The variable cost approach to pricing

John Thomas
Deputy Director, Economic Regulation
Office of Rail Regulation, UK

9 July 2004
UK railways - structure

• Network Rail – infrastructure manager and maintenance
• Renewal and enhancement contractors
• 20+ franchised passenger operators
• Other non-franchised passenger operators
• 6 private sector freight operators
• 3 rolling stock leasing companies
• Strategic Rail Authority (Governmental body) lets franchises and distributes grants
• ORR regulates natural monopoly elements of industry, allocates capacity and is competition authority
• Health and Safety Executive – safety regulator
Office of Rail Regulation

• Independent economic regulation
• Decisions best calculated to facilitate statutory duties including
  • to promote the use of rail network for carriage of passengers and goods
  • to promote competition in railway services for the benefit of users
  • promote efficiency and economy
  • to facilitate the SRA’s strategies
  • financing duty in relation to the infrastructure manager
  • enable operators to plan with a reasonable degree of assurance
Charging structure

- Variable charges – for Network Rail to recover costs which vary with the volume of traffic and to provide appropriate incentives
- Fixed charge – mark-up to ensure Network Rail recovers all its costs
- Performance regime – to incentivise Network Rail and train operators to improve performance
- Possessions regime – to incentivise Network Rail to improve engineering access efficiency and to make appropriate trade-off between engineering efficiency and passenger and freight disruption from possessions
Current variable charges

- Track usage charge
  - reflects wear and tear on infrastructure caused by an additional train
- Capacity charge
  - marginal congestion cost (revenue effect on operators)
- Traction electricity charge
  - cost of electricity procurement and supply
- Electrification asset usage charge
  - marginal wear and tear costs on electrification assets
The usage charge model

- Used in Britain since 2001 to derive variable costs
- Top down model
  - total anticipated renewals and maintenance expenditure
  - multiplied by percentage variabilities by infrastructure type (e.g. track, signalling, etc.)
  - equals aggregate variable cost
- Aggregate variable cost allocated to vehicles on the network using basic operating (vehicle) characteristics (e.g. speed, axle load, unsprung mass, suspension type)
The usage charge model (2)

- There is no geographical or asset type disaggregation in usage charges
- The usage charges derived from the top-down model are therefore network-wide averages but are disaggregated by type of vehicle
- Charges incorporate expected efficiency improvements over time
Fixed cost allocation

- Requirement for infrastructure manager to recover total costs
- Large proportion of Network Rail’s costs are fixed
- Where possible, allocated on a consistent basis with expenditure
- Allocation of fixed costs based implicitly on ability to pay – through the franchising process
- Marginal charges applied to marginal services
- Freight and open access operators only pay the marginal costs of operation
Performance regime

- Incentivises Network Rail and train operators to maintain and improve operational performance
- Benchmarks established for both parties based on historic delay
- Payment rates for each party set a pre-calibrated level to enable:
  - Network Rail to recover the costs of operator-on-operator delay
  - Train operators to be compensated for the modelled change in farebox revenue
- Network Rail’s benchmark reduces in line with performance improvement for which it is funded through access charges reviews
Enhancements, volume and quality incentives

- Enhancements to the network not directly incentivised through the charging structure
- Cost-reflective charges means that Network Rail not incentivised to accommodate additional services – volume incentive provides for this
- Regulator has required improvements in infrastructure quality in return for allowed income – enforcement action possible if not delivered
- Complemented by a direct financial incentive to improve asset condition – the asset stewardship incentive (includes broken rails, track geometry, signalling failures)
Future charges: context

- Divergence between costs and charges since 2001
- Inadequate knowledge of whole-industry cost and performance drivers
- Greater understanding of the wheel-rail interface
- Changes to industry structure
  - infrastructure manager is now a not-for-dividend company
  - Govt. conducting a rail review
- Commitment to revise structure of (franchised passenger) charges from April 2006
Objectives of charges review

- Provide the correct price signals to the industry to encourage efficient allocation of resources
- Inform policy, business and investment decisions
- Ensure close alignment of industry incentives to minimise whole industry costs
- Update charges based on new information
- Understand the key cost and performance drivers
- Incentivise the delivery of a high-performing and affordable railway
Opportunities

• Cost-reflectivity
  • increasing the industry’s knowledge of its own cost and performance drivers
  • incentivise the use of track-friendly vehicles
  • Incentivise better maintenance of both wheel and rail
  • allow the infrastructure manager to recover its average variable costs resulting from changes to service levels

• Strengthening incentives
  • aligning whole-industry incentives
  • Incentivise expansion of capacity?
Constraints

- Feasibility
- Simplicity
- Transparency
- Stability
- Regulatory consistency
- Terms of franchise agreements
- Capacity constraints
- Avoidance of undue discrimination
- Affordability
Variable usage charge revisited

• Issues:
  • review cost drivers and cost allocation
  • top-down econometric approach vs. bottom-up
  • lateral forces – driver of rolling contact fatigue
  • wheel-set maintenance
  • suspension types
  • Geographical/route differentiation
  • differentiation by asset type – e.g. jointed track/CWR
  • environmental charges
Discussion

John Thomas
Office of Rail Regulation
john.thomas@orr.gsi.gov.uk