Maximising Network Productivity and the Case for Road Pricing

Direct Charges for Road Use
Current practice, efficiency, acceptance

Stephen Perkins
International Transport Forum
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Charge for 40t Euro5 Truck in 2010
Euro cents/km (1 euro=1.4 AUD)

- France (F): 12
- Germany (D): 15
- Czech Republic (CZ): 17/26
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EU Eurovignette Directive

- Directive 1999/62/EC (Amended) on Charging HGVs for Using Infrastructure
- Discrimination against foreign trucks
- Charges capped on basis of expenditure
- Mark-ups allowed in sensitive areas X2
- Congestion differentiation to be allowed up to 5X average charge in peak
- Amendments now before Council
Impact of km Charges on Haulage

- **Swiss HVF**
  - 20% increase in charges per vkm
  - 18% increase in productivity
  - vkm 12% lower than they would have been

- **German Maut**
  - Empty runs down 13%
Siemens launched City Tolling Solution for the Western Extension in 2007.

Scope of Siemens: ANPR Cameras, Installations, System integration.

- 850 high-accuracy license plate recognition cameras
- 1 million plates per day (evidential records encrypted)
- Innovative system architecture to reduce data traffic

Transport for London achieved Traffic Reduction up to 30%.
London CC relative to cost of congestion

TfL modelling and Oxford University Transport Studies Unit find charge is about right but:

- Cars over-charged
- Trucks under-charged
- Vans about right at 8 pounds – undercharged at previous 5 pounds level
- Economic benefits of 180 million pounds a year (225 million Euros)

Prud’Homme finds costs exceed benefits but using undifferentiated French average time values
London CC Impact

- 30% reduction in congestion
- Switch from cars to metro and bus
- No reduction in economic activity
- 20% reduction in CO2 emissions
Singapore

- 1975 cordon, Area Licensing Scheme
- 1998 Electronic Road Pricing
- 33 gantries, currently 66
Singapore

• Speed/flow maintained by integrated management, not just ERP
  – 45-65 kph on freeway sections
  – ERP
    • Peak and shoulder charges - transponders
    • charges adjusted 3 monthly to speeds
  – Land use planning & road investment
  – Public transport investment
  – Auction of licences to own cars (big revenues)
    growth in car stock cut from 3% to 1.5% pa.
Stockholm

- Central islands – cordon on bridges
- Peak/off peak charges
- Initially transponders enforced by ANPR
- Initial trial reinstated after referendum vote
- Now ANPR cameras only
- By-pass road investments
- Congestion largely eliminated
- Net welfare benefit
- (Prud’homme losses)
National CC Schemes

• Great Britain
  – Phase in from truck e-km charge to cars, all roads
  – Abandoned finally 2009
  – Examining cheaper systems to charge foreign trucks

• Netherlands
  – Replacement of road tax & high car purchase tax with fairer e-km for all vehicles, all roads
  – Later phase in of congestion charges
  – Abandoned 2010 in election campaign
Acceptance: Traps to Avoid

• Don’t confuse objectives
  – Cheaper ways to raise revenues / environment
  – CC systems expensive – 10-30% of revenues
  – CC only if congestion serious & clearly perceived

• Don’t phase-in charges from a low base
  – This will fail to cut congestion
  – and fuel fears that real motive is just taxation

• Don’t promise revenue neutrality
  – Provide Transparency and accountability
Acceptance Strategy

• Communicate on cost of congestion and optimising flow
• Seeing is believing
• Trend
  – London
  – Stockholm
• Redundancy
Value Pricing

- US HOT lanes – San Diego, Orange County etc
  - Access to free flow reserved capacity, for a charge
  - Continuously varying charges, San Diego I-95
  - Alternative to congested lanes free of charge
  - Efficiency – often requires space for extra lane
  - Equity - everyone uses at some time
  - Offers choice rather than network optimisation
  - Both Cordons and VP better than no pricing when there is congestion (Small and Yan 2001)
Recent Research Indicates Higher Tolls

• VOT differs markedly and distribution skewed with long tail. Charges shift average VOT up, increasing equilibrium toll
• Choice yeilds big benefits where there is heterogeneity
• Reliability partly correlated with congestion but not the same. Needs to be added to cost of delay.
• Hypercongestion, where flow & speed falls is not usually modelled – implies higher equilibrium tolls
• But, even simple models are much better than “intuition”.

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