Land Transport for Freight and Passengers: Conflicting Requirements or Complementarity?

15th Trans Middle East

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Transport of passengers by rail is fashionable again!

- **The emergence of High Speed Rail (HSR) has brought a revival of passengers trains:**
  - trains are no longer limited to packed commuter trains in large metropolitan areas.
  - A useful alternative to the individual automobile model.

- **Passenger Trains are:**
  - Efficient: high volumes with possible high speed.
    (twin track railway capacity=13% greater than 2x3 lane highway)
  - Reliable: well managed operations bring reliable travel
  - Clean: low emissions of GHG and pollutants.

- **Many countries around the world are now promoting again interurban passenger transport trains:**
  - HSR Cat 1: Japan (Shinkansen) France (TGV) Germany (ICE) Spain (AVE) China (CRH); Morroco (TGV)
  - HSR Cat 2 and 3: USA (Acela), Italy (Pendolino)
  - Regular trains: Ethiopia, Kenya

Transport of passengers by rail is fashionable again!

Yet passengers trains are costly

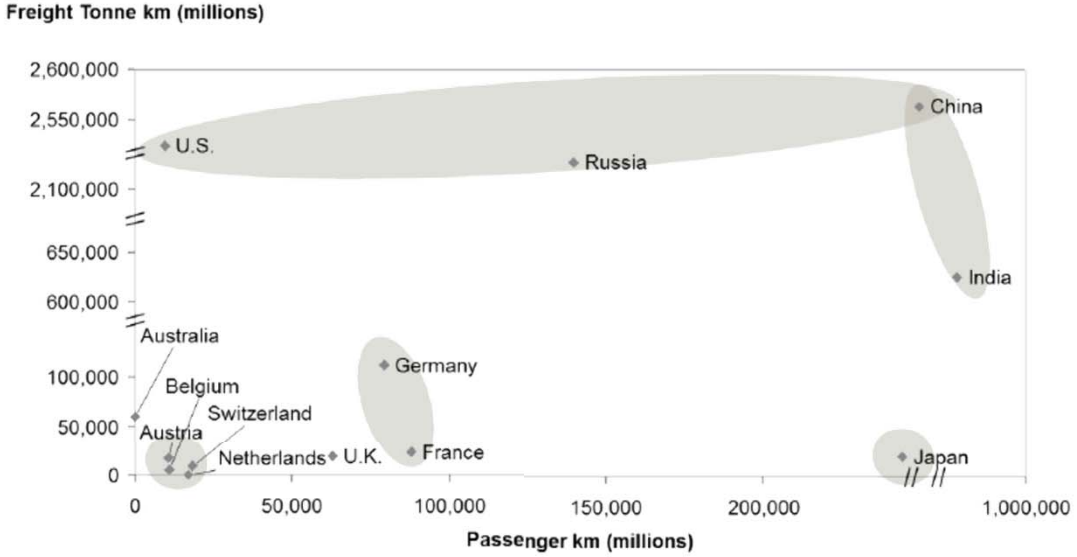
- **Infrastructure costs: speed requirements on:**
  - Horizontal alignment: even for speed down to 120 km/h
  - Power: electrification becomes mandatory as speed increases.
- **Operation costs: efficient operations are demanding in resources**
  - Personnel
  - Stations
- **Opportunity costs: freight and passengers don't mix well.**
  - Sharing infrastructure is detrimental to freight and thus degrades its profitability.
- **Financial profitability of passenger transport by rail is almost impossible to find and often even economic rates of return are negative.**

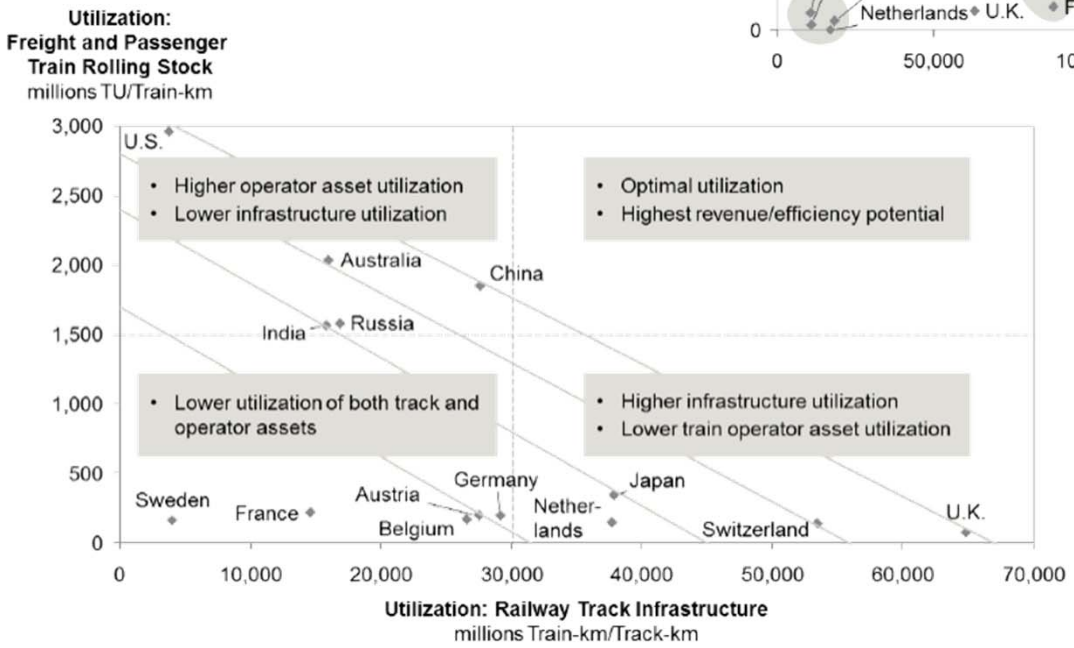
02.

Passengers on Rail: A Costly Equation

Freight and Passengers on rail around the world

Railway freight and PAX travel per country



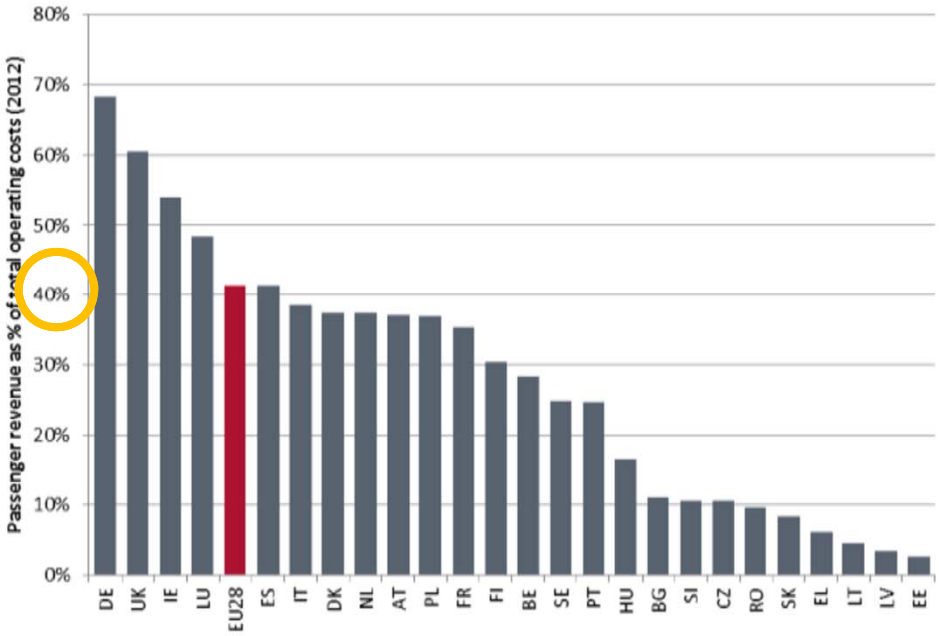


Train operator and railway infrastructure utilization

02. Passengers on Rail: A Costly Equation

Passenger oriented railways require heavy subsidies

Insufficient revenues to cover costs
EU total rail operating costs, revenues and subsidies (2012)



Subsidies in Europe are huge!
PAX rail revenues as a % of total operating costs (2013)

02. Passengers on Rail: A Costly Equation

In the USA, freight revenues cover its costs, Barely so in Europe

Train characteristics

	Length *(feet/m)*		Containers (40' – 2 TEUs) per Intermodal train[5]	Net tons per bulk train (typical)
	Typical	Maximum[4]		
U.S. Class I	6500/2000	10000/3000	150-300	9000-12000
Europe	1640/500	2460/750	25-50	1200-2000

Source: several industry reports

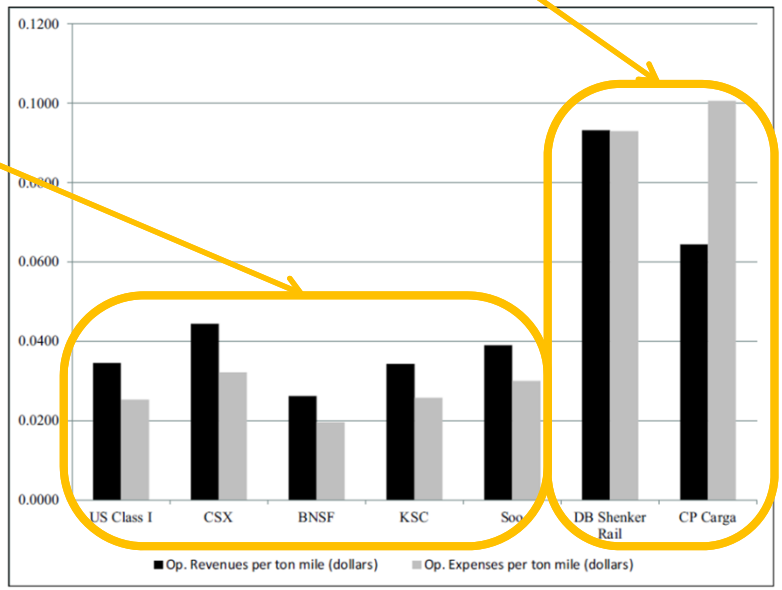
US Freight dedicated systems: Low fare yet profitable

Freight Railways Statistics for 2018

	Average[3]					*trains per*	
	Length of haul (miles)	net tons (per train) A	tons (thousands) B	ton-miles (million)	trains (B/C)	tons (thousands)	ton-miles (million)
U.S. Class I	913.6	3585	1,850,996	1,691,000	516,338	0.28	0.31
CSX	549.2	2902	417,303	229,172	143,789	0.34	0.63
BNSF	1114.3	1330	580,206	646,549	436,295	0.75	0.67
KSC	390.7	3692	75,833	29,629	20,540	0.27	0.69
Soo	426.7	2902	77,703	33,157	26,771	0.34	0.81
Europe	159.9	516	1,515,332	242,335	2,938,746	1.94	12.13
DB Shenker Rail	158.3	502	415,500	64,737	826,921	1.99	12.58
CP Carga	138.6	304	9,224	1,278	30,331	3.29	23.73

Source: Eurostat; Association of American Railroads (AAR); Surface Transportation Board (2010); DB, CP Carga annual reports.

European PAX-oriented systems: Loss-making despite high fares



Source: Association of American Railroads (AAR); Surface Transportation Board (2010); DB, CP Carga annual reports.

Operational Revenues and expenses for US and European Freight Railways

02.

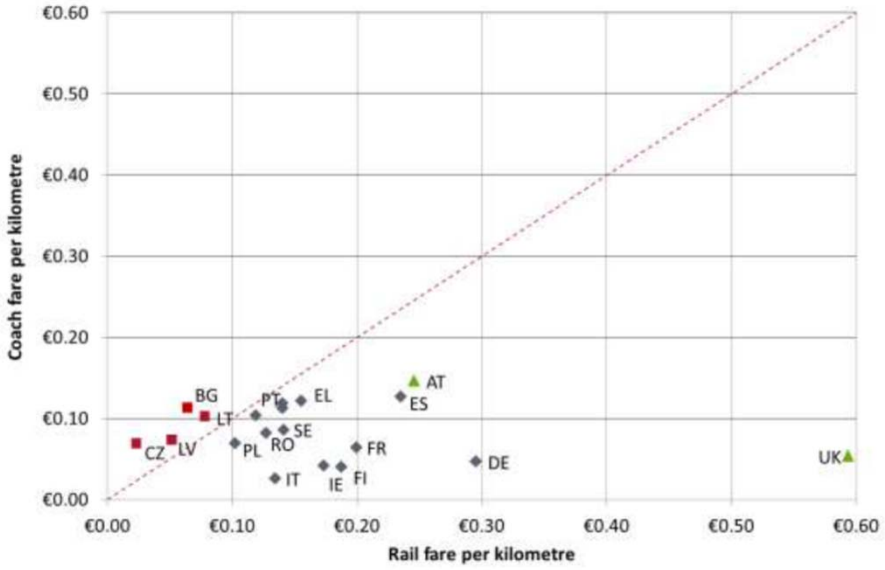
Passengers on Rail: A Costly Equation

On Rail, freight can be profitable. Not passengers.

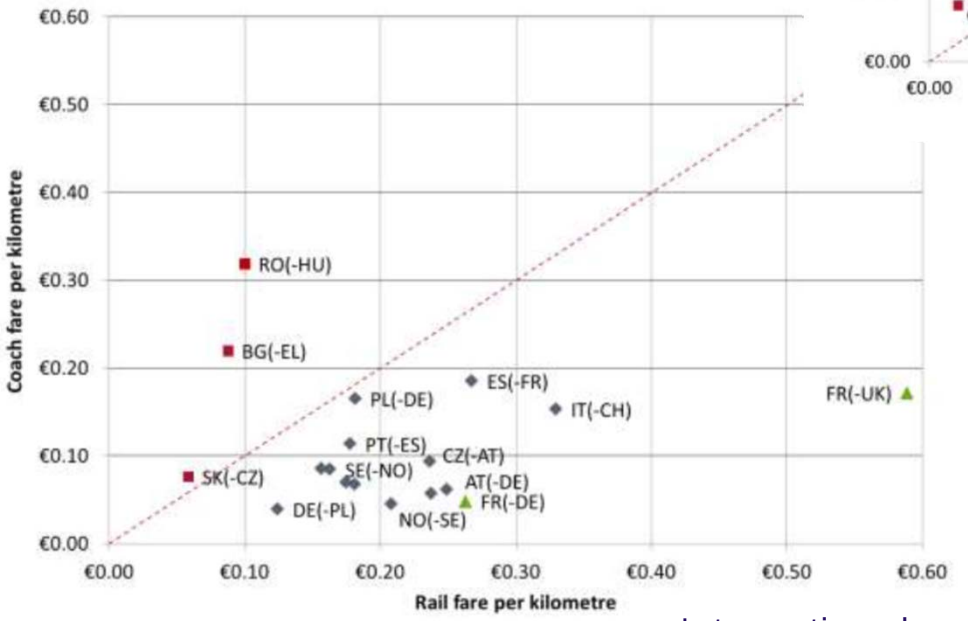
- **In USA:**
  - primary intercity passenger operator, Amtrak, created by Congress in 1970 → subsidized by Washington despite high fares (1,25 Bn USD subsidy for 2Bn USD operating costs in 2011)
  - No privately owned and operated intercity passenger services
  - Class I Freight Railroads are profitable and almost cheapest in the world.
- **Japan Railways group somewhat profitable… after massive clearing of the debts by GoJ prior to privatization start (1987)**
- **China Railways debt = 720 Bn USD (03/2018) (80% HSR-related) while China public debt = 4,300 Bn USD (2016)**
- **In Europe: All operators require subsidies, even in UK**
- **Even in Sweden, after 1988 reform, the operators are now profitable but the public infraco (Banverket) still requires heavy subsidies.**

03. Interurban Transport by coach: a “free” alternative to rail

- **For European passengers, trains are always more expensive than coaches.**



Under 300 km



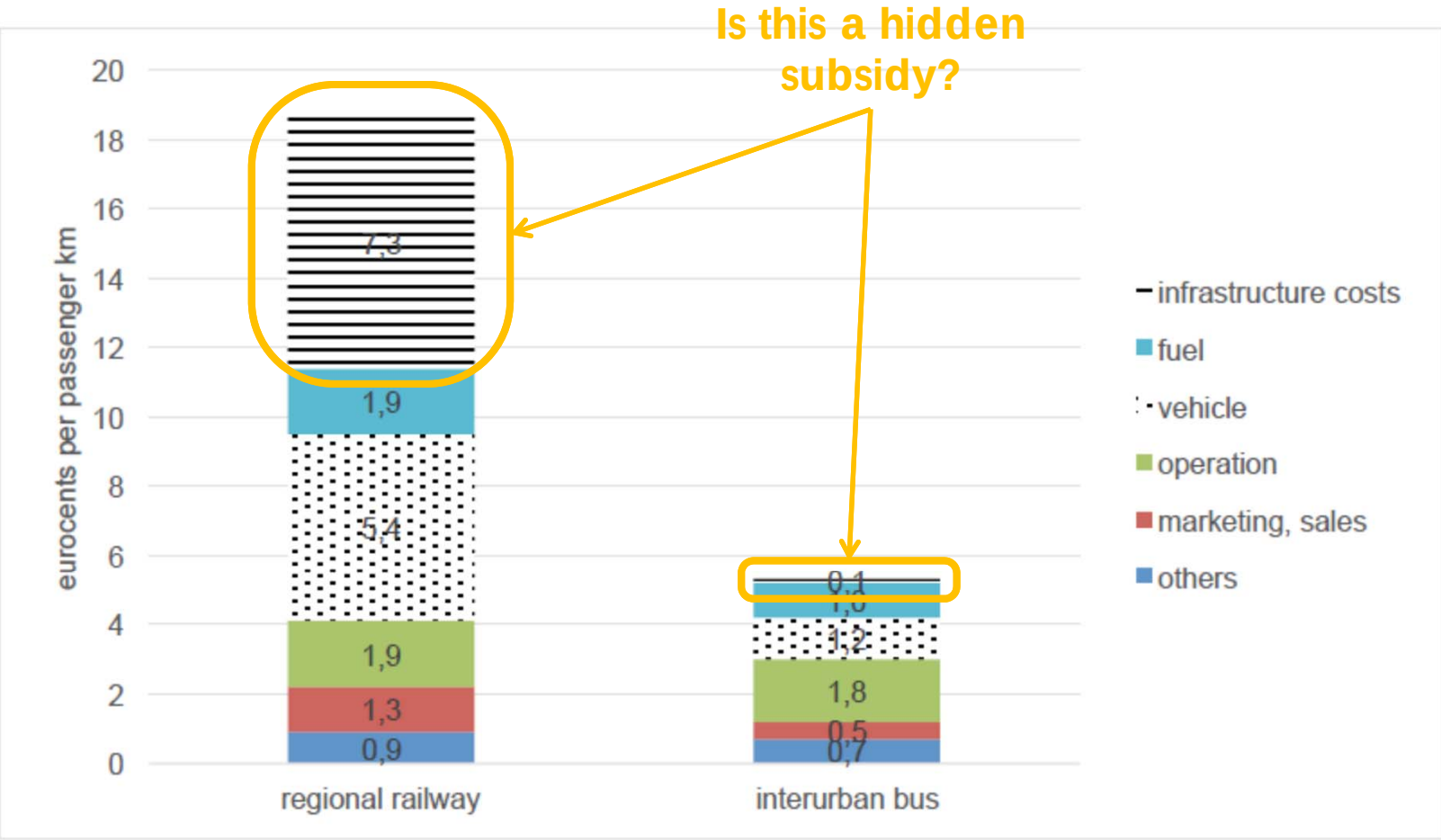
International

Rail and coach costs

03.

Interurban Transport by coach: a “free” alternative to rail

Cost structures: the German case

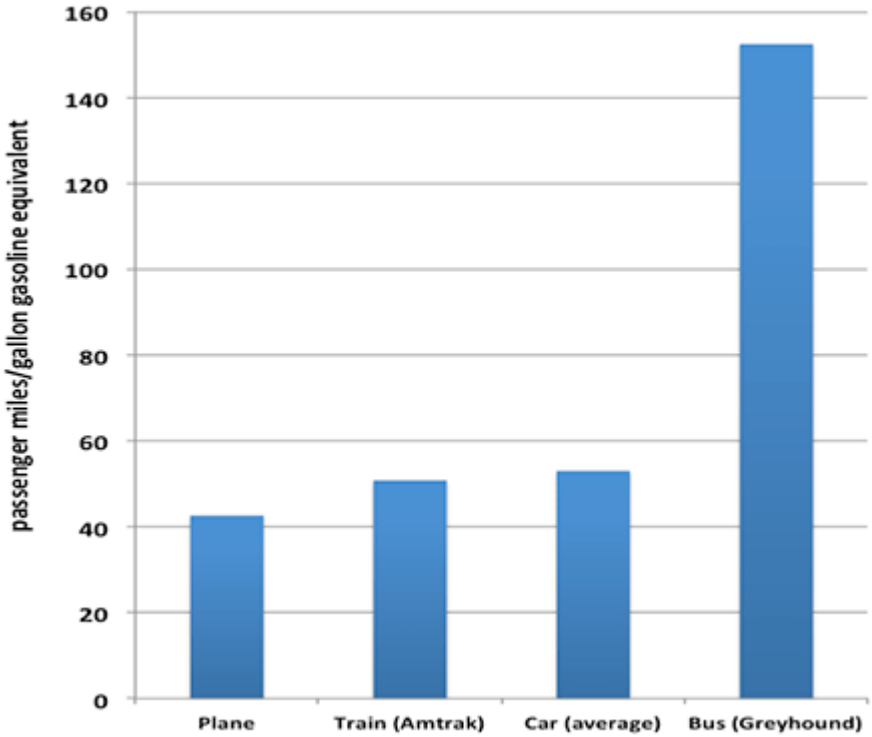


03.

Interurban Transport by coach: a “free” alternative to rail

Buses are more energy efficient and cleaner!

- **In theory, a train should lower the GHG emission by a factor of 8.**
- **In reality, trains too often emit more because of insufficient ridership: in France, most (diesel) regional trains are more emissive than buses on the same trip.**



03.

Interurban Transport by coach: a “free” alternative to rail

Coach Stations: an opportunity for local development

- **Bus terminals and stops:**
  - From simple, private infrastructure to large metropolitan “stations”
  - Building viable bus stops and roadside stations along main highways.

Blytheville, AK
Greyhound Bus Station

Shinjuku Expressway
Bus Terminal

- **An opportunity in touristic areas**

Birmingham Coach Station

Large bus terminals that includes tourist information, restaurants and shopping

the Michi-No-Eki concept: “Refresh” (Rest facilities); “Community” (cultural centers, tourist attractions, recreation and other local development facilities); “Information” (road, tourist and emergency care information)

04. Are coaches THE solution for land interurban public transport?

- **Intercity coaches are no substitute for trains:**
  - Less reliable
  - Slower
  - Less comfortable (but not always)
  - Sometimes more emissive in terms of GHG and pollutants
- **But they are:**
  - (Very) Cheap for passengers
  - (Almost) Free for the government
  - Highly flexible for the operators
  - Ubiquitous

Well regulated, intercity coaches can be the foundation of an efficient and effective interurban transport system for the masses… and the tourists.

AND THEYCAN FREE THE RAILWAY SYSTEM FOR WHAT IT WILL DO BEST: TRANSPORTING FREIGHT CHEAPLY, EFFECTIVELY AND EFFICIENTLY.

Thank you

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