High-Speed Rail (HSR): Partner or Competitor?

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Headings

- **Introduction**
  The context at the start of HSR services

- **The (fierce) competitive aspect**
  quite at the beginning of the HSR services

- **Travel time and fare level on HSR**, both as (main) argument for operating success

- **The inherent advantages/ constraints of HSR vs. Aircraft**

- **The complementary aspect**
  Short-haul air transport versus High volumes of transport
  Inter-modality at airports and the role of medium-sized airports

- **Conclusions**
  Background
  High-speed rail: Partner or competitor?
  Outlook
Introduction

- The main context
- The example of Japan
- The start in Europe
- HSR is the challenger
The (fierce) competitive aspect

Air Traffic Growth - French Domestic

Source: Air data
Modal split Rail/ Air based on (HSR) travel time
### Fare level on HSR
(Geneva-Paris, 1999)

<table>
<thead>
<tr>
<th>Class</th>
<th>1st Class (CHF)</th>
<th>1st Class Special Business (CHF)</th>
<th>2nd Class (CHF)</th>
<th>2nd Class Special Economy (CHF)</th>
<th>Excursion (CHF)</th>
<th>SUPERPEX (CHF)</th>
<th>EURORail (CHF)</th>
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<tr>
<td>TGV</td>
<td>CHF 240.—</td>
<td>CHF 940.—</td>
<td>CHF 180.—</td>
<td>CHF 799.—</td>
<td>CHF 679.—</td>
<td>CHF 476.—</td>
<td>CHF 12.—</td>
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</table>
Max. commercial speed on HSR

Max. commercial speed in Km/hour

High-speed

- about 450
- 350
- 300
- about 250
- 200
- 160

Magnetic levitation (expected)

New tracks
- Eurostar
- TGV- Duplex
- TGV- Nord
- TGV- Thalys
- TGV- Atlantique
- TGV- Sud-Est

Improved tracks
- ETR 500
- ICE
- AVE
- ETR 450/460
- X 2000
- Talgo Pendular
- IC 225

Conventional trains
- HST
- Eurostar
- TGV- Thalys
- TGV- Nord
- TGV- Atlantique
- TGV- Sud-Est
The inherent advantages/constraints of HSR vs. Aircraft

- Technique
- Safety
- Network flexibility
- Transport demand/supply
- Environment protection
- Traffic congestion
- Punctuality
- Operating costs
- Airport vs. Rail infrastructure costs
- Level of service
The inherent advantages/constraints of HSR vs. Aircraft
The **complementary aspect** within the high-speed transport system

- For poor volumes of HSR transport
  Short-haul air transport applies
  as point-to-point, hub-by-pass link
  as hub-feeder flight
  HSR is optional, if high-speed line nearby

- For high volumes of HSR transport and HSR travel time of:
  4 hours: air transport keeps the lead
  3 hours: fierce competition air/rail is taking place
  2 hours: air transport has still a role as a feeder and point-to-point function in a large agglomeration with several airports served
  1+half hour: air transport has no chance (even for transfer)
Inter-modality at airports

Airport rail station

City-centre rail station
(Brussels for example)

other destinations

Airport rail station
(Paris-CDG for example)

City-centre rail station

other destinations

Rail link to airports: illustration of the extremes
Inter-modality at airports

<table>
<thead>
<tr>
<th>Item</th>
<th>BRU</th>
<th>ORY</th>
<th>STR</th>
<th>GVA</th>
<th>ZRH</th>
<th>FRA</th>
<th>CDG</th>
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<td>Medium-sized</td>
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<td>Hub for SN AF SRLH AF</td>
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<td>Type of rail link at the airport</td>
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<td>Inter-city rail system</td>
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<td>High-speed rail system</td>
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X: effective at the time of study
(X): development in progress since the study was finished
### Inter-modality at airports

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<tr>
<th>Item</th>
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<th>CA</th>
<th>ZH</th>
<th>FRC</th>
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<td>Effects on rail</td>
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+: positive result    -: negative result  +/-: balanced result
The role of medium-sized airports

Key:
- City-centre
- Medium-sized Hub
- Medium-sized Regional airport
- Catchment area of medium-sized airport
- Improving rail access
Conclusions

- Background

- High-speed rail: Partner or competitor?

- Outlook
Conclusions

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