Gateways, Corridors and Competitiveness: an evaluation of Trans-European Networks and lessons for Canada

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Overview

• Wider economic benefits of high level transport infrastructure improvements elusive
• Much of the emphasis in EU on identifying the Community interest in new links: competitiveness and cohesion.
• At regional or local level high-level improvements can have mixed impacts
• Evidence from TENs
  – Aggregate evidence
  – Contrasting cases from the North European high-speed rail network
• Globalisation, trade and transport
  – Lessons for Canada
• Implications for policy and appraisal
Defining wider economic effects

• Accessibility
  – Time-space relationships
  – Absolute and relative change
  – The ‘two-way road’ effect e.g. Paris and provincial cities
  – Time thresholds

• Transport/other inputs trade-off
  – Imperfectly competitive markets
  – Scale economies
  – Market size
  – Agglomeration effects
Measuring wider economic effects

• Changes in GDP vs changes in welfare
  – Time savings
  – Productivity gains
• Labour market effects
  – Participation rates
  – Hours of work
  – Productivity effects
• Agglomeration and mark ups
• Summary of effects
  – Impact on competition in the affected regions,
  – Impact on the ability to gain benefits from the change in market power through agglomeration,
  – Impact on linkages, particularly backward linkages such as the labour market.
Trans-European transport network (TEN-T)
Priority axes and projects

1. Railway axis Berlin-Venice/Milan-Ravenna-Naples-Moscu-Palermo
3. High-speed railway axes of south-west Europe
4. High-speed railway axes east
5. Betuwe line
6. Railway axis Lyon-Trieste-Dhúlava
7. Motorway axes Lyon-Luxembourg/Paris-Athens-Sofia-Budapest
8. Multimodal project Portugal-Spain-west of Europe
9. Railway axis Calais-Dublin-Malta-Strasbourg
10. Malpensa airport
11. Øresund fixed link
12. Baltic Sea/Atlantic rail axes
13. United Kingdom/Belgium/Netherlands road axes
14. West coast main line
15. Galileo
16. Freight railway axes Strasbourg-Varsovie Madrid-Paris
17. Railway axes Paris-Strasbourg-Stuttgart-Vienna-Bratislava
18. Rhine-Meuse-Main-Danube inland waterway axis
19. High-speed rail interoperability on the Iberian Peninsula
20. Fahrplan belt railway axis
21. Motorways of the sea
22. Railway axis Athens-Sofia-Budapest-Vienna-Copenhagen
23. Railway axis Gdańsk-Warsaw-Brno-Bratislava-Vienna
25. Motorway axes Gdańsk-Berlin-Bratislava-Vienna
26. Railway/Road axis Ireland/United Kingdom/Continental Europe
27. Rail Bathys axis Warsaw-Kiev-Riga-Tallinn-Helsinki
28. Eurocorail on the Brussels-Luxembourg-Strasbourg railway axis
29. Railway axis of the Ionian Adriatic Intermodal corridor
30. Inland waterway Seine-Scheldt

Priority axes and projects

<table>
<thead>
<tr>
<th>Priority axes and projects</th>
<th>Priority project numbers</th>
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</thead>
<tbody>
<tr>
<td>Road</td>
<td>13</td>
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<tr>
<td>Rail</td>
<td>6</td>
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<tr>
<td>Inland waterway</td>
<td>8</td>
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<tr>
<td>Motorways of the sea</td>
<td>30</td>
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<tr>
<td>Airport project</td>
<td>21</td>
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<tr>
<td>Port project</td>
<td>10</td>
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<tr>
<td>Galileo</td>
<td>15</td>
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# Priority projects completed

<table>
<thead>
<tr>
<th>Projects or sections of projects completed in 2007</th>
<th>Date for start of operation</th>
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<tbody>
<tr>
<td>PP2 High Speed Train Paris-Brussels-Cologne-Amsterdam London</td>
<td>2007</td>
</tr>
<tr>
<td>PP5 Betuwe Line</td>
<td>2007</td>
</tr>
<tr>
<td>PP9 Rail Line Cork-Dublin-Belfast-Stranraer</td>
<td>2001</td>
</tr>
<tr>
<td>PP10 Malpensa Airport (finished)</td>
<td>2001</td>
</tr>
<tr>
<td>PP11 Öresund fixed link (finished)</td>
<td>2000</td>
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## EU Funding for TENs

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<tr>
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<tbody>
<tr>
<td>TEN Budget</td>
<td>2.2</td>
<td>4.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Cohesion Funds</td>
<td>7.6</td>
<td>9.0</td>
<td>12.8</td>
</tr>
<tr>
<td>ERDF*</td>
<td>5.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>ISPA</td>
<td>--</td>
<td>2.1</td>
<td>na</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14.8</strong></td>
<td><strong>21.3</strong></td>
<td><strong>23.2</strong></td>
</tr>
</tbody>
</table>

*Estimate DG TREN of the share allocated to TEN-T
Policy conflicts in TENs

• Lack of clarity in responsibility
  – TENs an EU concept but responsibility for decisions with member states, local/regional government or private sector
  – only matters on which cross-border agreement is needed (i.e. the strictly international elements of the TENs) should be resolved at EU level.
  – need for institutional structures to enable multi-level decision-making and their policing

• EU level transport policy addresses two fundamental concerns
  – development of a world class competitive economy (Lisbon Agenda)
  – increased cohesion within and between the member states

• National level takes decisions and coordinates funding

• Problems
  – Horizontal conflicts with other policy areas
  – Vertical conflicts through policy refraction
Appraising TENs Projects

- EU-wide issues: added value to the EU of the network and of any link.
  - Integration effect in terms of contribution to economic growth
  - Cohesion impact
    - Redistribution and the ‘two-way road’ effect
    - Empirical evidence:
      - increase in welfare from completion of the TENs typically < 4 per cent of regional GDP
      - only 1/10 change in relative accessibility
      - can be negative
    - Regions may campaign for projects which harm them
    - EU may be promoting projects which ultimately promote economic divergence
    - The policy structure fails to establish a clear dialogue between the different levels of government to reduce asymmetric information problem
Changes in accessibility and GDP (SASI model)
Comparison of alternative model results: SASI (left) and CGEurope (right)
Evidence on wider economic benefits

• Approaches to measuring benefits
  – Land Use Transport Interaction models
  – Computable General Equilibrium models

• Results
  – Large changes in accessibility may lead to only small changes in GDP/welfare in large networks
  – Ambiguity over relative influence of road and rail
  – Wider benefits may be additional 10-20% (SACTRA) or as high as 30-40% (Elhorst et al.) of direct benefits
  – Possibly higher than earlier theoretical studies had suggested
  – But impacts not always positive
  – Distribution of impacts critical
Local impacts

• Spillover issues
  – May be more difficult to identify than global
  – Depend on local connectivity
  – Introduction of competition between station locations

• Objective and performance issues
  – Need for services not to abandon existing communities
  – Conflict between metropolitan needs for fast links and areas in-between for connectivity
  – Dealing with by-passed locations
  – Border ‘shadow’ areas
North European HSR Network

[Map showing the North European High-Speed Rail Network with cities such as Ebbsfleet International, Ashford International, Breda, Mons, and Mauberge marked.]
Global networks

• National and international networks
  – Internal and external competitiveness

• Mainports
  – Scale and efficiency
  – Ownership and control
  – Linking landside with sea-/air-side infrastructure

• Landbridge routes and global networks
  – Asian routes
  – Russian routes
  – North American routes
## Trade flows and transport change

<table>
<thead>
<tr>
<th></th>
<th>EU</th>
<th>USA</th>
<th>Japan</th>
<th>Asia</th>
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<tbody>
<tr>
<td>EU</td>
<td>-</td>
<td>2141 (5.2)</td>
<td>413 (5.7)</td>
<td>1249 (5.2)</td>
</tr>
<tr>
<td>USA</td>
<td>1646 (2.7)</td>
<td>-</td>
<td>645 (3.1)</td>
<td>1333 (4.8)</td>
</tr>
<tr>
<td>Japan</td>
<td>785 (4.0)</td>
<td>1440 (4.5)</td>
<td>-</td>
<td>1973 (5.4)</td>
</tr>
<tr>
<td>Asia</td>
<td>2193 (8.0)</td>
<td>3144 (7.3)</td>
<td>1684 (4.6)</td>
<td>-</td>
</tr>
</tbody>
</table>

Trade flows between major trading areas in 2000 in 100 million US dollars (figures in parentheses are ratio of flows in 2000/1981)

Source: Ono et al (2007)
Trade flows and transport change

• Competition between networks
  – Horizontal and vertical integration
  – Rent seeking
  – Industrial concentration, tariffs and shipping margins: more liberal trade regimes lead to lack of competition in the transport sector (Francois and Wootton)

• Vertical integration and increasing trade intensity of production
  – Increases power of shippers (and ports) as firms more dependent on transport.
  – Vertical specialization accounts for one-third of all trade growth and up to one-half of trade growth for smaller and developing countries (Hummels).
  – Half of Chinese exports by value are imported inputs

• Global effects and local impacts
  – Competition and congestion effects
  – Home market effects and agglomeration
Lessons for Canada

• Global competition between production locations and between networks
• Development of networks (and nodes) can have unpredictable regional impacts within countries
• Four dimensions of flow:
  – flows with Canadian origins or destinations where the development of transport enables Canadian firms to compete more effectively (Flow A)
  – flows to and from outside North America with origins and destinations in neighbouring countries (essentially the US) which can be diverted through Canadian ports because of the greater efficiency of those nodes or of the transport links to them (Flow B)
  – flows between points outside North America (e.g. East Asia-Europe) which can be diverted through Canadian ports and overland routes (Flow C)
  – internal flows (Flow D)
Competing flows

Flow A

Flow B

Flow C

Flow D

National border

Origin/destination

Port/transhipment point
Conclusions

• Lessons from the TENs:
  – Fragmentation of policy-making framework
  – Incoherence in formulation of policies towards transport infrastructure and the efficiency of transport markets using that infrastructure
  – Inconsistencies in investment appraisal methods:
    • failure to recognise imperfectly competitive markets in transport-using sectors
    • interactions between regions affected by new infrastructure

• Implications
  – Modelling the transport impacts
  – Evaluation of the wider benefits
  – Improving consistency in the policy process

• Identifying winners and losers