



Railroading Around the World: Ownership, Subsidy, Investment, and Other Issues for the Future

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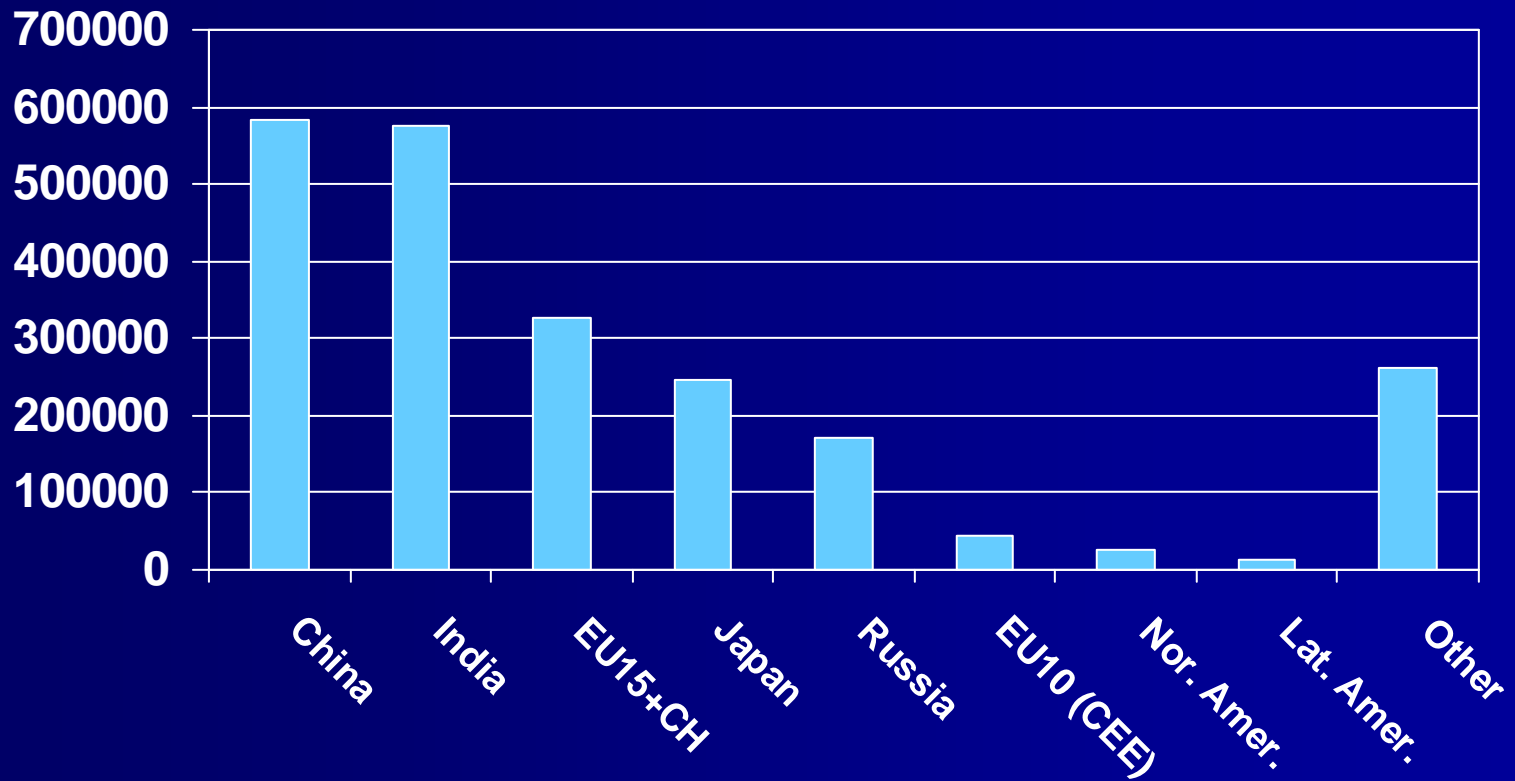
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Current State of the Railroads

- N. America: freights private & dominant, **were** near capacity, profitable; intercity passenger (VIA and Amtrak) public, unprofitable; suburban systems separate and publicly supported. Transport policy (if any) is in flux. HSR a major question economically and politically.
- EU: no railway “profitable” (~\$60B annual support), passenger dominant, freight minor share. Except HSR, rail in trouble. Major issues: capacity use and related access charges, inadequate support
- Russia: recovering, restructuring (freight and passenger). Major issues: recovery from neglect, pax losses and competitive structure. New Russian “Amtrak” established in December 2009, seems to be progressing. Freight growth now with new structure
- China: monolithic and dynamic (now more total traffic than US). Major issue: adapting to market forces. Large investment program, especially HSR, with problems emerging.
- India: Passenger dominant, growing, improving, but still inefficient. Major issue: cross subsidies from frt to pax.
- Japan: 3 major passenger companies private and profitable, 3 smaller passenger companies and freight company lose money.

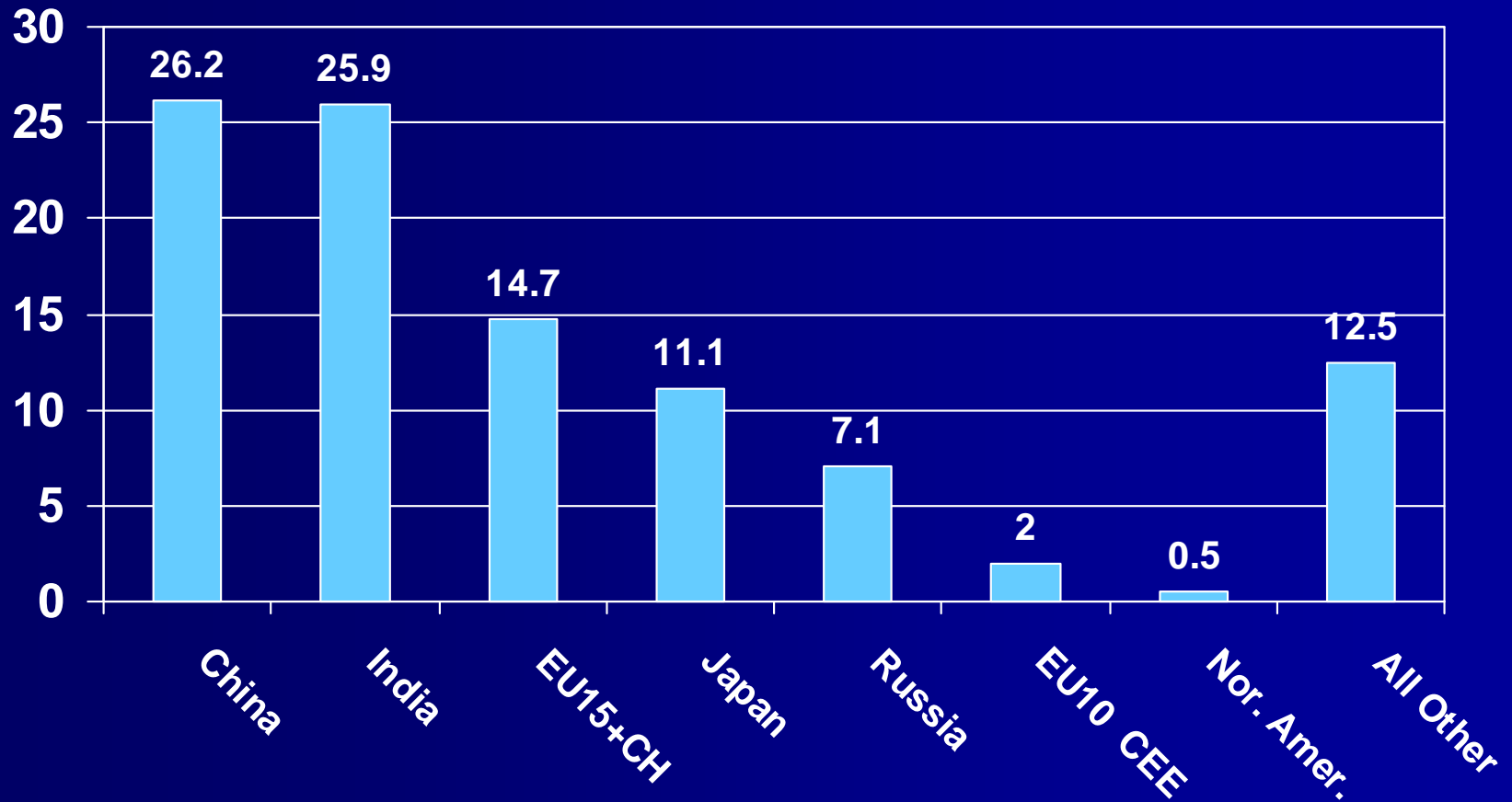
The World's Rail Passenger-Km (2005, Millions)



(0% private in 1980, 13% private in 2005, more now)

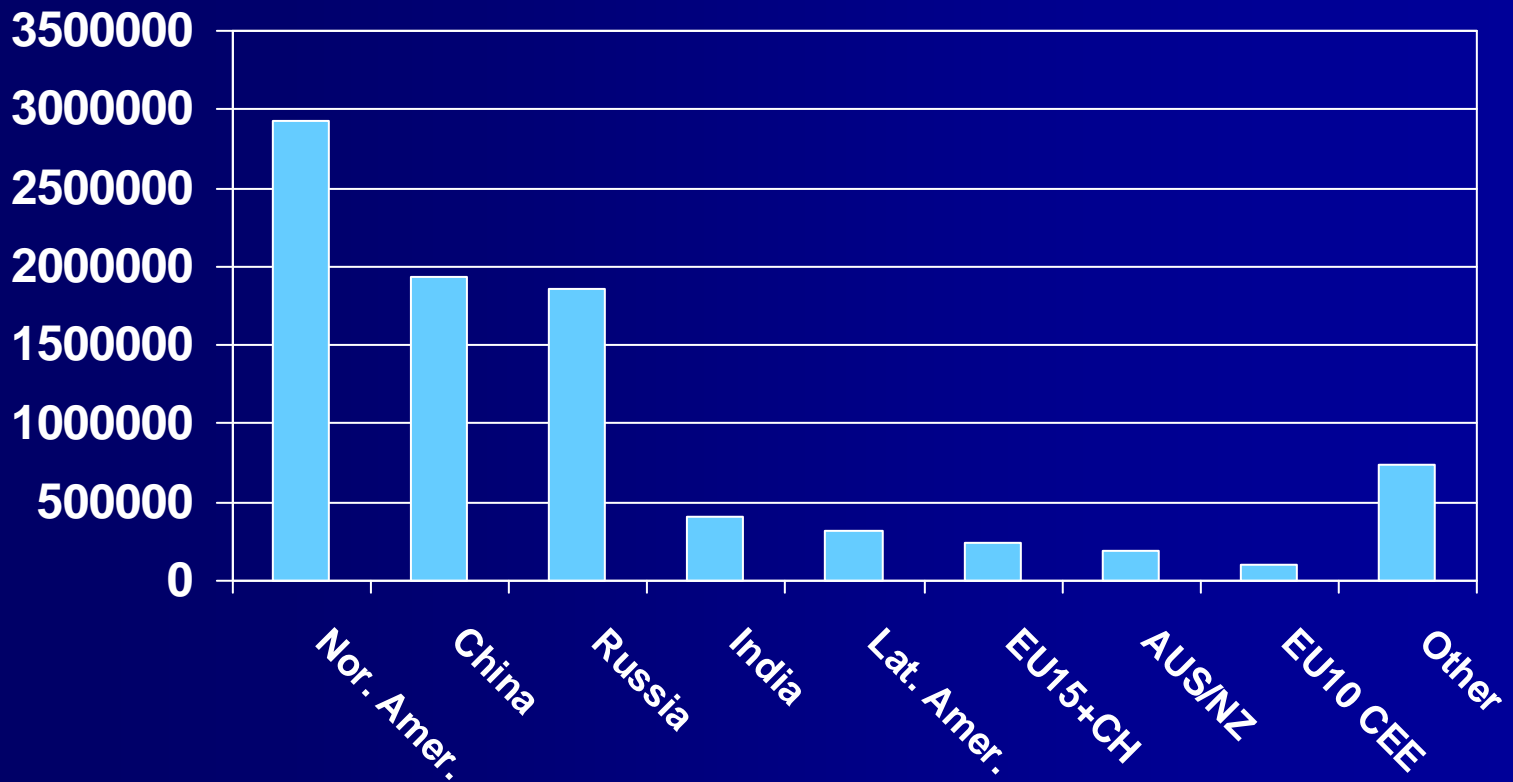
Percentages of the World's Rail Passenger-Km (2005)

(2005)



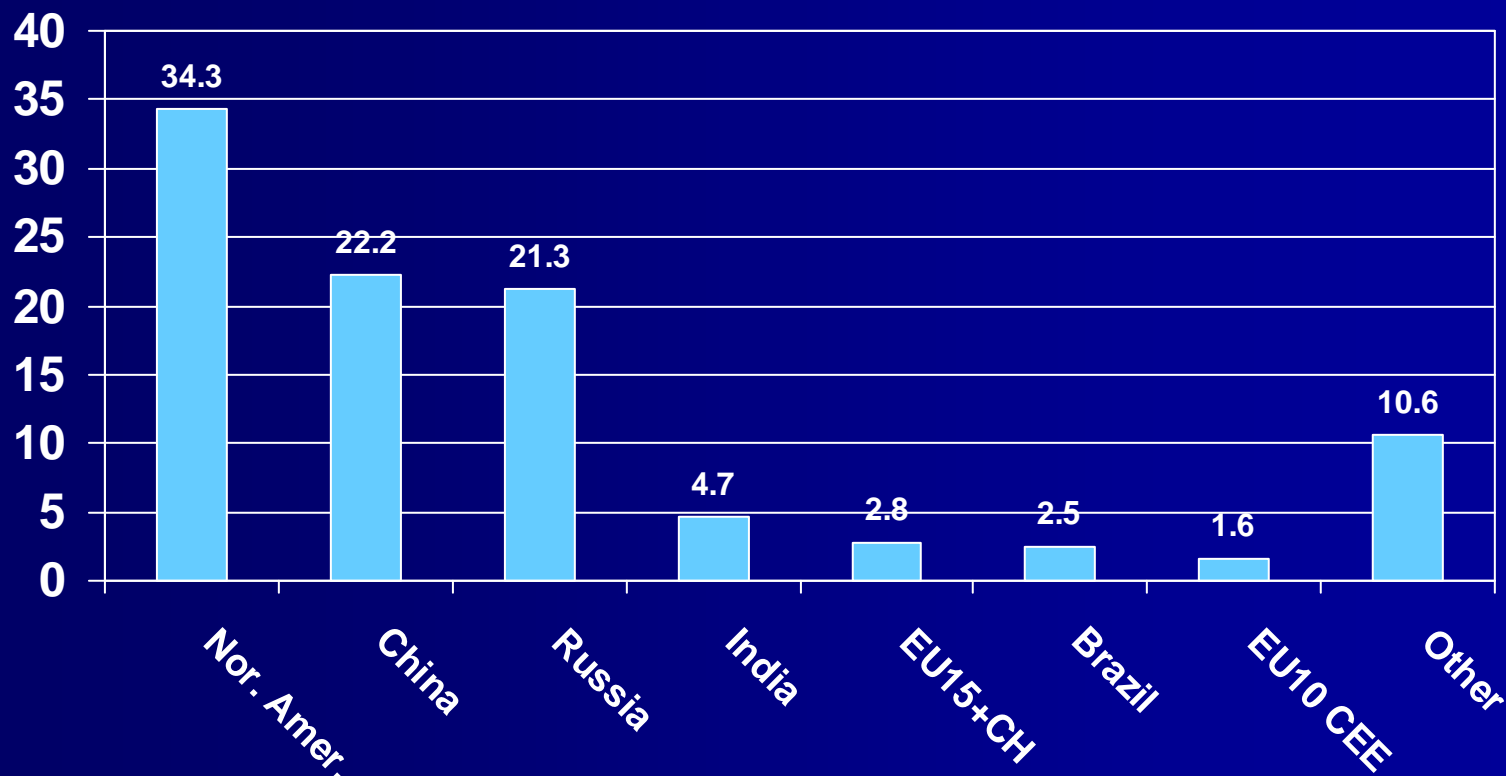
Top 5=85%

The World's Rail Freight Ton-Km (2005, Millions)



(22 % private in 1980, 37% private in 2005, share growing)

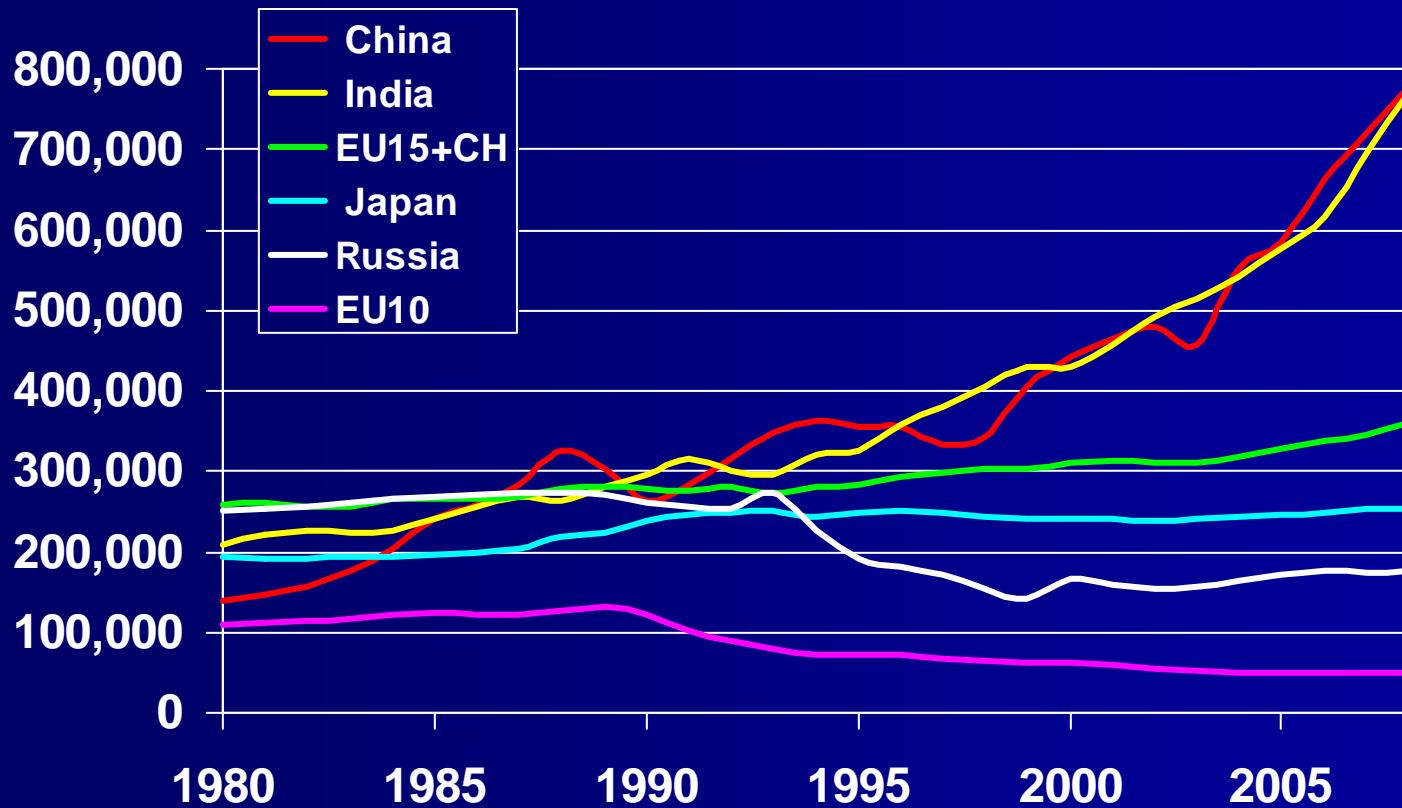
Percentages of the World's Rail Freight Ton-Km (2005)



Top 4=82.5%

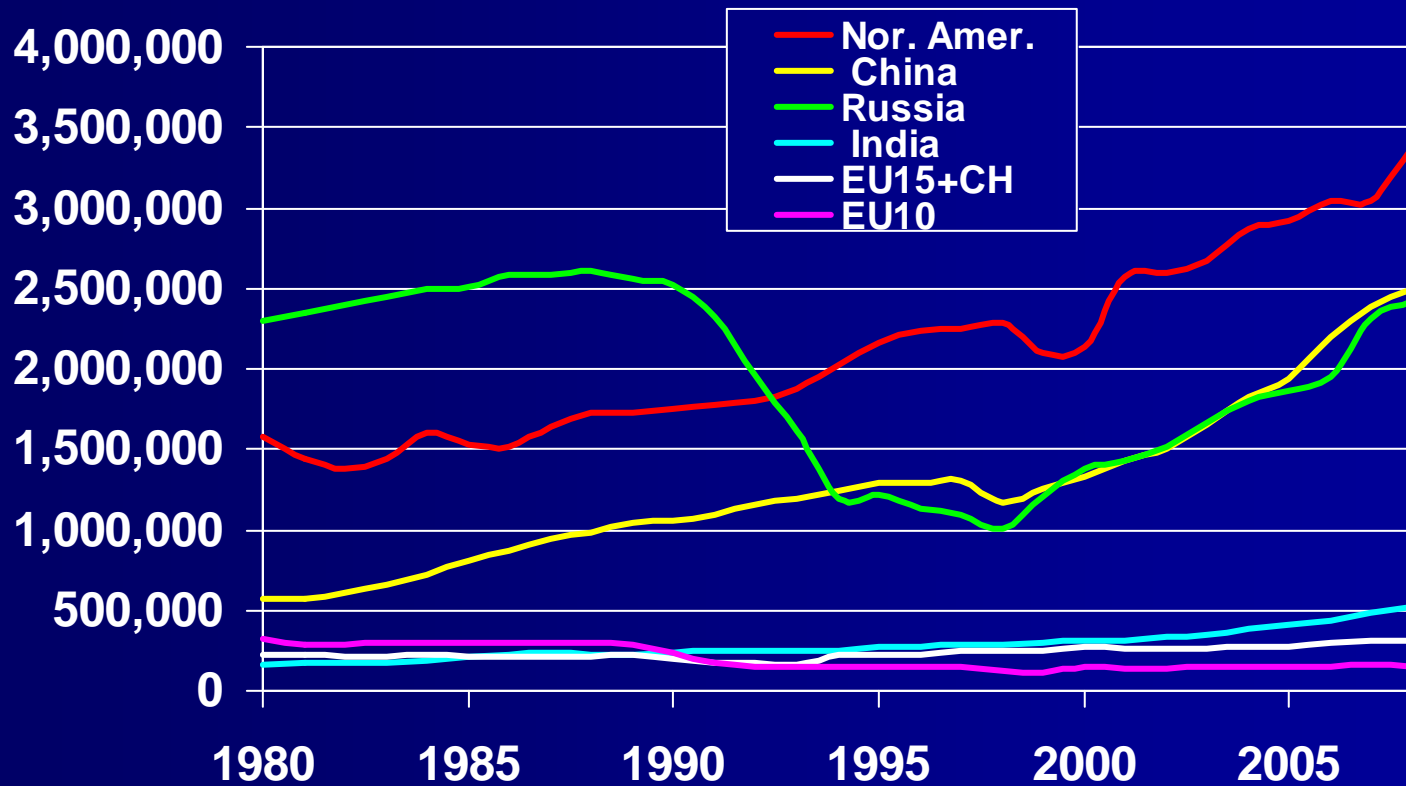
Passenger Traffic Trends

(Million Passenger-Km)



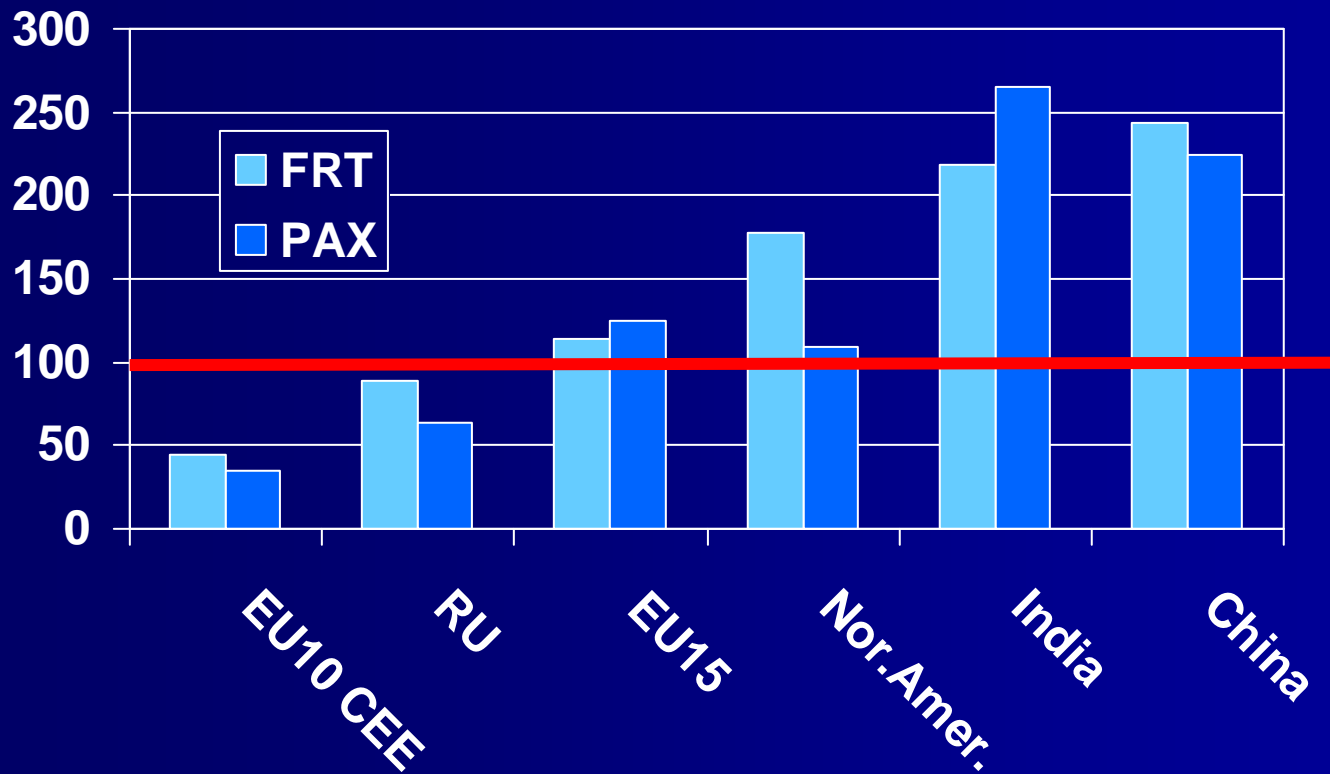
Rail Freight Traffic Trends

(Million Ton-Km)



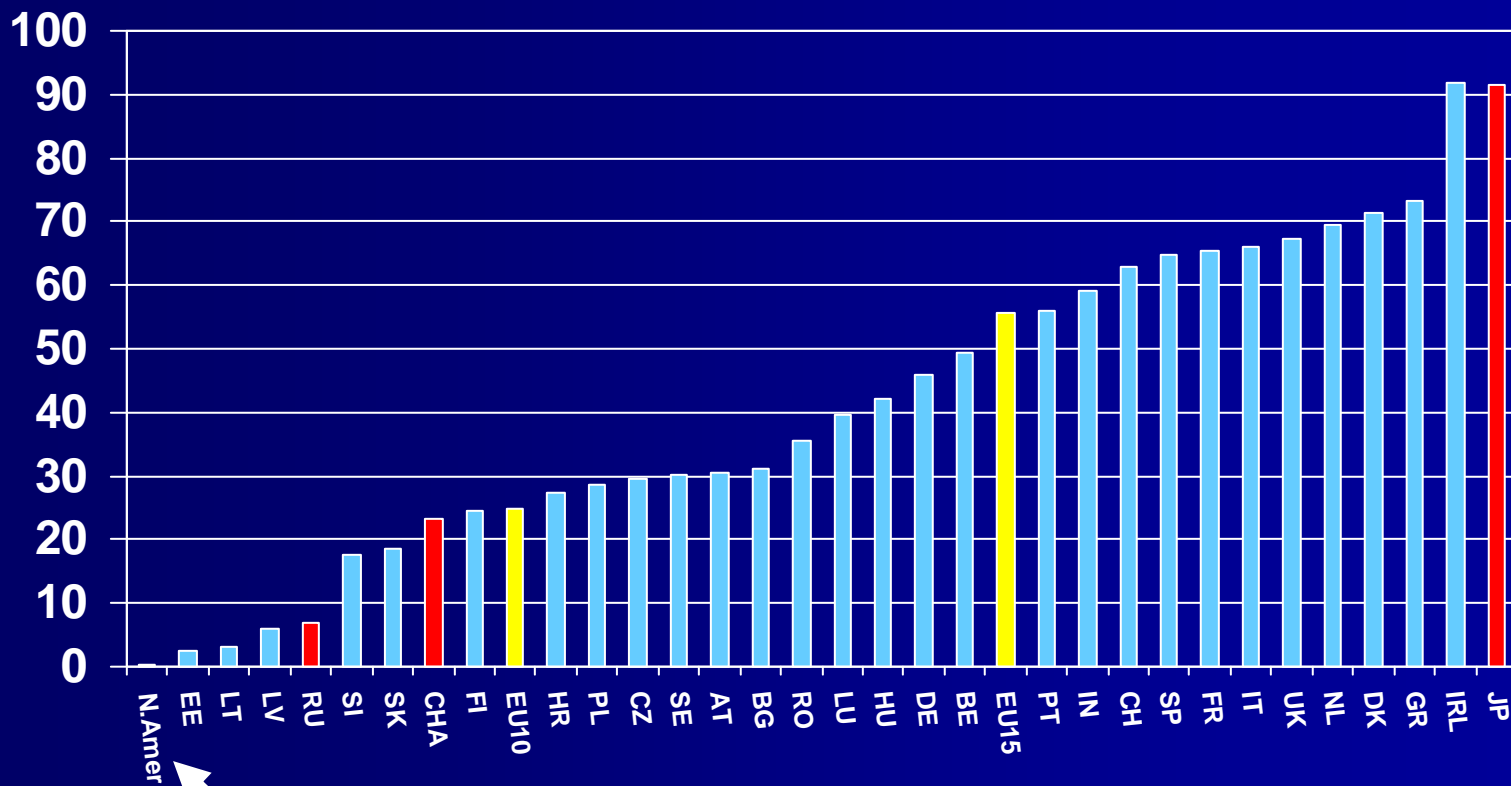
2008 Compared to 1988

(1988=100)

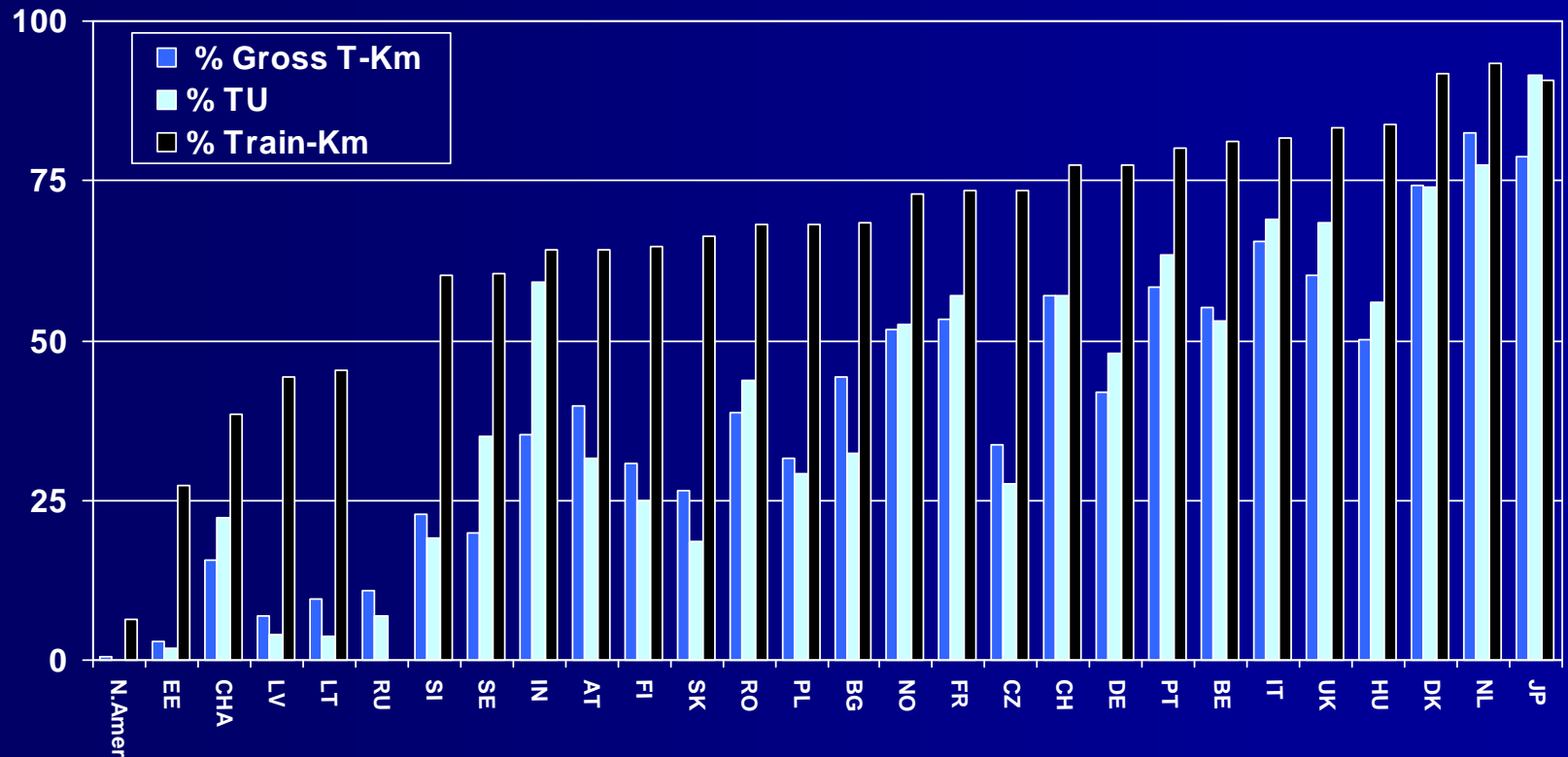


Percentage Passenger Traffic

(P-Km as % of P-Km + T-Km)



Measures of Passengers in the Traffic Mix (Percent Passenger Traffic)

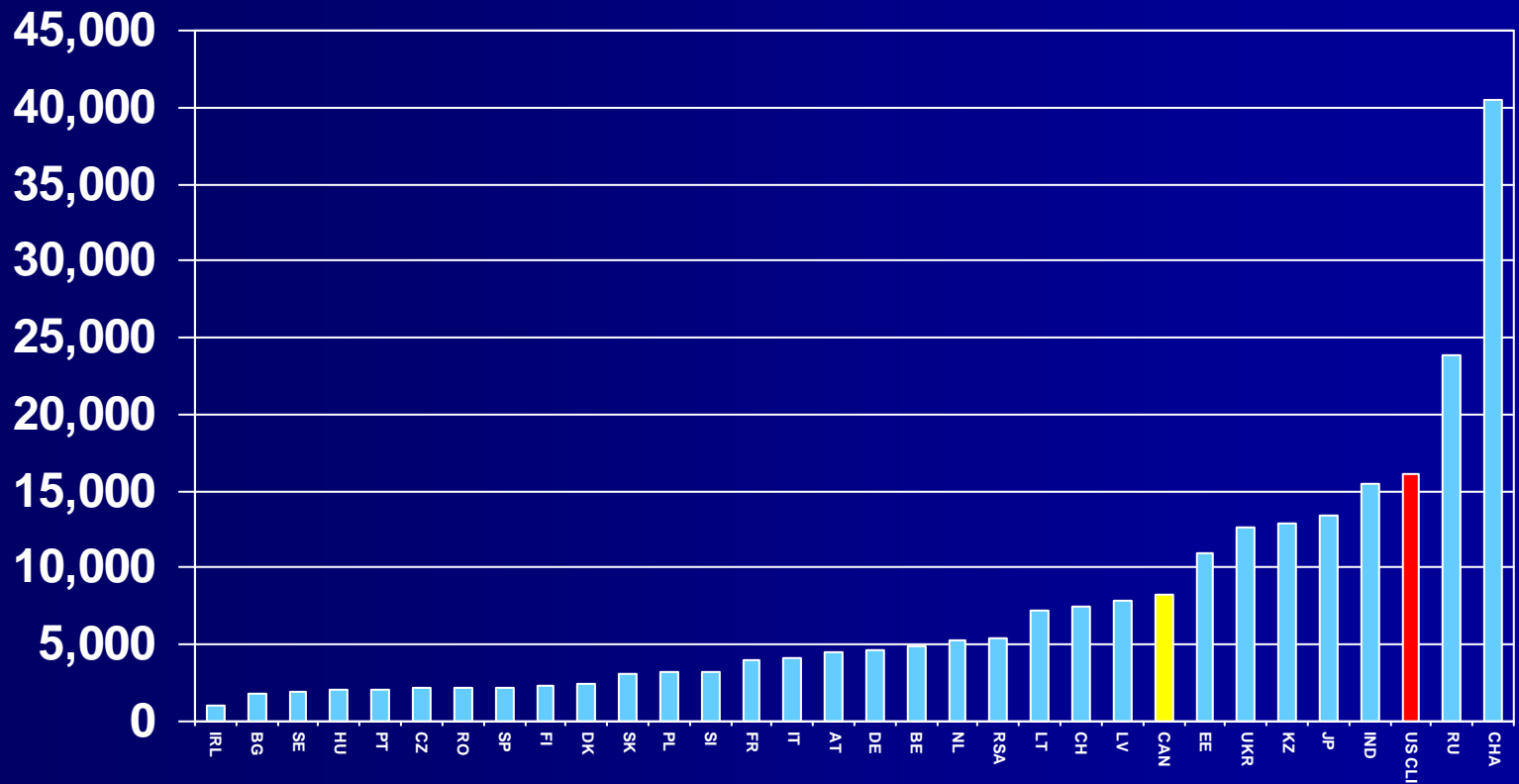


$TU = P\text{-Km} + T\text{-Km}$

Issue: maintenance versus capacity costs

Traffic Density

(000 TU/Km)



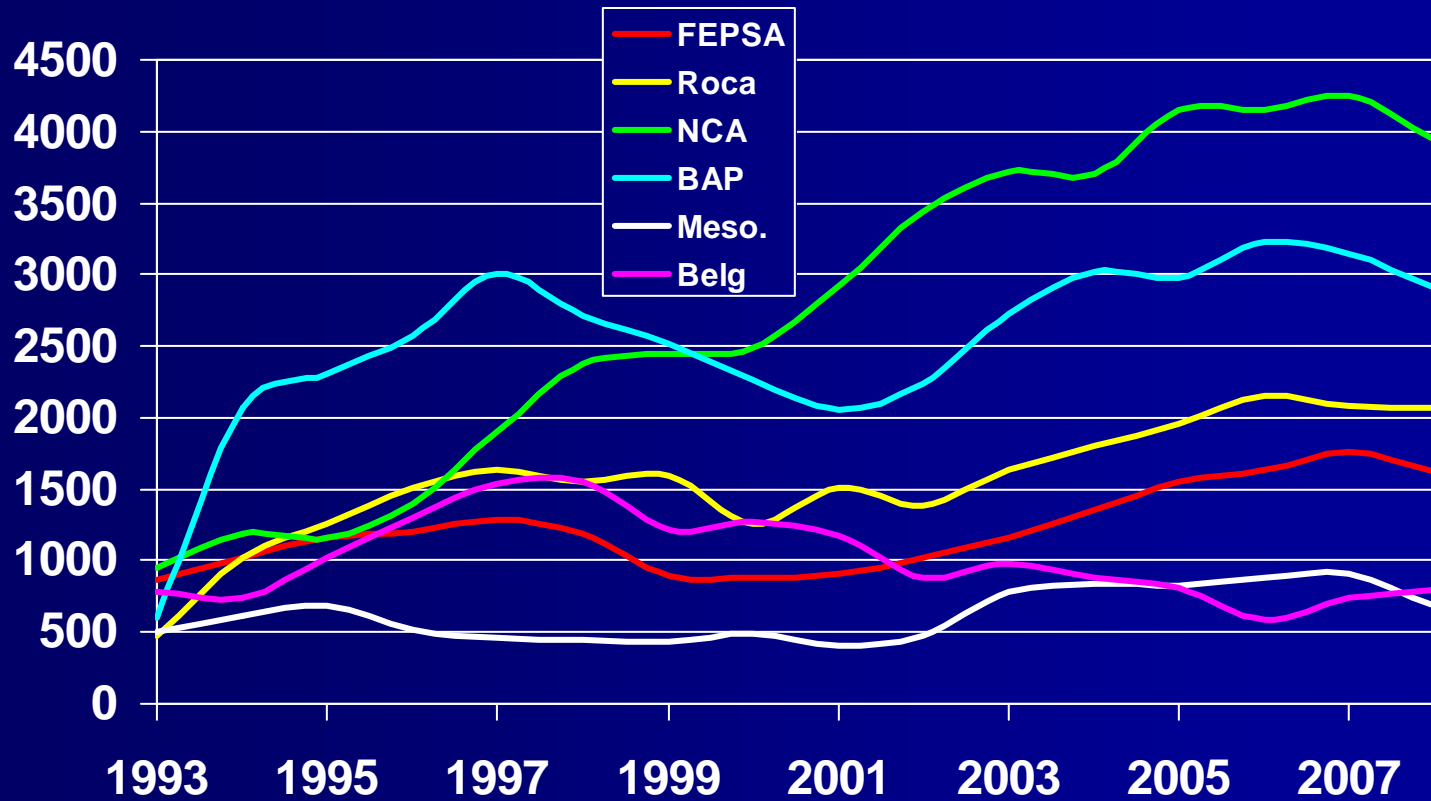
TU=sum of T-Km and P-Km

One Major Type of Change: Using the Private Sector

- Latin America: Argentina, Brazil, Chile, Bolivia, Mexico, **Guatemala** (mostly freight, some passenger)
- Africa (all services)
- Japan (outright privatization – passenger services only). THSRC
- **Estonia**
- U.S: Conrail, now some passenger, HSR?
- Canada – CN privatization
- The famous UK experience
- Small, but growing, EU freight and passenger services. Eurotunnel and HS-1

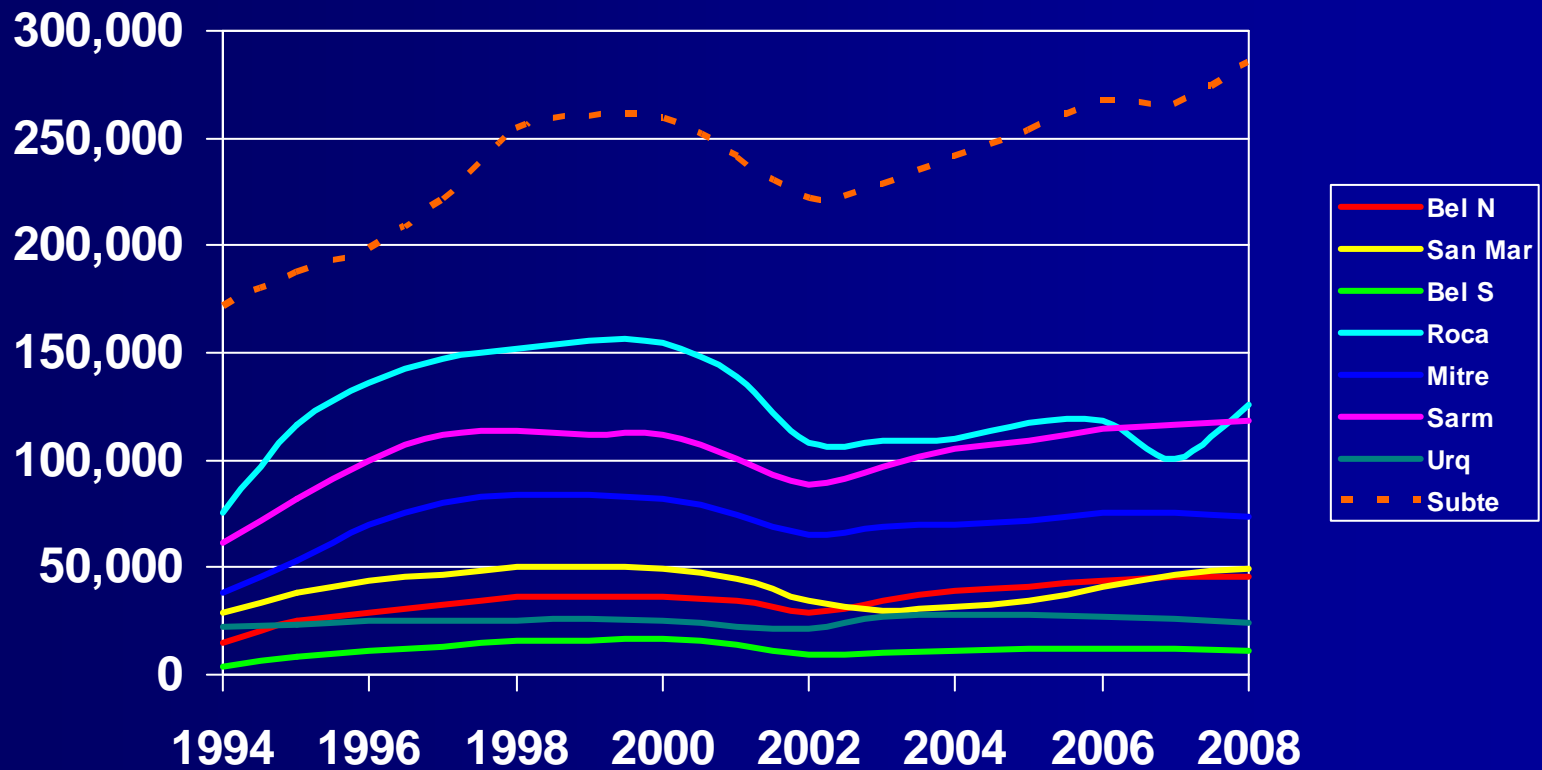
Freight Concessions in Argentina

(million ton-km)



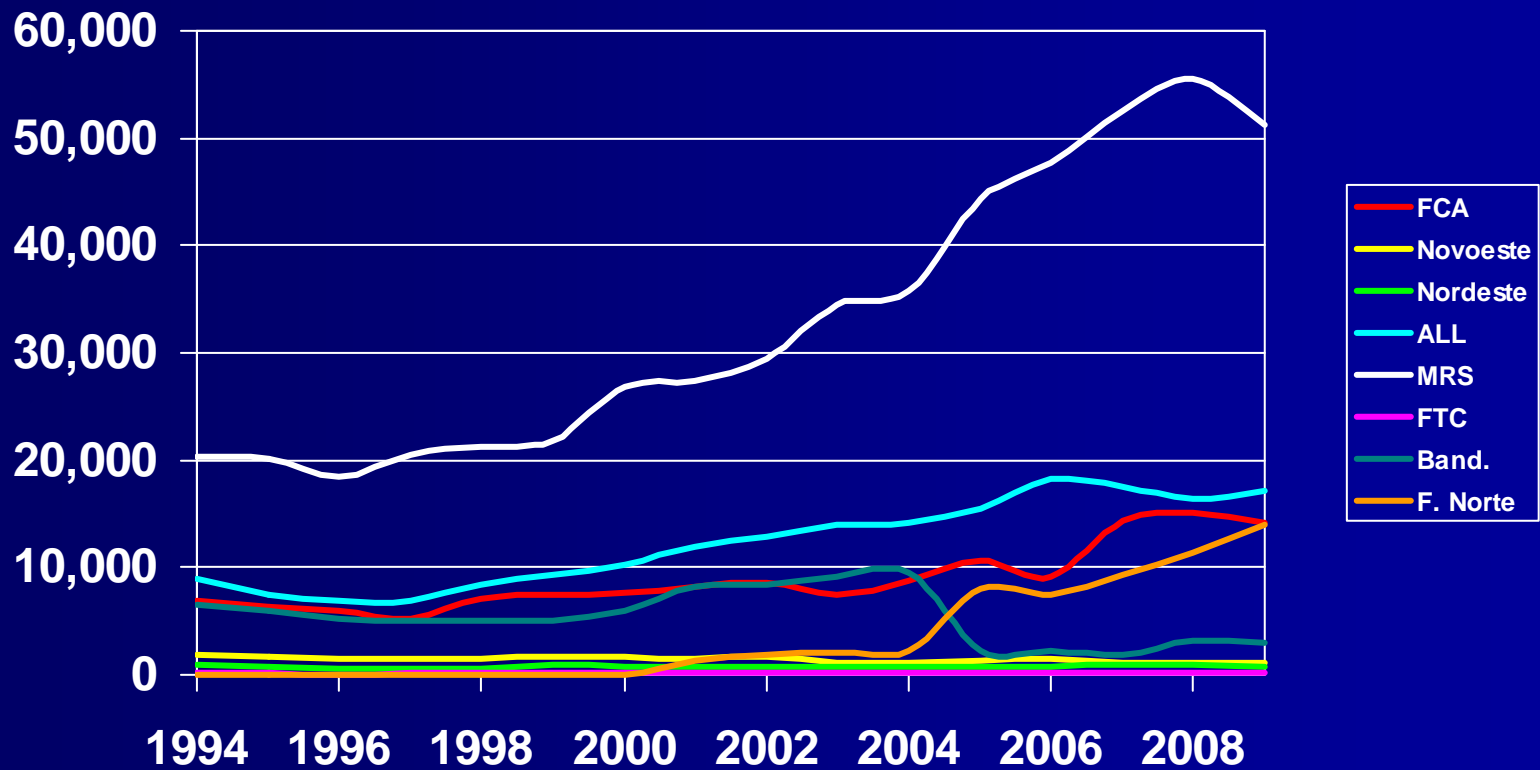
Passenger Concessions in BsAs

(000 passengers)



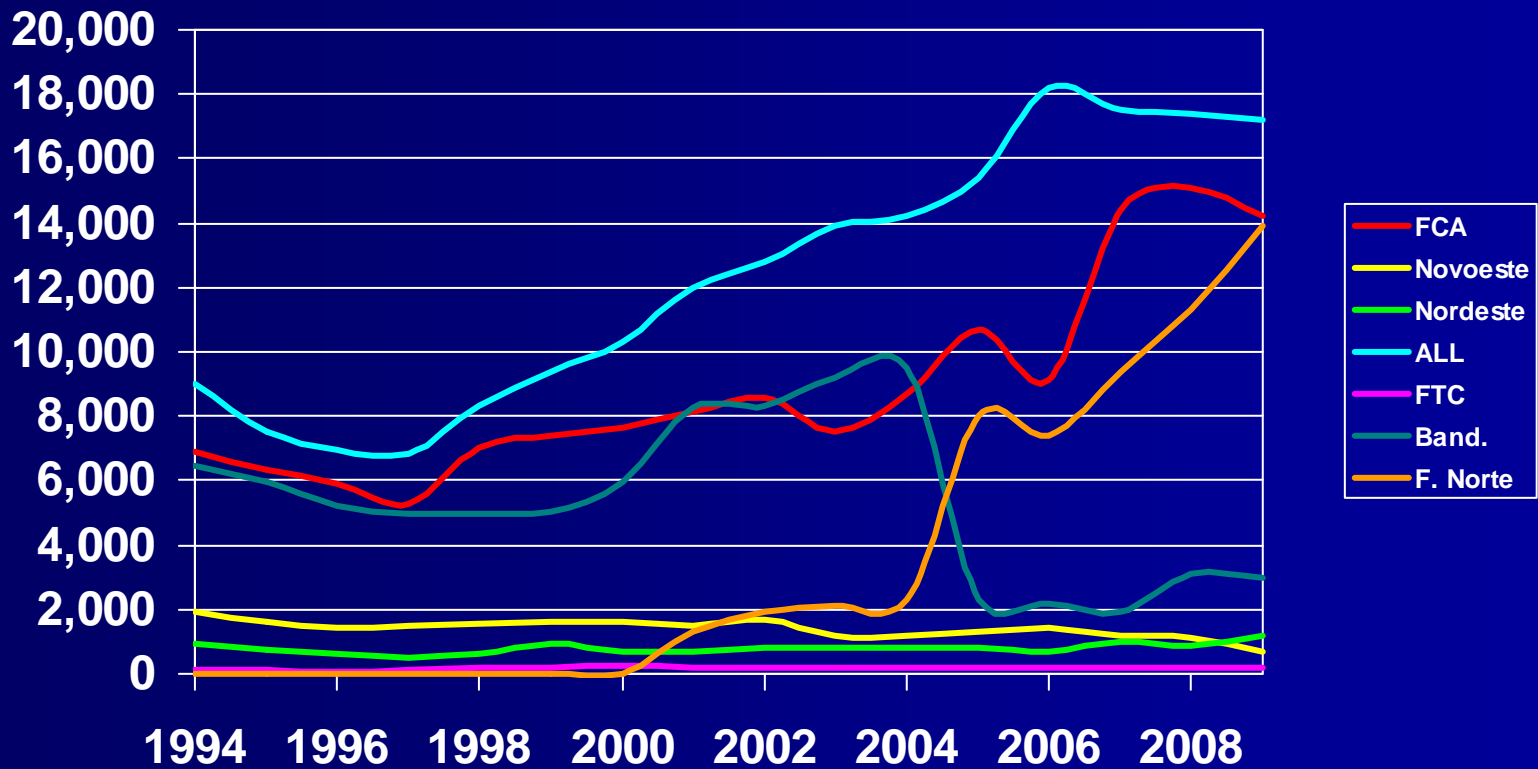
Freight Concessions in Brazil

(million ton-km)



Freight Concessions in Brazil

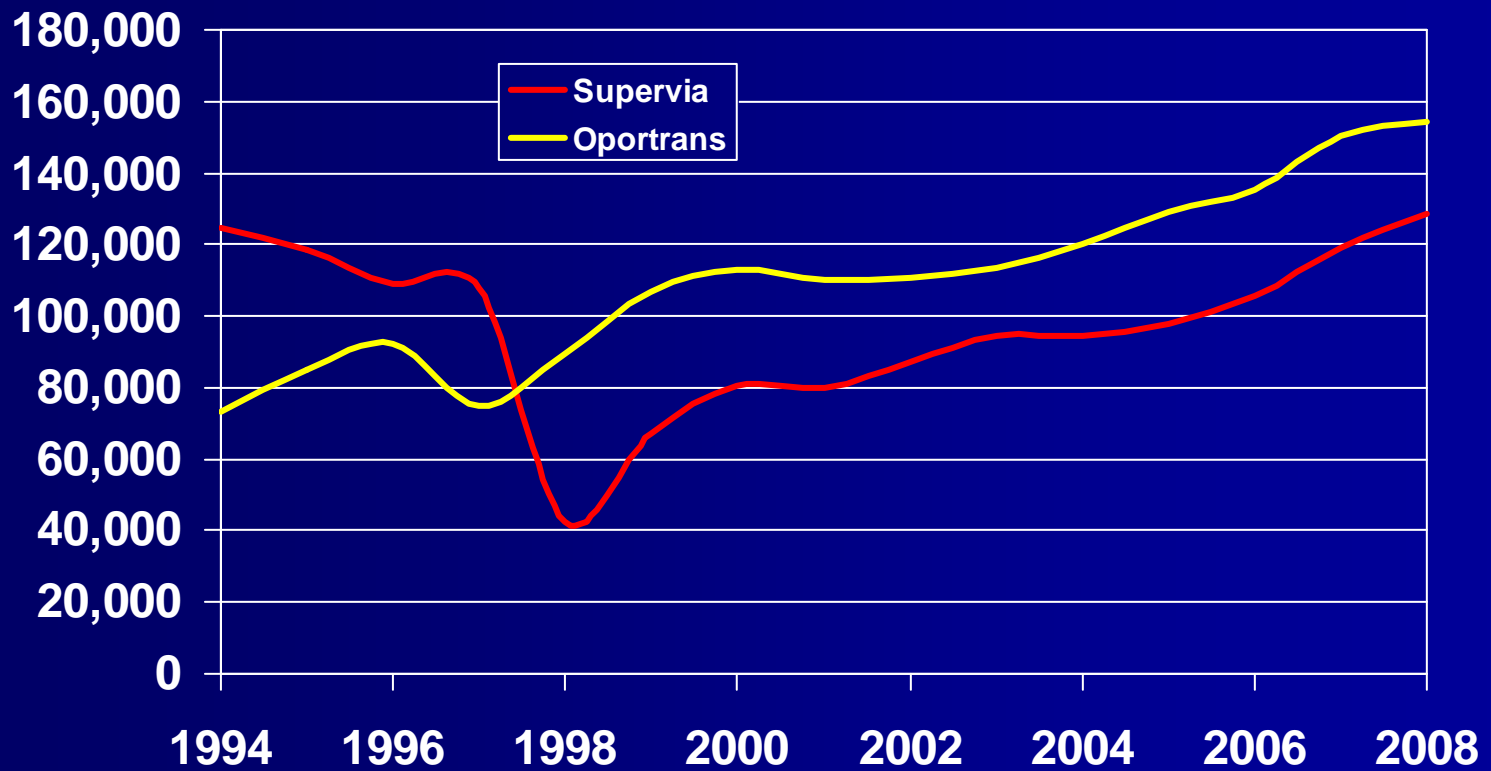
(million ton-km)



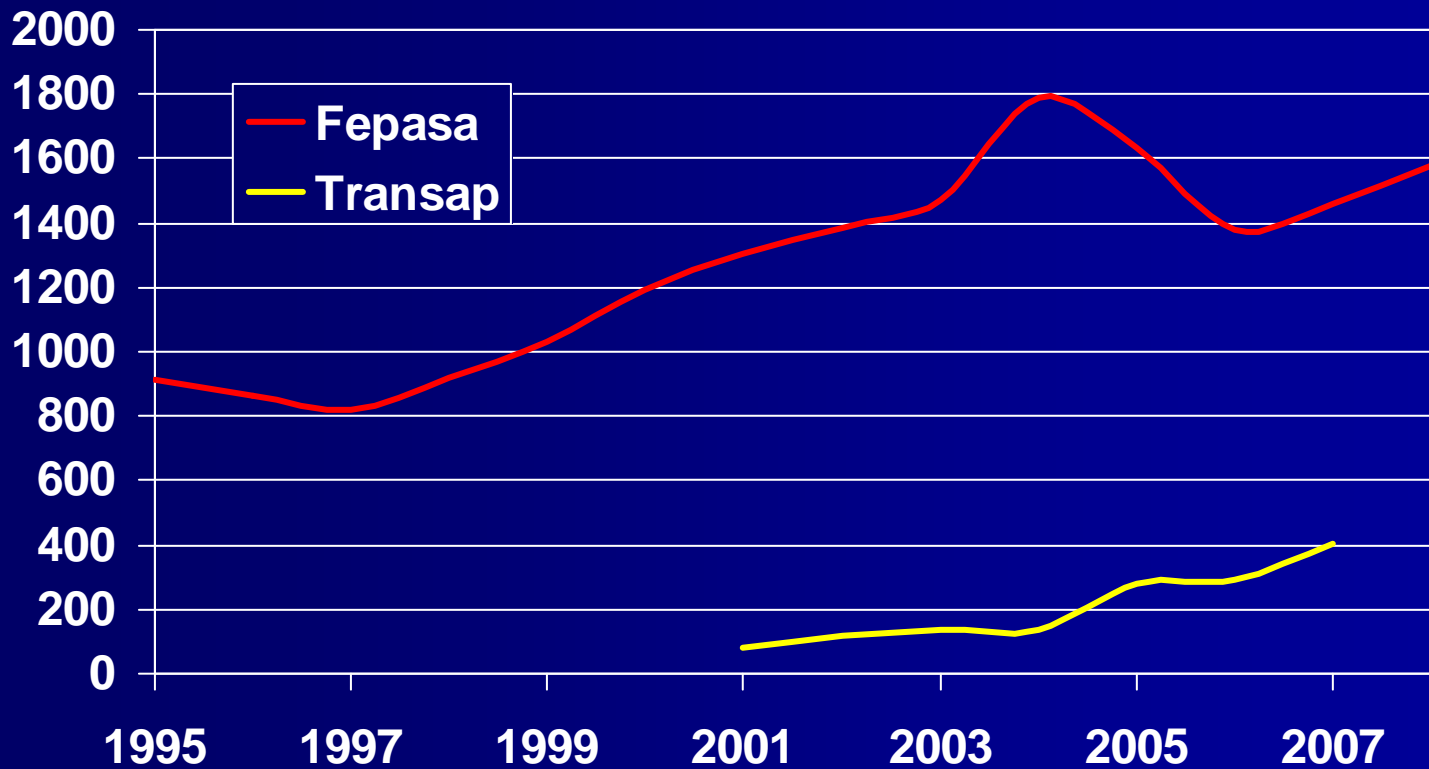
MRS Removed

Passenger Concessions in Rio

(000 passengers)



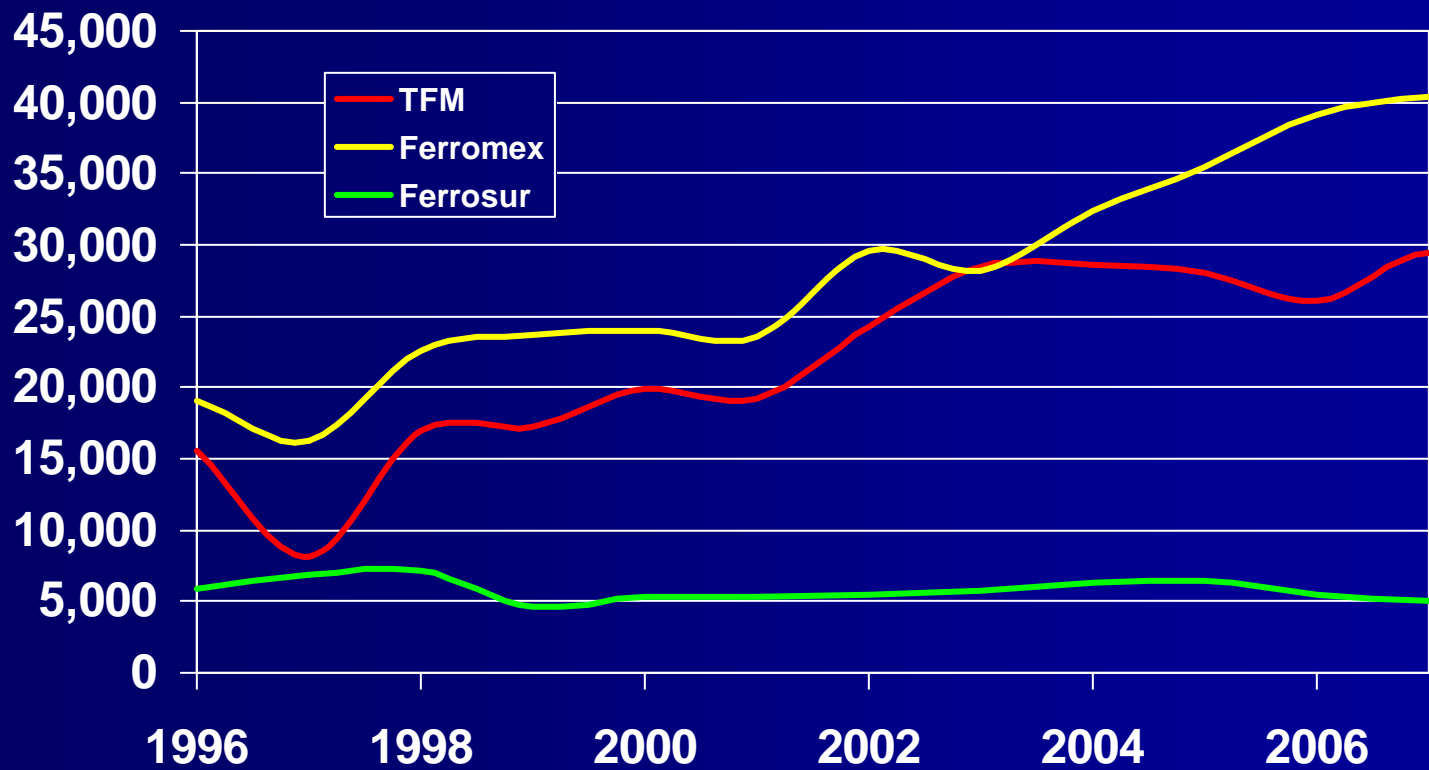
Freight Operators in Chile



Note: Chilean structure is similar to EU

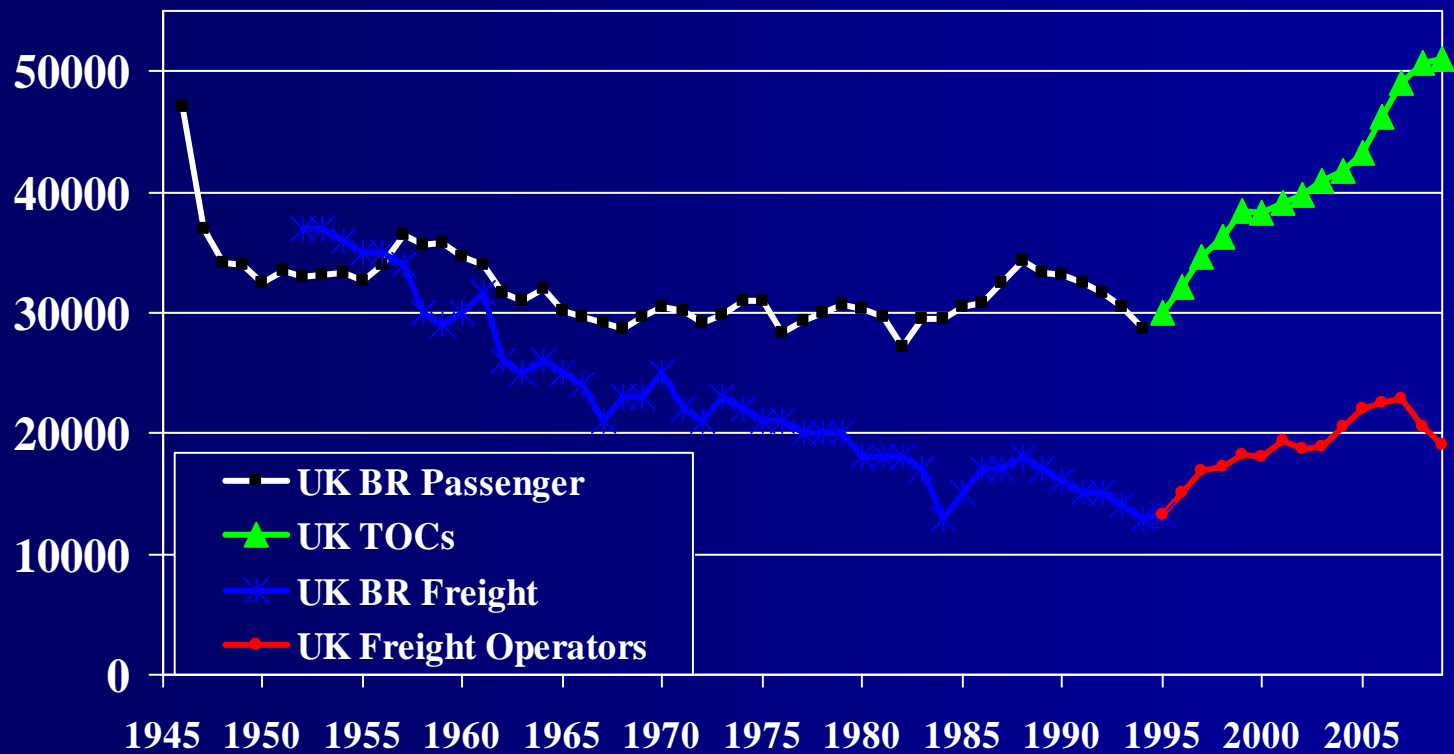
Freight Concessions in Mexico

(million ton-km)

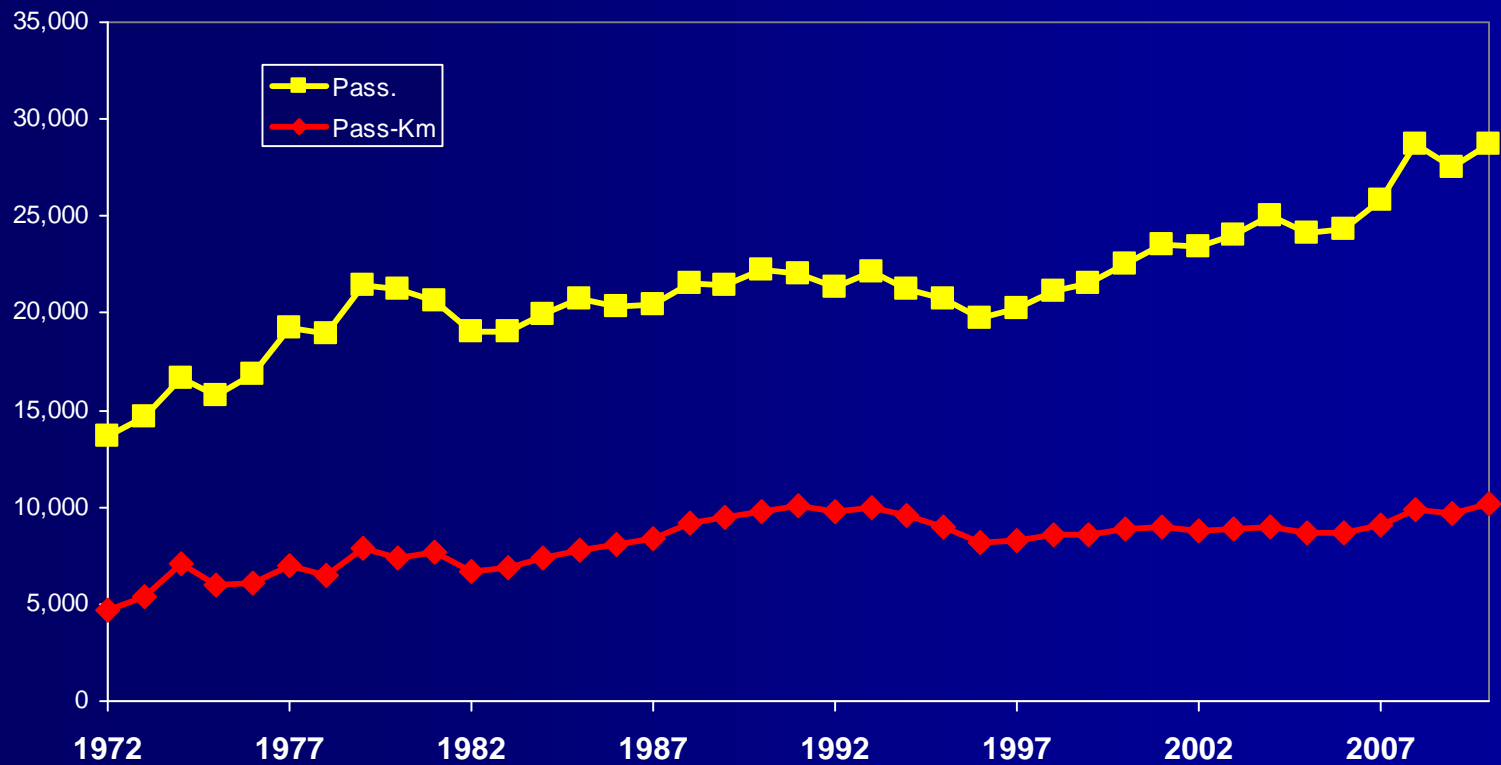


Rail traffic in the U.K. Before and After Privatization

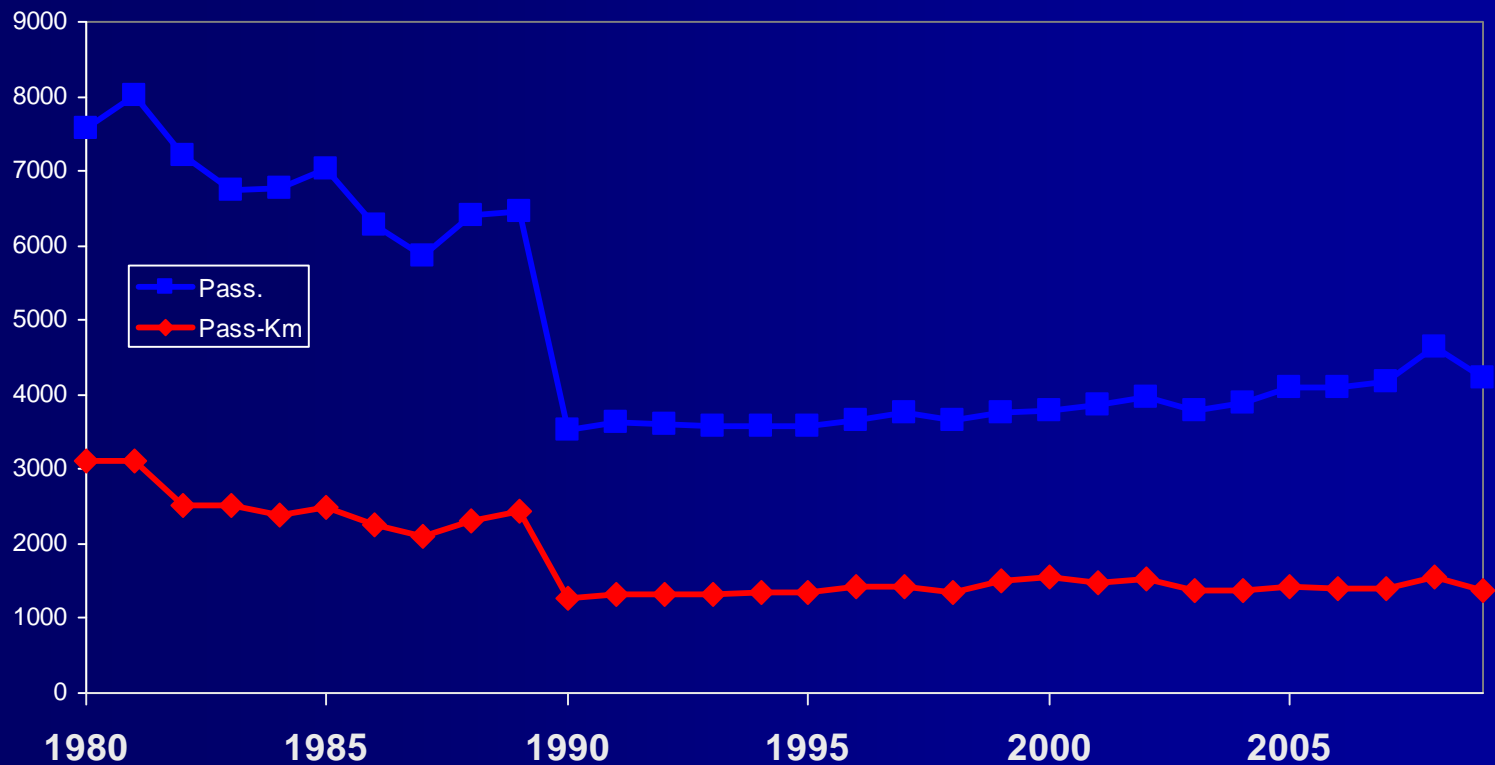
(000,000 passenger-km and ton-km)



Amtrak Passengers (000) and Passenger-Km (000,000)



Via (Canada) Passengers (000) and Passenger-Km (000,000)



Note: US and Canada are still rail passenger socialists...

Another Type of Change: New Models of Organization

- Structure and Ownership
- US/Canada: freight integral and private (competition **IN** the market), passenger usually tenant and public. Intermodal and intra modal (rail) competition. **Consider trackage rights and mandatory access.**
- EU models based on vertical separation, but ownership varies. Freight competition **IN** the market, passenger competition **FOR** the market (franchises) and intermodal.
- Australia has mixture as well
- Latin America: integral concessions (**FOR** market) with intermodal competition both freight and passenger. Chile is only separation model.
- In all cases, regulation (if any) must be consistent with structure, ownership and competition objectives

Structure and Ownership

	Fully State-Owned	Partnerships	Privately Owned
Integral (Monolithic)	China, Belarus, South Africa,	Network Rail? Passenger and freight concessions	Smaller US freight railroads (500), East Japan, Central Japan and West Japan
Dominant Operator Integral, tenant operators separated	Amtrak and VIA, Japan Rail Freight, Russia	US Commuter railways on freight tracks, FEPASA in Chile	Most US freight railways, including trackage rights to create competition
Vertical Separation ("Open Access")	"Standard" EU model	Some UK franchises, Network Rail?	Most UK franchises, Railtrack (but not Network Rail), EWS

The EU Experience

- Stated objectives: reduce the fortresses and create competition **in** and **for** the markets. Experience: **in** for freight, **for** (franchising) for (some) passengers.
- Approach:
 - separate infrastructure from operations,
 - require “non-discriminatory” access
 - separate social from commercial
 - officially: separate I/S and B/S for infra, freight, intercity pax and various social pax and frt services.
- General result: great resistance, only partial implementation so far, but moving ahead faster. Freight mergers, HSR competition planned
- Key issue: access charge level and structure.

EU Access Charges

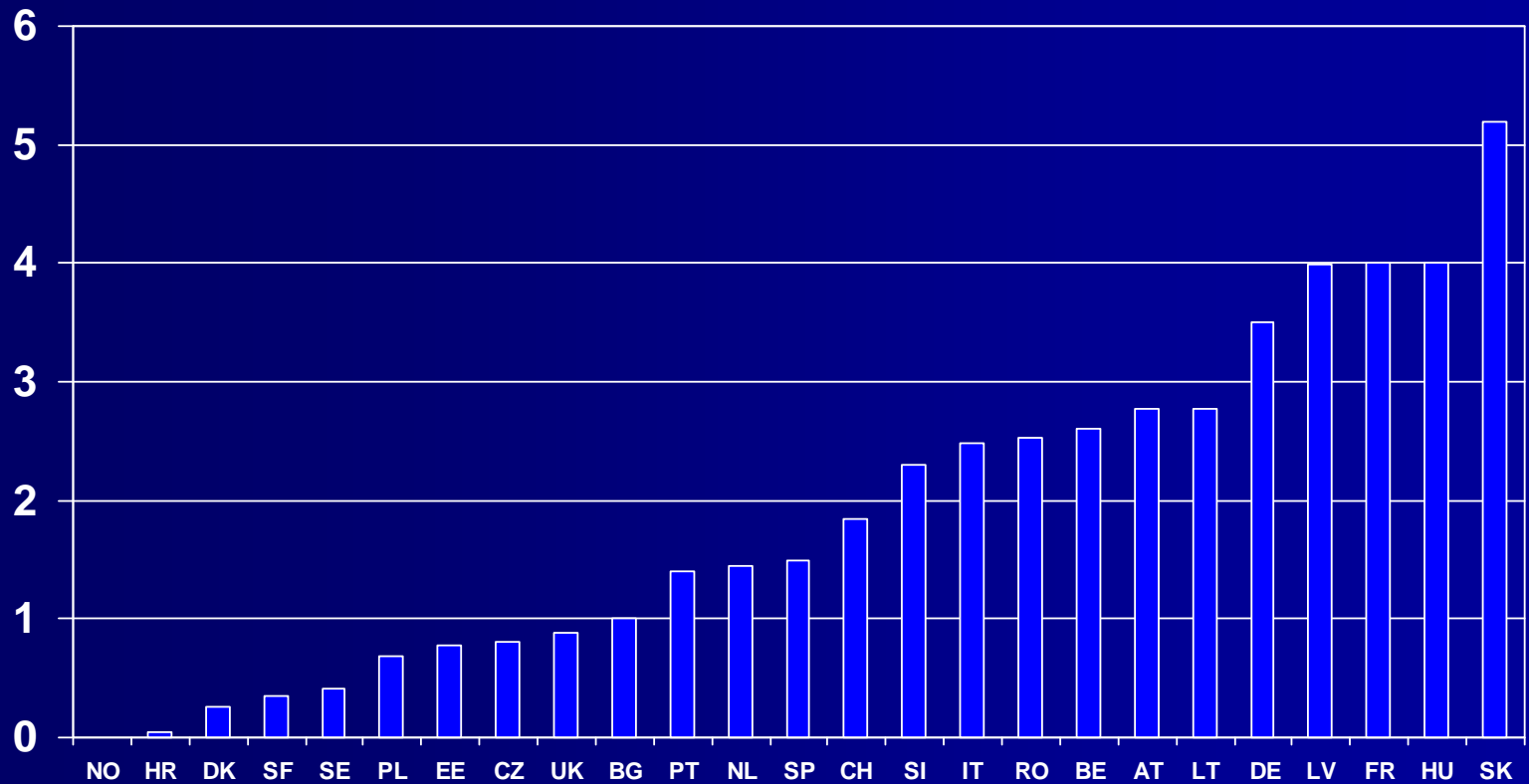
- Supposedly based on “Social Marginal Cost,” with public funding for the gap, but:
 - no consensus on calculating MC
 - differing financial goals, and thus “mark-ups”
 - different local circumstances and objectives
 - limited and conflicting data
- Widely varying access regimes both in structure (variable vs. two-part) and variables used, and as to levels
- A single “Europe” for freight does not yet exist
- Network statements are emerging and change is accelerating

EU Access Regimes

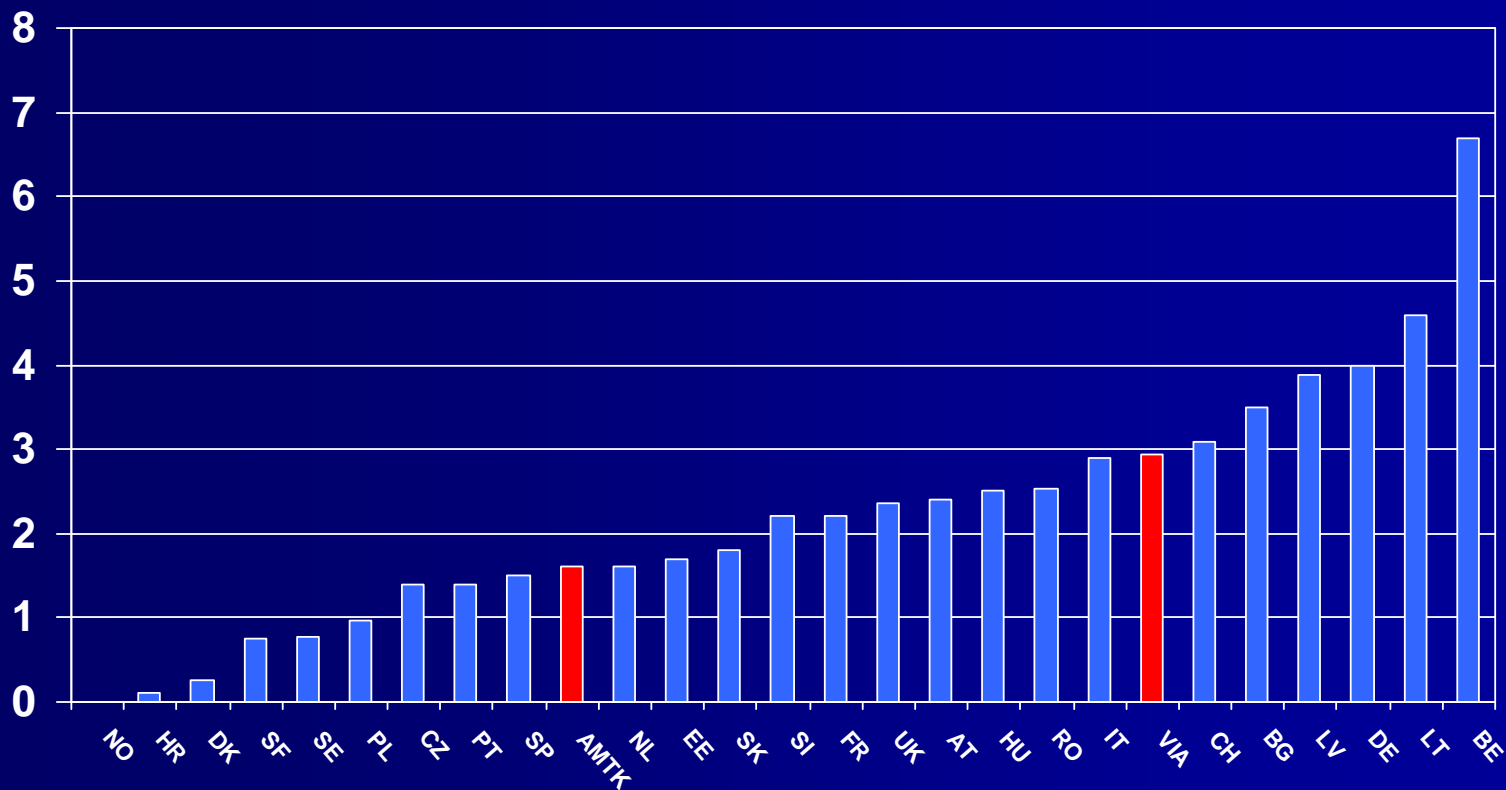
	Line Categs	Res. Chgs	Serv. Dist	T.O.D	GT-Km	Tm-Km	Tm	Stn Stop	ET
AT	Five	No	No	No	X	X		X	
BE	One	No	Yes	Yes		X		X	
BG	Two	Path-Km	Yes	No	X	X			Trn-Km
HR	Six	No	Yes	No		X			
CZ	Four	No	Yes	No	X	X			GT-Km
DK	One	No	No	No		X			
DK	S. Bridge	No	No	No			X		
DK/SE	Or. Bridge	No	No	No			X		
EE	Single	No	Yes	No	X	Frt Only			
SF	Single	No	Yes	No	X				Diesel
FR	Eight	Path-Km	Yes	Yes		X		X	Trn-Km
DE	Twelve	No	Yes	No		X			
HU	Three	No	Yes	No		X	X	X	Trn=Km
IT	Many	No	Yes	Yes		Yes		X	
LV	One	No	Yes	No		X			Trn-Km
LT	One	No	Yes	No	X	X			
NL	One	No	No	No	X	X		X	
NO	One	No	Yes	No	Frt Only				
PL	Six	No	Yes	No	X	X			Trn-Km
PT	Nine	No	Yes	No		X			Trn-Km
RO	One	No	Yes	No		X			
SI	Two	No	Yes	No		X			
SK	Three	No	Yes	No	X	X	X		
SP	Four	Path-Km	Yes	Yes		X			GT-Km
SE	Single	No	Yes	No	X	X			+ diesel
CH	One	No	Yes	No	X	X			Trn-Km
UK	One	Fixed	Yes	Yes	Frt Only	Pax only			

Note: **Yellow** indicates two-part regime

Access Charges For Typical Local and Suburban Trains (Euros/Train-Km)

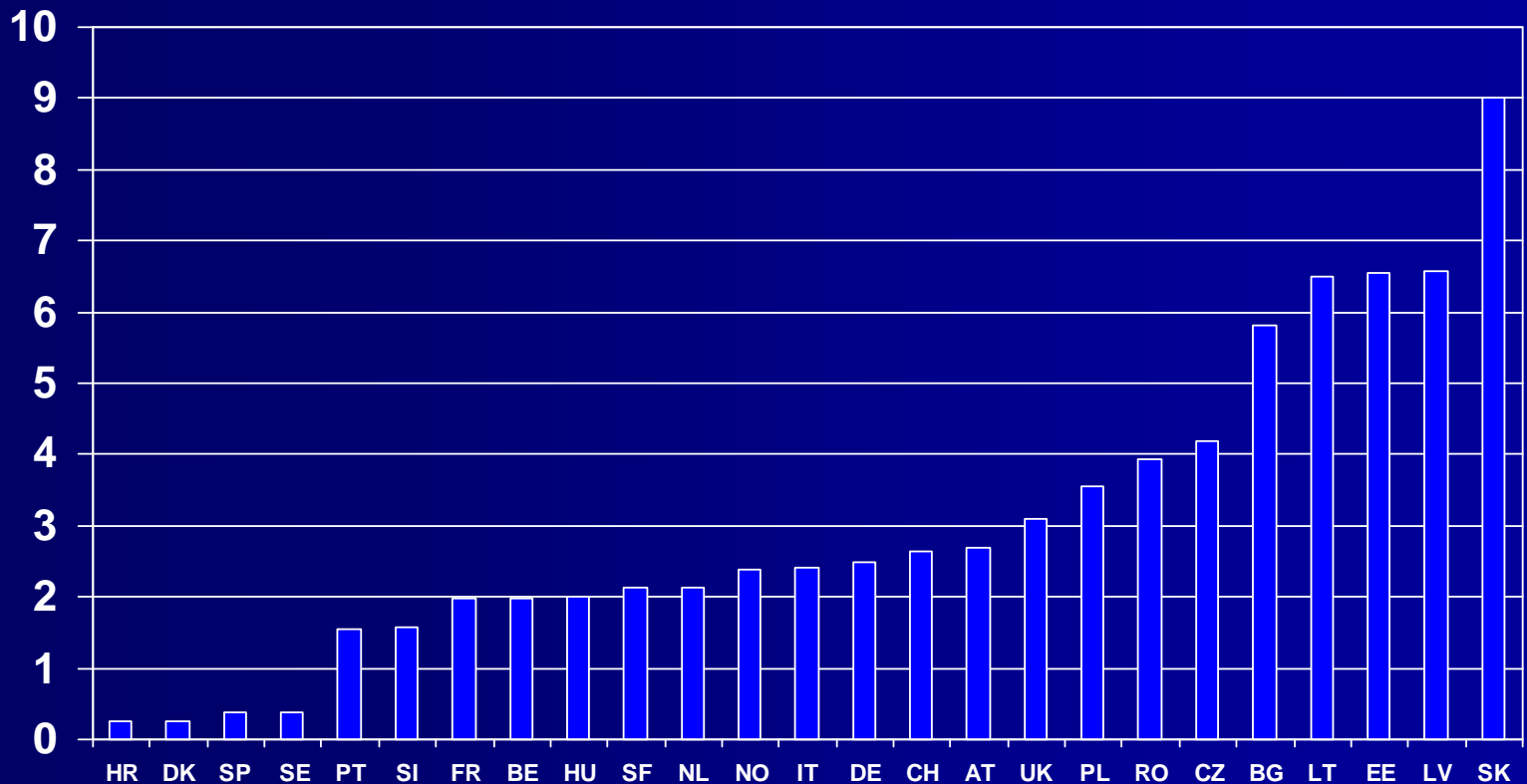


Access Charges For Typical Intercity Passenger Trains (Euros/Train-Km)

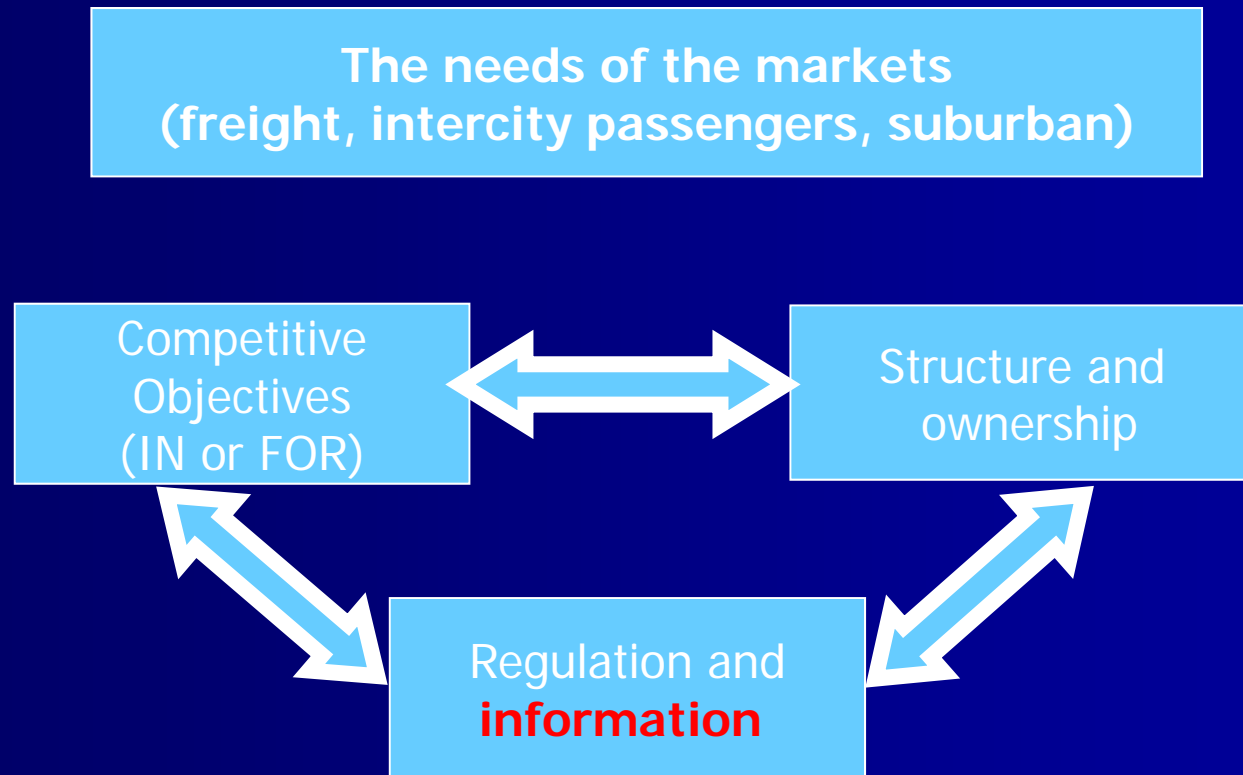


AMTK and VIA are estimated averages

Access Charges For Typical 960 Gross Ton Freight Train (Euros/Train-Km)



Deciding on the Railway Role



How are Railways Financed?

- Balance of public and private objectives
- Ownership and control
- Ability to separate activities
- Public policy for financing: capital only, competition for subsidy

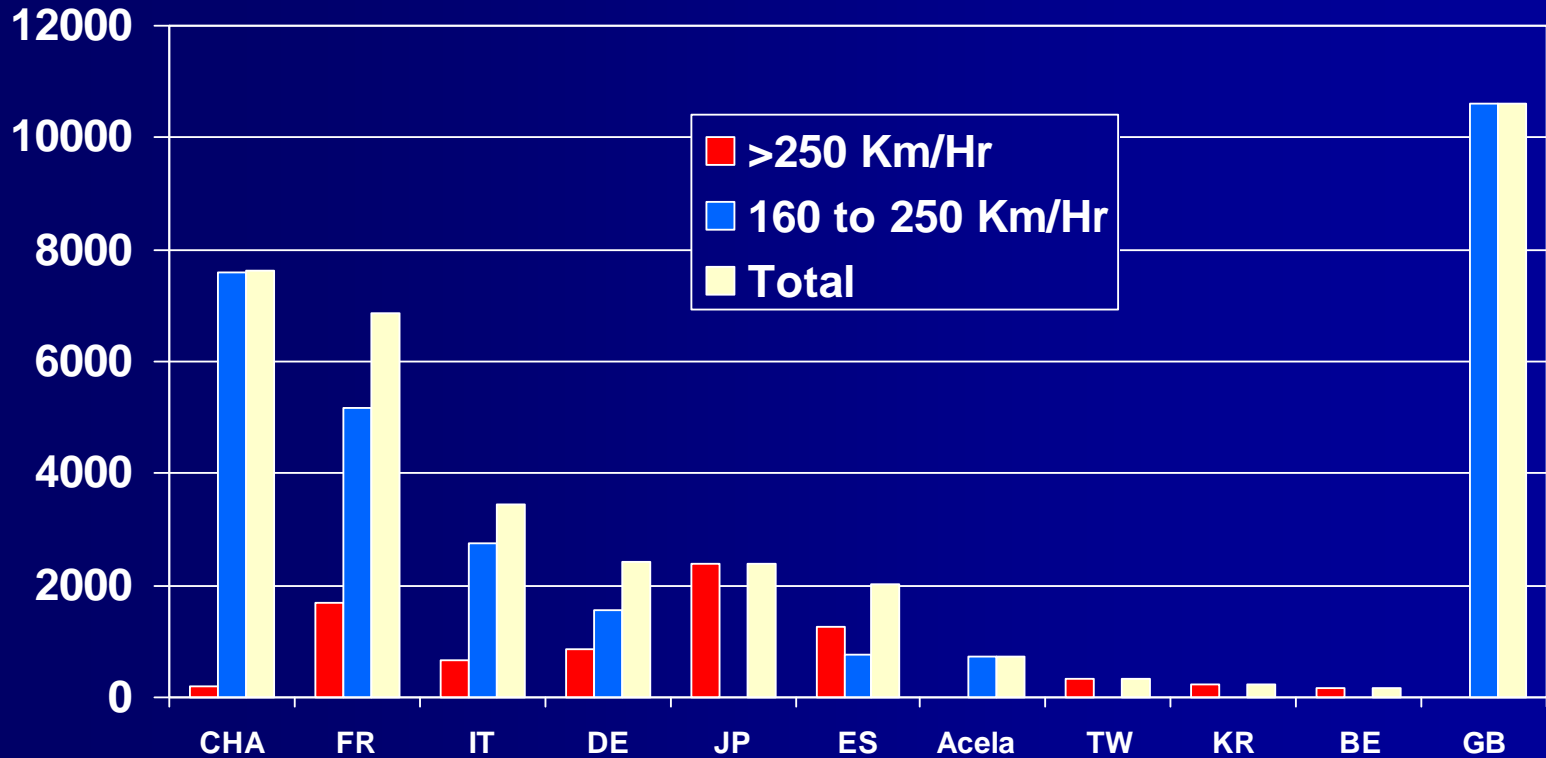
How are Railways Financed?

- U.S. **Has had** no public finance for freight railroads. Amtrak (a corporation) supported by Federal budget for both operating and capital. HSR in transition (?) Canada similar
- EU generally limits support for “commercial” activities (freight, intercity passenger) but permits support for infrastructure (with open access) and for “social” services. Wants to require competition FOR social markets (UK, Germany, Sweden, NL)
- UK example: support to Network Rail for infrastructure, support to franchises by competitive contract, limited support to freight under contract
- Latin America: no support for freight, competed concessions for passengers (capital and operating)
- China totally public but central/local mix
- Japan private/public mix

The Future of World Railroading

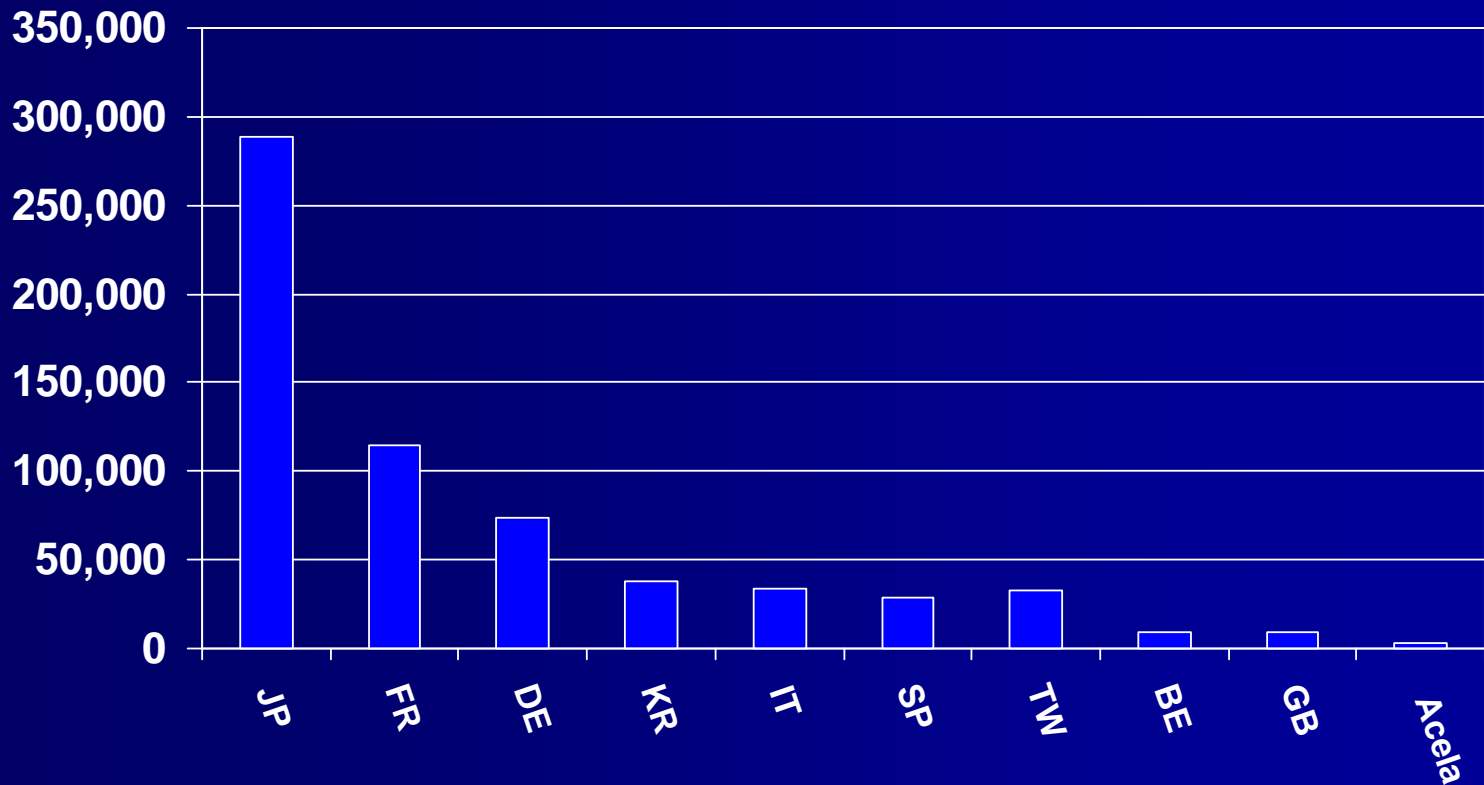
- US/Canada:
 - Freight: Regulation, public finance for public purposes, fuel/carbon taxes!
 - Pax: Federal/State balance, definition of roles, private sector roles?
 - HSR? **Unfortunately has become a partisan issue.**
- EU
 - Freight: Access charges, open access for new (private operators), Shift access charge balance from pax to freight
 - Pax: HSR growth, competition **FOR** short haul services
- China:
 - Freight: Adjusting to market (pricing and service), capacity, but slowly
 - Pax: Growth of autos and airlines, support policies
 - Overall: Separating railway from Government. Enormous investment in HSR and freight!
- Russia:
 - Freight: Growth of highways, competition policy
 - Pax: Forming Russian "Amtrak" and suburban spin-offs: **operators vs carriers**
- India: Separate Government from enterprise, rise of autos and trucks, remove cross subsidy from freight to passenger.

Kilometers of "High Speed" Line 2009



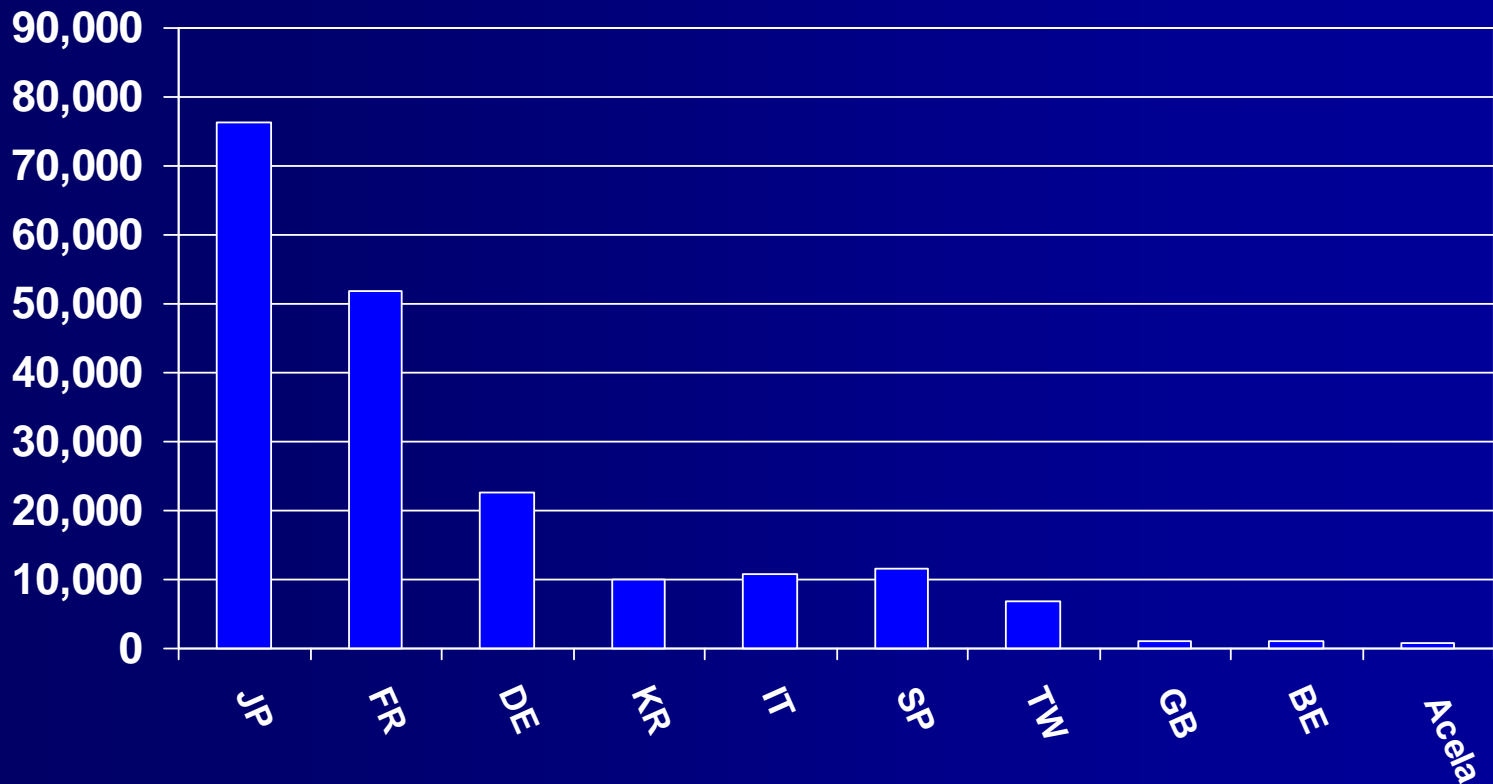
“High Speed” Passengers 2009

(000)



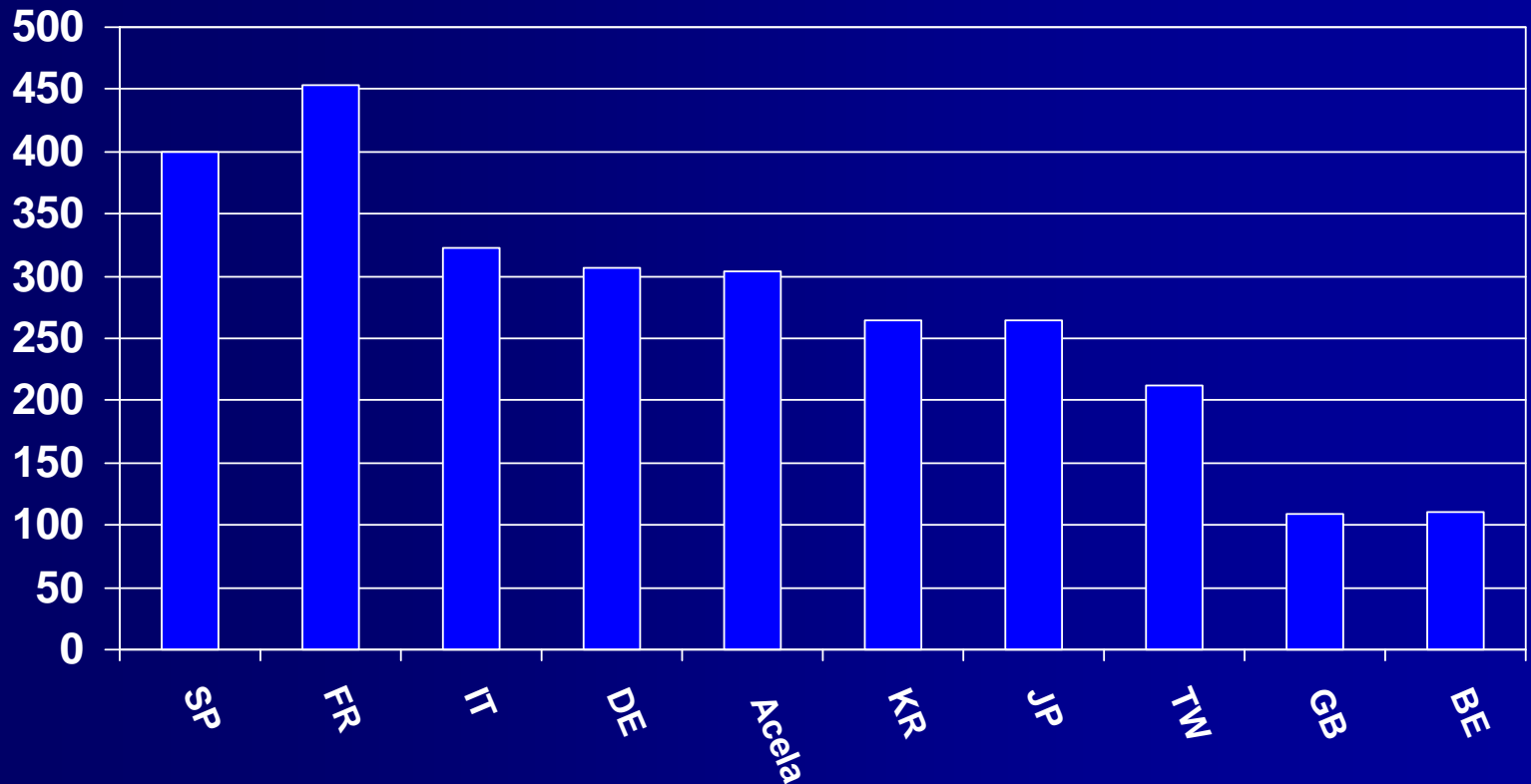
Note: Includes all passengers above 160 Km/Hr

“High Speed” Passenger-Km 2009 (000,000)



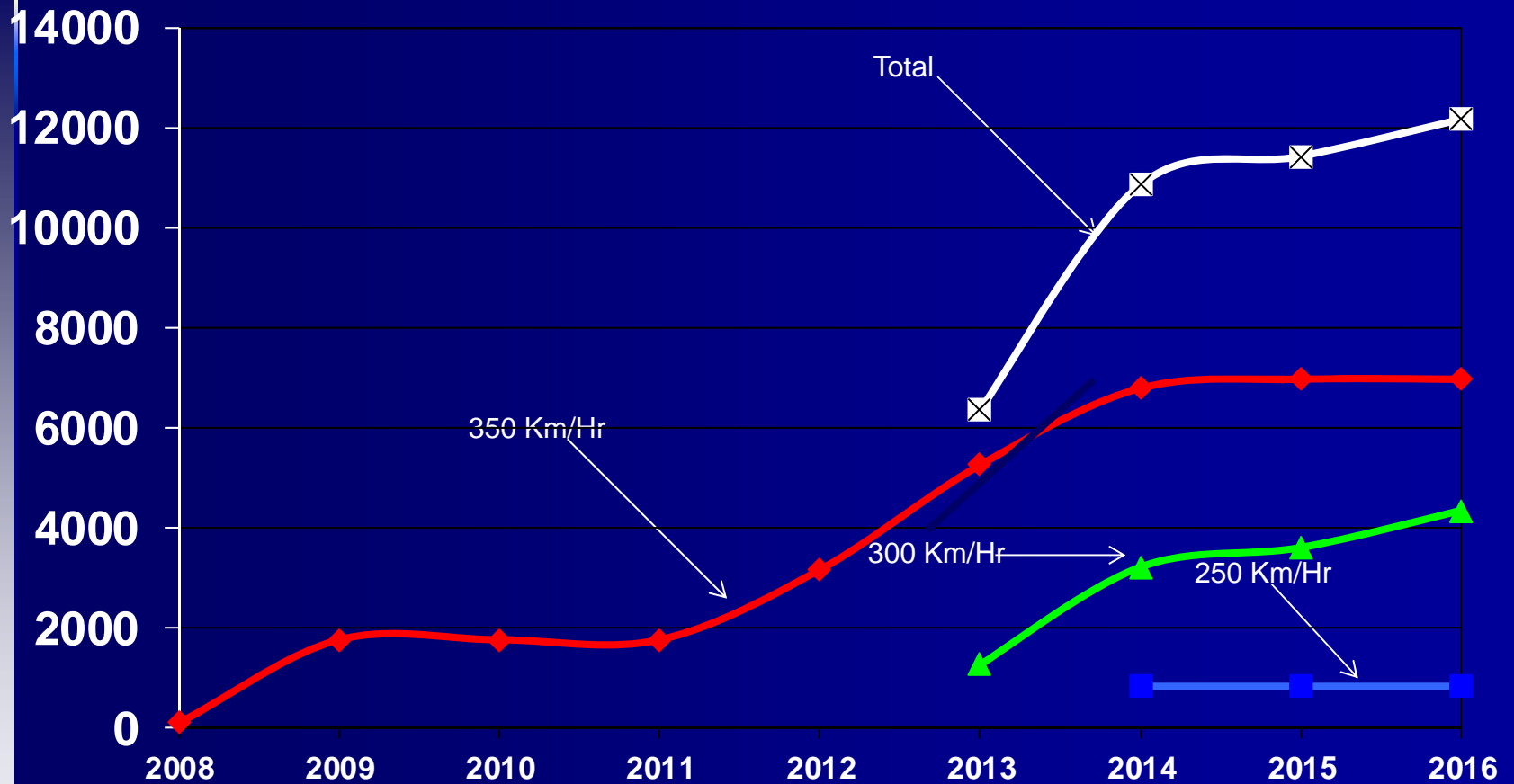
Note: Includes all passengers above 160 Km/Hr

Average "High Speed" Trip Length (Km) 2009

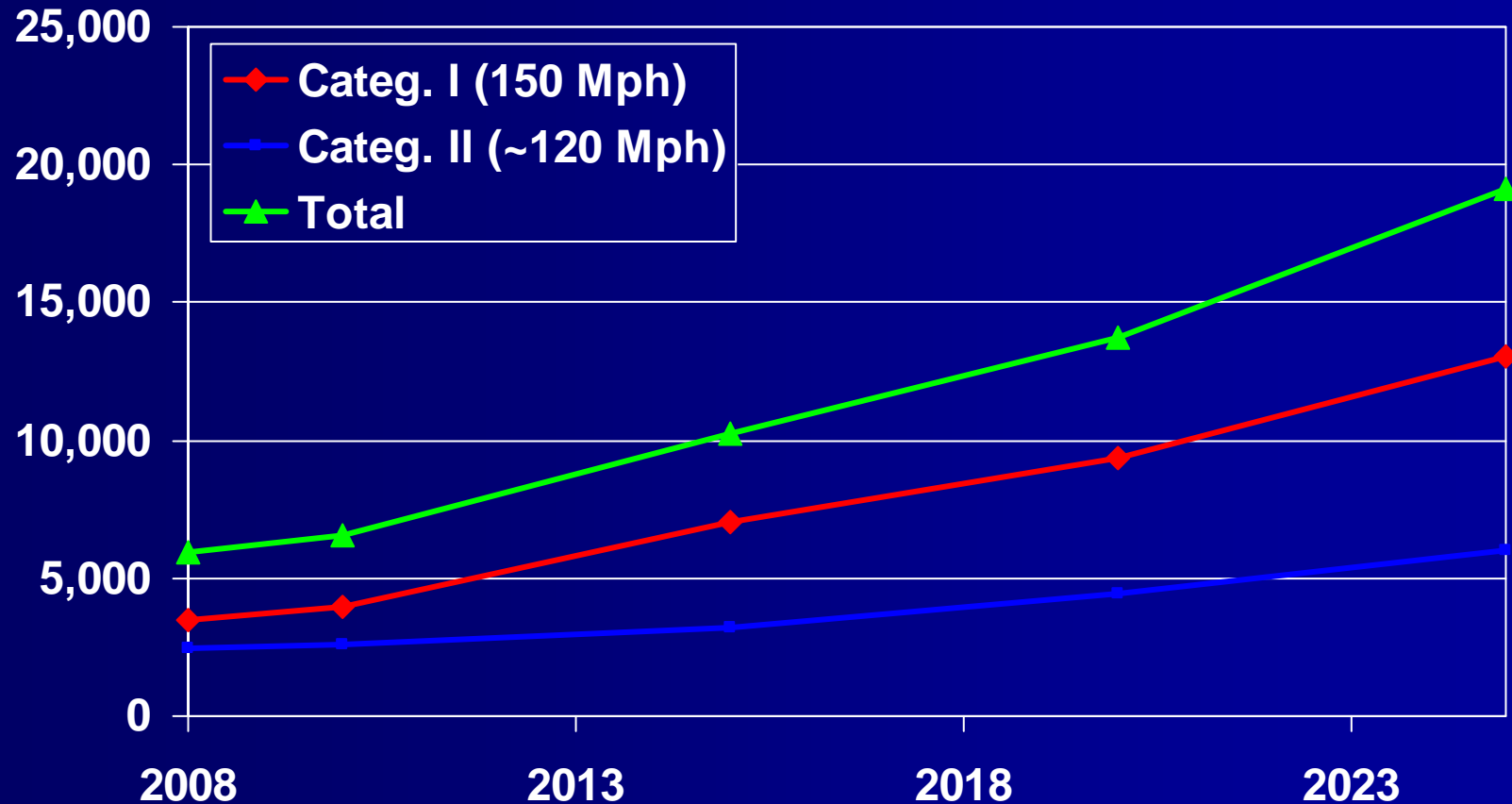


Note: Includes all passengers above 160 Km/Hr

Planned Km of HSR In China



E.U. HSR Line Miles by Category



Latin American Rail Comparisons

	Line Km	Employees	Freight Wagons	Ton-Km (000,000)	Productivity measures		
					(000 Ton-km per)		
					Line Km	Employee	Freight Wagon
Argentina (2006/2007)							
FEPSA	2,560	897	1,800	1,754	685	1,955	974
Ferrosur Roca	2,650	799	4,600	2,076	783	2,598	451
NCA	3,254	1,316	5,000	4,257	1,308	3,235	851
BAP (now ALL)	3,000	1,325	5,200	3,140	1,047	2,370	604
Mesopotamico (now ALL)	2,100	500	2,100	906	431	1,812	431
Belgrano	4,940	1,470	4,200	739	150	503	176
Total	18,504	6,307	22,900	12,872	696	2,041	562
Brazil (2007)							
Centro Atlantico (FCA)	8,093	5,940	12,486	14,400	1,779	2,424	1,153
Novoeste	1,942	483	2,133	1,200	618	2,484	563
Nordeste	4,238	1,691	2,275	1,000	236	591	440
ALL (old FSA)	7,225	2,371	13,343	17,500	2,422	7,381	1,312
MRS	1,674	4,138	15,311	52,600	31,422	12,711	3,435
Tereza Christina	164	235	380	200	1,220	851	526
Bandeirantes (old FEPASA)*	2,029	501	7,267	1,900	936	3,792	261
EFVM Vitoria Minas (CVRD)	905	6,303	20,811	75,500	83,425	11,978	3,628
EFC (Carajas -- CVRD)	892	4,999	10,027	83,300	93,386	16,663	8,308
Ferronorte	504	791	4,100	9,400	18,651	11,884	2,293
Total	27,666	27,452	88,133	257,000	9,289	9,362	2,916
* part absorbed into Ferronorte							
Mexico (2006)							
TFM	4,940	3,434	12,233	29,454	5,962	8,577	2,408
Ferromex	8,134	6,755	14,165	40,410	4,968	5,982	2,853
FCCM	1,472	463	770	1,550	1,053	3,348	2,013
Total	13,074	10,189	26,398	69,864	5,344	6,857	2,647
<i>Italics indicates estimated</i>							