Rail Infrastructure Access Charge Issues

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What Is Infrastructure “Separation”?

❖ **Stages** of “separation”
  - None. Fully integrated (one operator, one infrastructure provider)
  - Tenant (minority) users. Infrastructure manager controls and provides the dominant operations, minority users pay as tenants. “Trackage rights,” non-competing use
  - Full separation. All operators are separated from infrastructure provider.
  - Open vs. controlled (franchised) access: a separate question

❖ **Types** of separation: accounting, holding and institutional

❖ **Ownership** (public, mixed, private)
# Structure and Ownership

## Ownership Spectrum

<table>
<thead>
<tr>
<th>Structure Spectrum</th>
<th>Public</th>
<th>Mixed</th>
<th>Private</th>
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</thead>
<tbody>
<tr>
<td>Integrated</td>
<td>China, India</td>
<td>Some Arg. Frt concessions, Mex City frt, GYSEV</td>
<td>Brazil Concessions (Frt and pax), Argentina pax and some frt concessions, 3 main JR</td>
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<tr>
<td>Dominant/Tenant</td>
<td>Russia Pax, 3 island JR</td>
<td>Amtrak, VIA, JR Frt</td>
<td>US/Canada/Mex frts</td>
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<tr>
<td>Separated</td>
<td>Accounting</td>
<td>&quot;EU&quot;</td>
<td></td>
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<tr>
<td>Holding</td>
<td>DB, FS, PKP, RU</td>
<td>German concessions and companies</td>
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<tr>
<td>Institutional</td>
<td>SJ/BV/Gm, Railion DK &amp; NL</td>
<td>Swedish concessions, ARTC</td>
<td>UK</td>
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</table>

True "separation"
Variables to Manage

**COMPETITION**
- Intermodal or IN/FOR Market

**STRUCTURE**
- Integral
- Dominant/Tenant Separated
- Pub/Mix/Pvt Ownership

**REGULATION**
- Tariffs (?)
- Access Regime
- Entry/Licensing
- Safety
- Govt Support

1. All fit together
2. Regulation is a referee, not a panacea
Is “Separation” New and Untested?

(It depends)

- US/Canada since 1900+ (Amtrak and VIA since 1970s). (mostly tenant)
- Japan – 1987 (tenant)
- Sweden – 1987 (institutional, public)
- UK – 1995 (full institutional, privatized -- study)
- Australia – ARTC in 1997 (mixed)
- EU Order 91-440 (1991 to present). (Mostly accounting, some holding, some institutional)

US Rail System Map Today: Class I Railroads
(BUT 60 to 25 to 7)
Multiple Use US Tracks

(Excluding Amtrak)
Access Charge Situations

- Mutual interest (negotiated, often reciprocal)
- Non-competing use (pax on frt line)
- Imposed against the will and interest of infrastructure provider (usually regulatory)
- Mental constructs of the separated provider
  - Who, me?
  - The “public utility” provider
  - Infrastructure as a product to sell (EU language)
Background: Objectives (Why Do It?)

- Originally, common interest by railways
- Efficiency in rail sector (economies of density)
- Financial stability for infrastructure provision
- Clarifying government roles and costs
- Business focus of the parts (inc. infrastructure)
- Open up public/private roles
- Promote competition: intra-modal, international
- The Commission made us do it (EU railways) and now new EU candidates CEE (BG, Turkey, RO)
Infrastructure Charges: Coverage

- Maintenance and renewals
- Train planning and operations
- Electric power (diesel fuel by operator)
- Congestion and scarcity (capacity)
- External (social) costs
Tenant cases, focus on variable cost, or on negotiated outcome

Pure social marginal cost (theory)
- maximizes economic efficiency, may not yield financial stability if government does not pay its share

Marginal cost plus markup (MC+)
- need to know (and rely on?) government contribution
- objectives of the markups?
- in principle, zero based

Full cost minus government contribution (FC-)
- same issues as MC+ (but MC is floor price)
- allocates all costs: can conceal inefficiencies

Major Issues
- defining/calculating marginal costs
- calculation of social costs
- agreed and consistent definitions and data
- mark-ups and knowing the elasticities of the users

MC+ and FC- very similar issues: the devil is in the mark-ups
Infrastructure Charge Structures

**Simple** – variable with measures of use
- gt-km, nt-km, p-km, train-km, wagon-km, % revenue
- weighting factors (speed, axle load, equipment design, specific route, time of day, commodity, other)

**Two-part**
- variable factors as above
- fixed part (capacity to be used, path reservation)
- discrimination: economic efficiency versus equity
- allocation (FC-) versus causality (MC+)
Economic and Policy Issues

- Degree of separation
- Network complexity and intensity of traffic
- Mix of traffic and path allocation priorities
- Growth rates in traffic (need for new capacity)
- Number of operators
- Competition goals (intramodal, international)
- Freight, ICP, HSR and suburban passenger incentives and cross-subsidies
- Slot rigidity (schedule) versus market demands
- User price elasticities (esp. supported services)
- Political/affiliate incentives to discriminate
Recommendations for Bank audience

- Start with market definition (frt, ICP, Sub’n/regional)
- Examine ALL models: separation often not appropriate: LAC, AFR. Asian models vary.
- Use competition for the market, not in the market where possible.
- Keep access charges as uncomplicated as possible (tenant models are easier)
- Access charges should at least cover MC (inc renewals): gap between charges and FC should be reliably funded. If not, stick to tenant models
- Access regimes can use mixed approaches by market: simple MC+ for freight, 2-part FC- for exclusive services, simple or 2-part MC+ for ICP depending on competition
### Access Charge Regimes for Types of Rail Users

<table>
<thead>
<tr>
<th></th>
<th>Pure SMC</th>
<th>MC+</th>
<th>FC-</th>
<th>FC Contract with Sponsor (if any)</th>
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<tbody>
<tr>
<td><strong>Suburban</strong></td>
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<td>High requirement for scheduled slots, relatively low speed. Limited response to price signals, high public support.</td>
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<tr>
<td><strong>HSR Franchise</strong></td>
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<td></td>
<td>Use two-part tariff for operations on conventional lines.</td>
<td>Slots all scheduled, rigid quality requirements, number of competing operators limited</td>
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<tr>
<td><strong>ICP Conventional and HSR:</strong></td>
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<tr>
<td>With competition in the market</td>
<td>High capacity requirements. Two-part contracts appropriate, but fixed component should be minimized.</td>
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<tr>
<td>Without competition (or with competition for the market)</td>
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<td></td>
<td>High capacity schedule requirements. Suitable for two-part contracts.</td>
<td></td>
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<tr>
<td><strong>Freight</strong></td>
<td>Low schedule and track quality requirements. High response to price signals. Use either SMC or MC+ simple tariff with minimum mark-ups. Markups (if any) for freight in domestic, import-export and transit traffic movement should be uniform.</td>
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Some Experience

- Tenant models in the US and Japan “work” partly because they don’t matter much
- UK approach has undergone significant (painful) change
- EU has a patchwork of regimes: creates “seams”
- Cost recovery objectives differ
- Wide range of charges, especially freight
- Network complexities and intensities vary
- Different balances Freight versus Passenger
- No single model available
# The Access Regime Patchwork

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<th>Simple</th>
<th>Two-Part</th>
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<tr>
<td><strong>MC+</strong></td>
<td>A,CZ,DK, SF, NL, N(frt), P, S, CH, UK(frt), US tenant, JR Frt, ARTC</td>
<td>BG, F, RO, UK(pass)</td>
</tr>
<tr>
<td><strong>FC-</strong></td>
<td>D, LV, PL, SI, SK</td>
<td>EE, H, I, E</td>
</tr>
</tbody>
</table>

**Note:** Railtrack began as two-part, FC: now shifting toward MC+.
Network Complexity versus Intensity of Use
(train-km/km of line basis)

Ratio: track-km/line-km (complexity)

Train-km/line-km (intensity)

Note: Russia, US and China added manually and do not affect the regression line.
Tenancy vs. Separation
(Percent Passenger Traffic)
Average Access Charges
(€/Train-Km)

Cross-hatch indicates CEEC
Average Freight Train Size (net tons): The Baltics are Different

RU=2000, US=2700, CHA=2500, IR=1800