severe speed limits
- Result: operational chaos, financial troubles of Railtrack and its bankruptcy in 2001
- Higher involvement of government (subsidies) into rail after Hatfield

# Results

- Growth of traffic (especially passenger)
- Subsidies (firstly sharply down, up after Hatfield, then again down)
- Costs (growth if unit costs; Why?)

# Assesment

- Mix of successes (traffic, innovations) and failures (costs, Hatfield)
- Rail important in intercity and commuting transport (role of London!)
- Therefore, governemnt can hardly hope that by privatization will solve the „rail problem“

# Discussion question

- Can you imagine a better way how to reform British railways?

## 7.6 Case: privatization of UK railways

Preston, J., & Robins, D. (2013). Evaluating the long term impacts of transport policy: The case of passenger rail privatisation. *Research in Transportation Economics*, 39(1), 14-20.

# Rail privatization in Britain – success or failure?

- Britain's national rail system was 'privatised' as a result of the 1993 Railways Act, with most of the organisational and ownership changes implemented by 1997.
- This paper examines the long term impacts of these changes.
- A key issue when examining long term changes is that of the counterfactual – what would have happened if the changes had not occurred?

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# Methodology

- A simple econometric model of the demand for passenger rail services was developed and used in conjunction with extrapolative methods for key variables such as fares and train km to determine demand-side counterfactuals.
- Extrapolative methods were also used to determine counterfactual infrastructure and train operation costs

# Main constraint

- Evaluation research is tortured by time constraints
- The effects of a policy change are distorted by exogenous variables such as changes in population and income and are overtaken by other policy initiatives.

# Brief history

- 1980s - the disposal of ancillary businesses
- 1993 – Railways Act
- 1994 – Railtrack (IM) emergence (privatised 1996)
- 1996-97 – 1st round of franchising
- 2000 – Hatfield accident
- 2001 – Railtrack bankrupt
- 2002 – Network Rail (IM) emerged

# Demand

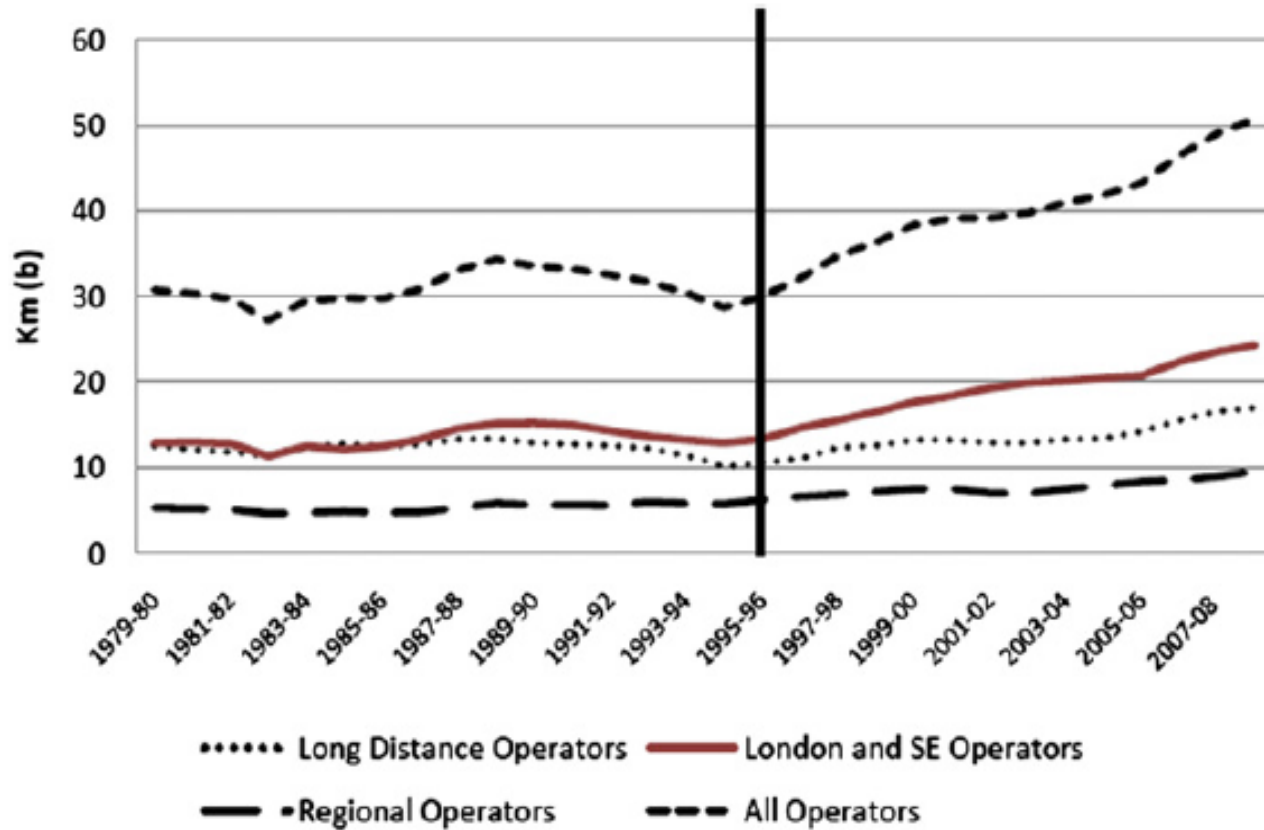


Fig. 1. Passenger kilometres by sector.

# Fares

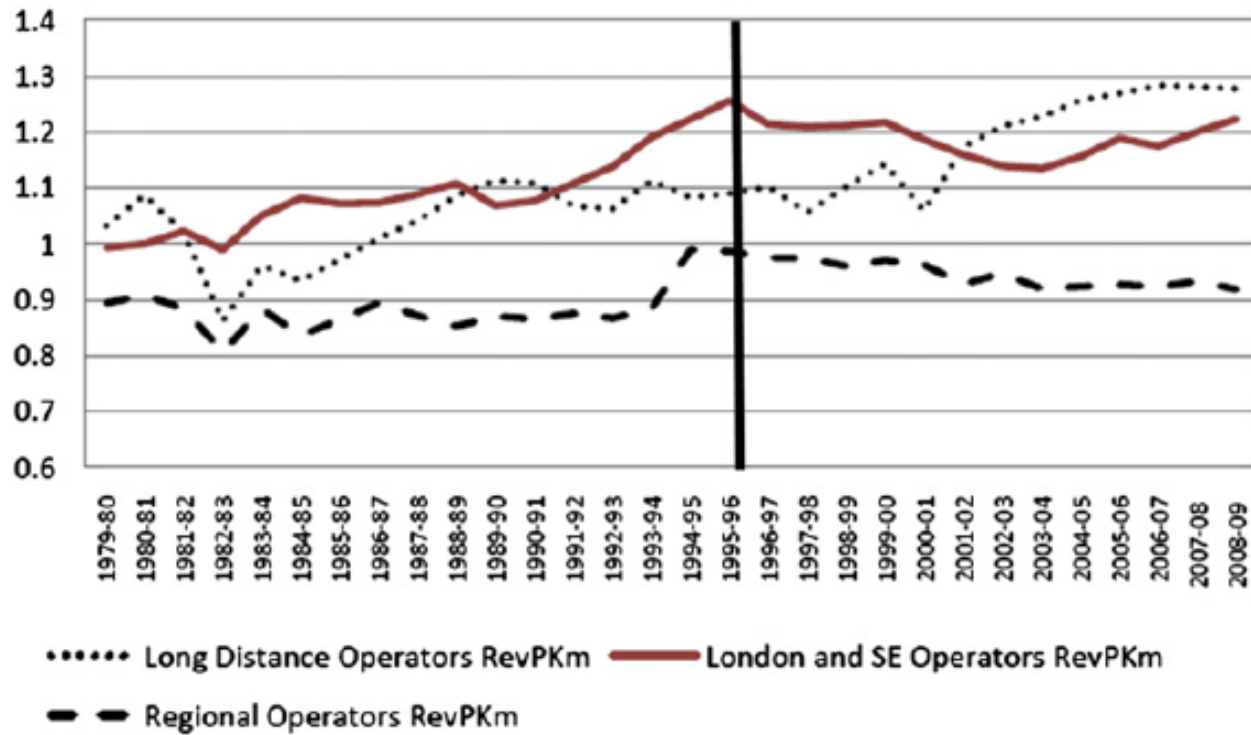


Fig. 2. Real revenue per passenger km (£ per 10 km, 2008 prices).

# Supply

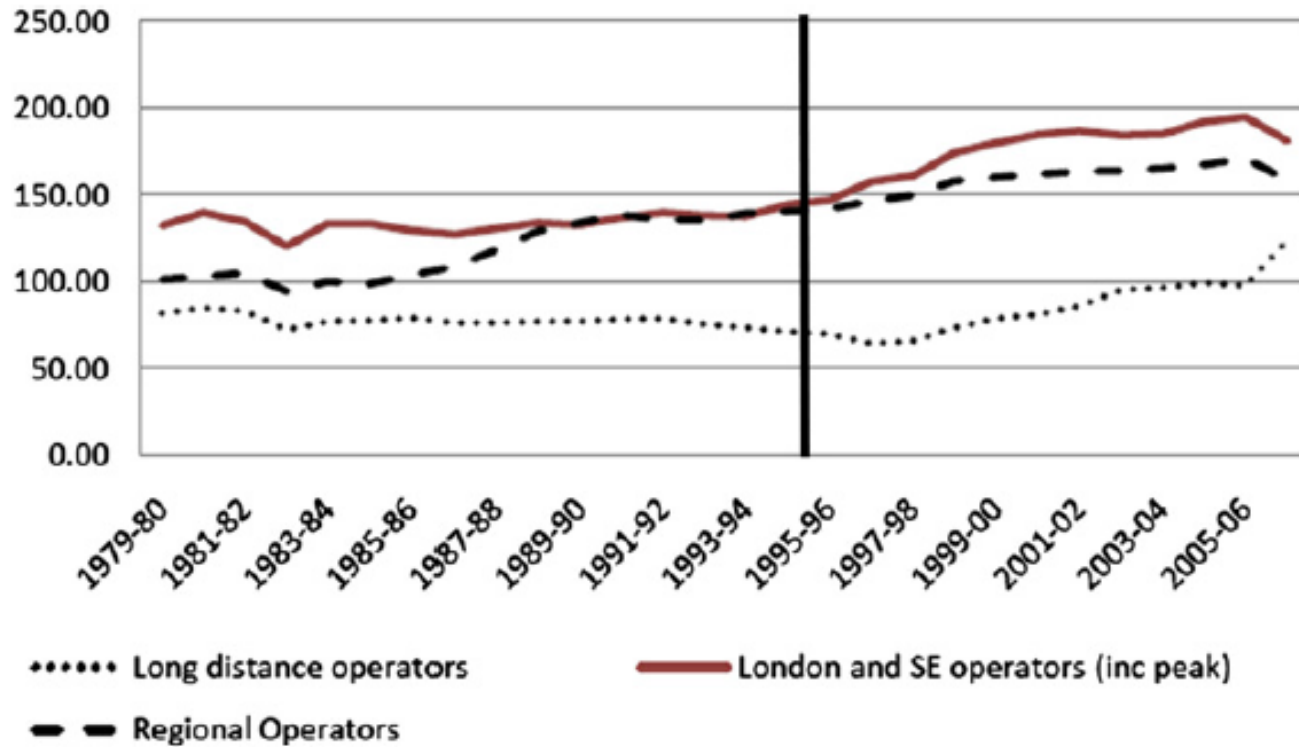


Fig. 3. Train km (millions).

# Costs

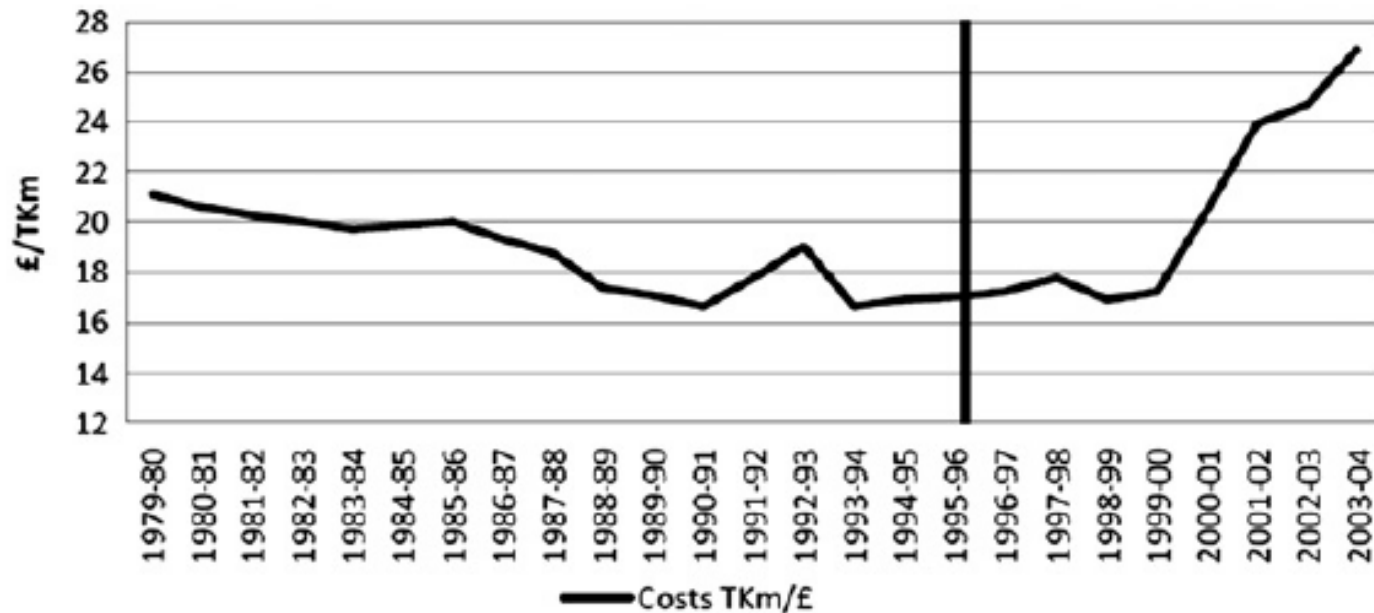


Fig. 4. Total costs per train km (£, 2008 prices). Source: Smith (2006).

# Subsidies

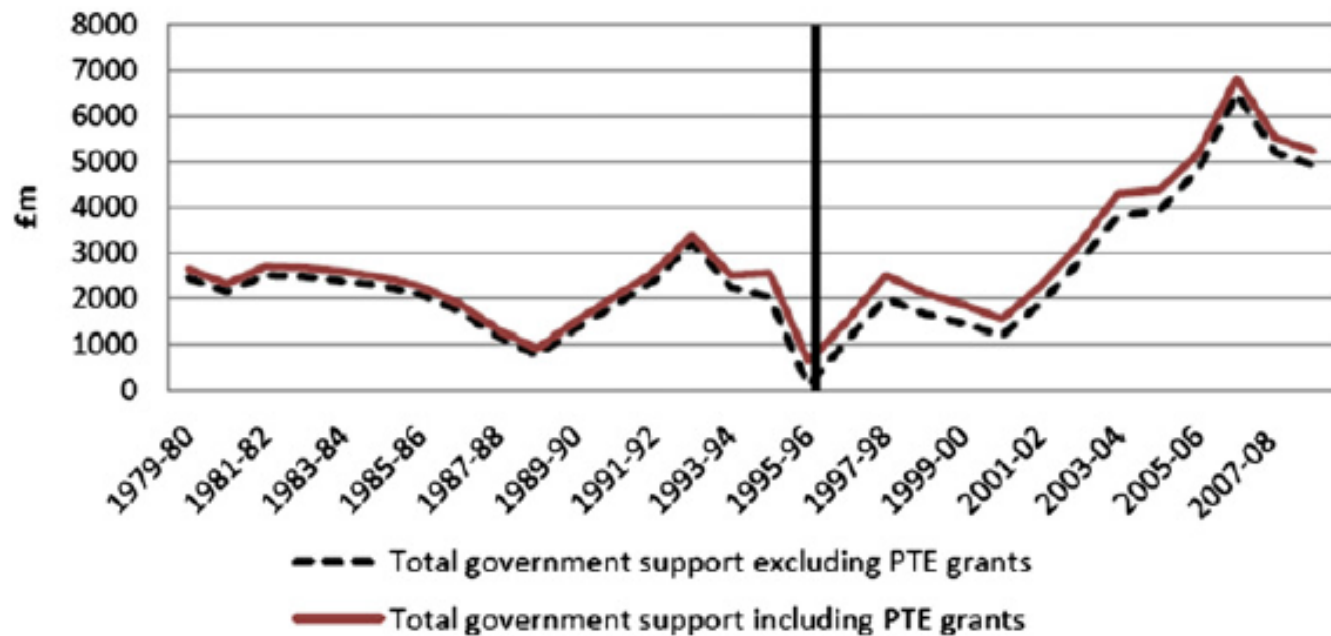


Fig. 5. Total government support to the rail industry (£ million, 2008 prices).



# Model

$$\begin{aligned} \ln PKM_t = & \alpha + \beta RPKM_t + \gamma TKM_t + \delta GDP_t + \theta PRIV + \mu HAT \\ & + \rho STRIKE \end{aligned} \tag{1}$$

where  $PKM_t$  = Passenger Kilometres in year  $t$ ,  $RPKM_t$  = Real Revenue per Passenger Kilometre in year  $t$ ,  $TKM_t$  = Train Kilometres in year  $t$ ,  $GDP_t$  = Real Gross Domestic Product in year  $t$ ,  $PRIV$  = Privatisation Dummy Variable (1992/3 to 2005/6),  $HAT$  = Hatfield Dummy Variable (2000/1 to 2006/7) and  $STRIKE$  = Strikes Dummy Variable (1982/3 and 1991/2). The estimated coefficients of equation (1), using data from 1979/80 to 2008/9, and some diagnostic statistics are given in [Table 1](#).

# Estimation results

**Table 1**  
Forecasting model parameters.

Coefficient	Value	t-statistic
$\alpha$	2.923	17.106
$\beta$	-5.690	-2.817
$\gamma$	0.0024	7.093
$\delta$	3.68762E-07	3.614
$\theta$	-0.092	-8.575
$\mu$	-0.051	-3.117
$\rho$	-0.063	-3.283
Adjusted $R^2$	0.983	
Durbin-Watson	1.453	

# Interpretation

- Privatisation suppressed demand between 1992/3 and 2005/6 by around 8.8% ( $1 - \exp \theta$ )
- The Hatfield accident suppressed demand between 2000/1 and 2006/7 by a further 5.0% ( $1 - \exp \mu$ )
- The strikes in the years 1992/3 (ASLEF) and 1991/2 (Signalmen) were estimated to reduce demand by around 6.1% ( $1 - \exp \rho$ )

# Elasticities

- A feature of the negative exponential specification is that demand elasticities are directly proportional to the relevant policy variables.
- At the mean values in the data, the elasticity of demand
  - with respect to RPKM was computed to be 0.62,
  - with respect to TKM it was calculated to be 0.90
  - and with respect to GDP it was found to be 0.39.
- These values are broadly consistent with some other studies

# Counterfactuals

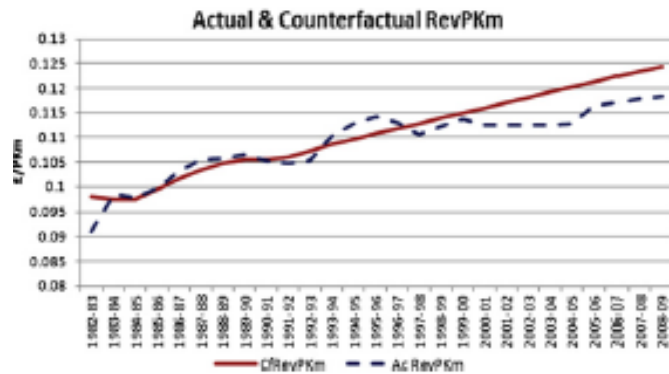


Fig. 6. Actual and counterfactual revenue per passenger km (£, 2008 prices).

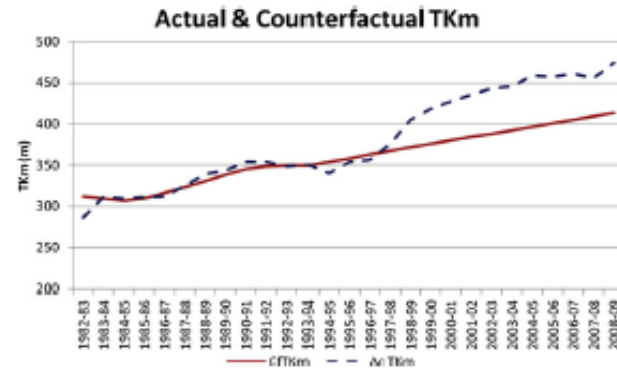


Fig. 7. Actual and counterfactual train kilometers (millions).

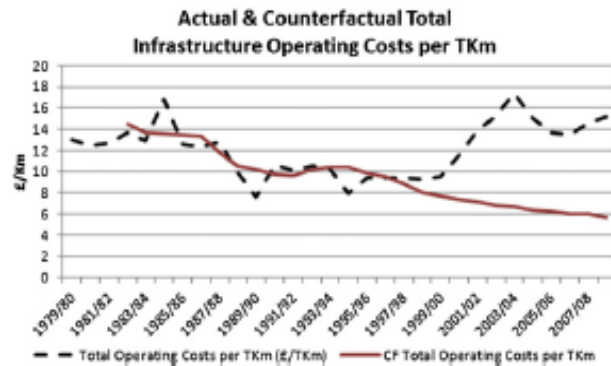


Fig. 8. Actual and counterfactual infrastructure costs per train km (£, 2008 prices).



Fig. 9. Actual and counterfactual train operating costs per train kilometre (£, 2008 prices).

# Welfare analysis

**Table 2**

The welfare effects of rail privatisation (£ billion) (2008 prices).

	Change in revenue	Change in total industry costs	Change in consumer surplus	Welfare change
1995/96	0.036	-0.059	0.132	0.227
1996/97	0.061	0.705	0.270	-0.373
1997/98	0.111	0.845	0.684	-0.051
1998/99	0.185	1.099	0.940	0.027
1999/00	0.257	1.407	1.163	0.014
2000/01	0.210	3.244	0.999	-2.035
2001/02	0.231	5.058	1.083	-3.744
2002/03	0.247	5.699	1.117	-4.335
2003/04	0.268	7.132	1.195	-5.669
2004/05	0.319	6.594	1.371	-4.911
2005/06	0.354	5.788	1.298	-4.136
2006/07	0.482	5.037	1.906	-2.649
2007/08	0.572	5.593	2.257	-2.764
2008/09	0.630	7.461	2.579	-4.252
Totals	3.957	55.077	16.993	-34.652
Present Values	£2.84	£39.84	£12.34	-£24.65

# Discussion

- The role of assumptions
- Winners and losers
- Vertical and horizontal fragmentation

# Conclusions (1)

- Although our results are sensitive to the assumptions we have made concerning the counterfactual they suggest a number of impacts.
- Since privatisation, rail demand has grown strongly but our analysis indicates that transitional disruptions suppressed demand by around 9% over a prolonged period (1992/3 to 2005/6), whilst the Hatfield accident reduced demand by about 5%, albeit over a shorter period (2000/1 to 2006/7)
- A welfare analysis suggests that although consumers seem to have gained as a result of privatisation, for most years this has been offset by increases in costs. An exception is provided by the two years immediately before the Hatfield accident.



# Conclusions (2)

- Overall the loss in welfare since the reforms were introduced far exceeds the net receipts from the sale of rail businesses.
- Thus although the reforms have had advantages in terms of lower fares and better service levels than otherwise would have been the case, this appears to have been offset by increased infrastructure and train operations costs.
- The source of these high costs remains an area of speculation but appear to be related to aspects of both market and regulatory failure.

## 7.7 Summary

# Readings for Lecture 8

- Caves, D. W., & Christensen, L. R. (1980). The relative efficiency of public and private firms in a competitive environment: the case of Canadian railroads. *Journal of political Economy*, 88(5), 958-976.
- Boardman, A. E., Laurin, C., Moore, M. A., & Vining, A. R. (2013). Efficiency, profitability and welfare gains from the Canadian National Railway privatization. *Research in Transportation Business & Management*, 6, 19-30.
- Tomeš, Z. (2017). Do European reforms increase modal shares of railways?. *Transport Policy*, 60, 143-151.