Cost-Benefit Analysis in Transport – a UK Perspective

Peter Mackie
ITS, University of Leeds
Presentation to OECD/ITF Round Table
21/22 October 2010, Queretaro, Mexico
The Appraisal Process
Transport appraisal is like a Russian doll

- The overall decision-making process
- Within that process, the technical appraisal
- The form of the technical appraisal – in the UK this is the framework approach (NATA)
- The framework is cost-benefit analysis plus non-monetised impact assessment
Transport Appraisal – State of the Art

Public Acceptability

Social

CORE

Economic

Political

Political aspirations
Consistency with policy

Technical Appraisal
• So, CBA happens within an overall cultural context
• The context is determined by politics, history, geography, the legal system, the stage of economic development
• In the UK context, CBA can be viewed as setting the rules of engagement of the planning system both at national and local level
• The appraisal rulebook is the WebTAG (Transport Appraisal Guidance)
<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Impacts (changes in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport Users</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
</tr>
<tr>
<td></td>
<td>Fares/costs</td>
</tr>
<tr>
<td></td>
<td>Journey quality</td>
</tr>
<tr>
<td></td>
<td>Perceived accident costs</td>
</tr>
<tr>
<td></td>
<td>Option Value</td>
</tr>
<tr>
<td>Transport operators/</td>
<td>Revenues</td>
</tr>
<tr>
<td>Infrastructure providers</td>
<td>Operating costs</td>
</tr>
<tr>
<td></td>
<td>Capital costs</td>
</tr>
<tr>
<td>Non-users</td>
<td>External accident costs</td>
</tr>
<tr>
<td></td>
<td>Environmental impact</td>
</tr>
<tr>
<td>Rest of economy outside transport</td>
<td>Agglomeration</td>
</tr>
<tr>
<td></td>
<td>Competitiveness</td>
</tr>
<tr>
<td></td>
<td>Labour markets</td>
</tr>
<tr>
<td>Government</td>
<td>Subsidies</td>
</tr>
<tr>
<td></td>
<td>Taxes</td>
</tr>
<tr>
<td></td>
<td>Charges</td>
</tr>
<tr>
<td></td>
<td>Grants</td>
</tr>
</tbody>
</table>
Some Practical Questions

- What decisions is CBA required for? Large/small; capital/current; commercial/social; project/policy
- Is the philosophy commercial plus user benefits and externalities (Sugden/Harberger)? Or is it social appraisal of projects (Pearce/Nash)?
- In the UK we use standard values for non-working time and for safety benefits derived from WTP studies
- CBA is a neo-classical comparative static analytical framework. Is this OK?
Some Critiques of UK Transport Appraisal

- Appraisal inadequately aligned to policy or inconsistent with policy
- Policy analysis weak relative to project appraisal
- Appraisal is not very agile – the new problems are reliability, resilience, sustainability, security. Conventional modelling and appraisal does not handle these well
- Inadequate appraisal treatment of induced behaviours – land use change, employment and economic activity impacts
Technical Critiques

• Values of business travel time savings – is the cost saving approach still tenable?
• Values of time savings are assessed not to vary with journey length – is this defensible?
• Are we sure the values from stated preference are “per driver” or “per car”?
• Is the appraisal treatment of fuel taxation correct?
• What is the right definition of the benefit: cost ratio – i.e. what exactly is the constrained resource?
• The biggest questions concern the adequacy of transport appraisal for assessing the impact on the total economy

• British approach following Mohring and others has been until 1999 to rely on perfect competition paradigm – transport benefits are a good proxy for total system benefits

• Following SACTRA (1999) and later work, sources of additional wider economic impacts due to market imperfections have been incorporated in appraisal
Additional Wider Economic Impacts

- Agglomeration economies – increasing returns to economic mass/density arising from labour market pooling, knowledge spillovers, and other economies external to the firm
- Reductions in deadweight losses due to spatial market imperfections – induced increment in output * price/marginal cost mark-up
- Similar tax wedge effects due to induced increases in employment
In current economic conditions (post-credit crunch; significant unemployment; tight public finances), there is a view that the only thing that matters is the impact on GDP, or Gross Value Added.

Strong desire to incorporate land development and employment effects in city regional appraisal.

Strong desire for appraisal comparison across sectors at local and regional level.

Possible power shift from central to local in terms of funding.
GVA Approaches Focus On

• The impact of transport improvements on accessibility and productive potential at area level
  – *Comment*: *how to model realisation of potential?*

• The relationship between accessibility, real wages and employment at area level
  – *Comment*: *how to handle employment displacement from other areas versus net generation?*

• The further relationship to agglomeration in the city region
  – *Comment*: *problematic issues of causality and confounding*
Concluding Thoughts on Transport CBA

- A body of coherent knowledge and practice has been built up and codified
- There is a strong link to modelling and design but a weaker link to policy and strategy
- The economic crisis creates policy imperatives which CBA struggles to address
- In any case, policy dimensions such as reliability, resilience and security pose challenges for appraisal going forward