Roundtable

Efficiency in Railway Operations and Infrastructure Management

Efficiency Indicators of Railways in France

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• 2 – Efficiency of rail transport services

• 3 – Network efficiency
Strategic goals

Operational goals: network, traffic

Operational consistency

Inputs: Capital, Labour, Energy...

Operational efficiency

Demand: P.km, T.km...

Economic efficiency

Supply: train.km

Productive efficiency

Political relevancy
2) Efficiency of rail transport services
Political goals (see the strategic objectives of the 2011 white paper, Grenelle Environment Forum on the expansion of freight, high-speed rail, regional trains, etc.)

Relevance

National operational choices: Infrastructure (SNIT scheme, regeneration), relations between the infrastructure manager and the TOCs, access pricing, competition, etc.

Consistency

Resources deployed (TGV, regional express trains, rolling motorway)

Inputs: work, capital, energy, etc.

Operational efficiency

Indicators of operational efficiency: subsidy/pkm, revenue/pkm, cost/pkm

Demand: passenger-km, tonnes-km

Productive efficiency

Offering: train-kilometres, available seat-kilometres

Economic efficiency
Economic efficiency

Demand: passenger-km, tonnes-km

Offering: Economic efficiency
High Speed Trains Traffics in Europe (Billion of pass.km/year - 2012)
# Rail passenger traffic

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<tbody>
<tr>
<td><strong>Long distance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- HSR</td>
<td>61256</td>
<td>-1,4</td>
<td>-0,2</td>
<td>3,6</td>
<td>-2,7</td>
<td>-1,2</td>
<td>-0,4</td>
</tr>
<tr>
<td>- Intercity</td>
<td>53768</td>
<td>-0,7</td>
<td>1,8</td>
<td>2,4</td>
<td>0,0</td>
<td>-0,5</td>
<td>0,6</td>
</tr>
<tr>
<td>- TER</td>
<td>7489</td>
<td>-4,9</td>
<td>-10,6</td>
<td>10,7</td>
<td>-17,6</td>
<td>-5,8</td>
<td>-6,1</td>
</tr>
<tr>
<td><strong>Regional</strong></td>
<td>31184</td>
<td>-0,3</td>
<td>0,7</td>
<td>3,7</td>
<td>3,6</td>
<td>0,1</td>
<td>1,5</td>
</tr>
<tr>
<td>- TER</td>
<td>14037</td>
<td>1,2</td>
<td>0,2</td>
<td>4,5</td>
<td>5,5</td>
<td>-1,2</td>
<td>2,0</td>
</tr>
<tr>
<td>- Paris region</td>
<td>17147</td>
<td>-1,4</td>
<td>1,1</td>
<td>3,1</td>
<td>2,0</td>
<td>1,2</td>
<td>1,2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>75293</td>
<td>-0,9</td>
<td>-0,1</td>
<td>3,7</td>
<td>-1,2</td>
<td>-1,2</td>
<td>0,0</td>
</tr>
<tr>
<td><strong>Total with Paris</strong></td>
<td>92440</td>
<td>-1,0</td>
<td>0,1</td>
<td>3,6</td>
<td>-0,7</td>
<td>-0,7</td>
<td>0,2</td>
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Focus on rail freight traffic

- Competition on the market
- Germany saw liberalization as a way to support rail ≠ France
- Modal share rail Germany 2003-2008: + 1,6 pts, thereof 1,2 from competitors

Transport Minister: « Toward 100 Gtkm! »

Sources: SOeS, SBA
Graphs S. Séguret, 2009
Productive efficiency

Inputs: work, capital, energy, etc.

Demand: passenger-km, tonnes-km

Economic efficiency

Offering:
Main indicators (France)

- Pass.km: 100, 138.0, 154.8, 100, 76.7, 42.6, 100, 110.5, 104.4, 100, 90.3, 86.1, 100, 122.4, 121.3
- Ton.km: 100, 110.5, 122.4, 100, 76.7, 86.1, 100, 110.5, 104.4, 100, 90.3, 86.1, 100, 122.4, 121.3
- Unit.km: 100, 110.5, 122.4, 100, 76.7, 86.1, 100, 110.5, 104.4, 100, 90.3, 86.1, 100, 122.4, 121.3
- Employees: 100, 110.5, 122.4, 100, 76.7, 86.1, 100, 110.5, 104.4, 100, 90.3, 86.1, 100, 122.4, 121.3
- Productivity: 100, 110.5, 122.4, 100, 76.7, 86.1, 100, 110.5, 104.4, 100, 90.3, 86.1, 100, 122.4, 121.3
A graph showing the change in various metrics in Switzerland from 1996 to 2013. The metrics include Pass.km, Ton.km, Unit.km, Employees, and Productivity.
Operational efficiency

National operational choices: Infrastructure (SNIT scheme, regeneration), relations between the infrastructure manager and the TOCs, access pricing, competition, etc.

Consistency

Operational efficiency
Public subsidies to TER (France)

Public contribution Index, base 100 : 2002
Per train-kilometre - Index, base 100 en 2002
Public subsidies in Switzerland

[Graph showing the trend of public subsidies from 1999 to 2011 for Public contribution Index, base 100: 2000 and Per train-kilometre - Index, base 100 en 2002.]
Public subsidies to HSR up to what extent?

Tours-Bordeaux
Public Subsidies
5 euros/passenger
during 50 years

Marseille-Nice
Public subsidies
30-35 euros/pass
during 50 years.
3) Network efficiency

- The efficiency of basic operations.
Summary annual performance chart for 2012 (last year of the first performance contract, 2008-2012)

<table>
<thead>
<tr>
<th>Strategic objective 1: Adapting to market liberalisation and increasing business revenue</th>
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<tbody>
<tr>
<td>6 sub-objectives: Mainly focused on customer satisfaction</td>
</tr>
<tr>
<td>4 sub-objectives achieved, 2 partially achieved: 1) the quality of freight paths has not improved as fast as expected; 2) costs are better reflected in charges.</td>
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<thead>
<tr>
<th>Strategic objective 2: Modernising infrastructure and improving network performance</th>
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<tbody>
<tr>
<td>13 sub-objectives: Maintenance, maintenance management, safety</td>
</tr>
<tr>
<td>7 sub-objectives achieved, 5 partially achieved: mainly concerning the elimination of level crossings (only half the targeted number), the standard of programming and ensuring that renewal investment is effective. One failure: the multiannual view of renewals.</td>
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<tr>
<th>Strategic objective 3: Breaking even and establishing sustainable financing</th>
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<tbody>
<tr>
<td>6 sub-objectives: Improving the coverage of cost by revenue</td>
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<tr>
<td>2 sub-objectives achieved, One partially achieved: management control adapted to the strategic segmentation of the network; 3 sub-objectives not achieved because of the freezing of €341m of the operating subsidy: costs not fully covered by revenue (charges or balancing subsidy); accounting targets consequently missed.</td>
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<tr>
<th>Strategic objective 4: Dynamic steering and responsible governance</th>
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<td>8 sub-objectives: Improving governance design and control</td>
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<tr>
<td>7 sub-objectives achieved, One partially achieved, concerning the slower-than-expected establishment of the liaison with regional authorities (regional transport organising bodies).</td>
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<tr>
<td>Strategic objective 1</td>
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| Adapting to market liberalisation and increasing business revenue | - Rate of satisfied customers.  
- Rate of acceptance of the pricing.  
- Number of paths affected by the maintenance.  
- Rate of regularity in 5mn. |
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<tr>
<th>Strategic objective 2</th>
<th>Examples of indicators</th>
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<tr>
<td>Modernising infrastructure and improving network performance</td>
<td>- Track length renovated (with respect to the objective in 5 years).</td>
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<td>- Number of turnouts renovated (id.).</td>
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<td>- Number of level crossings removed (id.).</td>
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<td>- Cost of renewal of a km of track (id.).</td>
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<td>- % of the network in poor condition.</td>
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<td>- New centralized controls (with respect to the program).</td>
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<td>- PDCA for investments (Plan-Do-Check-Act).</td>
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<td>- % of realized investment (with respect to the program).</td>
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<td>- % of investment without cost overruns.</td>
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<td>- % of investment without exceeding deadlines.</td>
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<tr>
<td>Strategic objective 3</td>
<td>Examples of indicators</td>
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| Breaking even and establishing sustainable financing | - Revenue (with respect to the forecast of the business plan).  
- Government subsidies (with respect to its commitments).  
- Ratio revenue/full cost.  
- Accounting results with respect to the business plan.  
- Ex-post financial assessment of major projects (1 year, 5 years, 10 years) |
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<th>Strategic objective 4</th>
<th>Examples of indicators</th>
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<td>Dynamic steering and responsible governance</td>
<td>- The provisions are mainly related to the organization of the company and its management and is not amenable to performance indicators except ratings of specialized agencies.</td>
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Network efficiency

- The marginal capital efficiency.
Optimal ranking under budget constraint

Improvement / ERR ranking

Ranking:
- NPV/public euro
- IRR (financial)
- ERR (socio-econ.)

Decreasing budget
First investments of RFF to promote rail freight (1997-1997)

Source: RFF

Effectiveness of local politicians

Net present value/subsidy

TWO PORT TERMINALS
If we consider the 40 candidate projects between 1997 and 2007:

If the ten most profitable projects were selected every billion subsidy would have generated 8 billion net present value.

If the ten less profitable projects were selected every billion subsidy would have generated 0.5 billion net present value.
A global programme efficiency indicator (value-for-money criterion)

For a given time series of subsidies the virtual optimal programme is ranked by the decreasing NPV/public subsidy ratio.

This virtual optimal programme generates the overall Net-Present-Value Wo.

The actual programme generated the overall Net-Present-Value W.

The overall efficiency indicator: \( W/Wo \)
MERCI