

Opportunities and Risks of the Infrastructure Management Models

VALEC/IDB Seminar

Lou Thompson

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Thompson, Galenson and Associates, LLC
14684 Stoneridge Drive
Saratoga, CA 95070-5745



Tel: (408) 647-2104
Fax: (408) 647-2105
lou.thompson@gmail.com

<http://www.tgaassoc.com>

Opportunities and Risks

➤ Opportunities:

- Provide low cost transport to underserved parts of the country – economic development
- Promote national linkages, freight and passenger – political integration
- Open Access – competition IN the rail freight market, not just intermodal competition with trucks and water
- Put trucks, water and rail on equal competitive footing

➤ Risks:

- Demand and cost forecasts
- Getting public versus user financing roles right (who pays?)
- Matching infrastructure to customer needs (capacity and quality)
- Getting access charges right (covering operating costs, allocating capacity)
- Effective regulatory model (economic and safety) development: ensuring neutrality and competition
- Environmental damage from development and transportation

The Basic Questions

- Access objectives: neutral or competitive access (or both)?
- Economic objectives: national/regional development, cost coverage, financial?
- Basic demand studies have been done and are critical because:
 - Existing, private, new carriers, passenger?
 - What infrastructure system do your customers want: slow, fast, heavy? Train types?
 - **Operators** are **your** customers, shippers are **their** customers
 - How much capacity will be used and what are your costs to provide it?
- Setting access charges to cover financial objectives **and** allocate capacity efficiently
- Setting access priorities and managing dispatching/scheduling
- Managing the system: who maintains, dispatches, billing
- How will prices and safety be regulated? Basic public utility model?

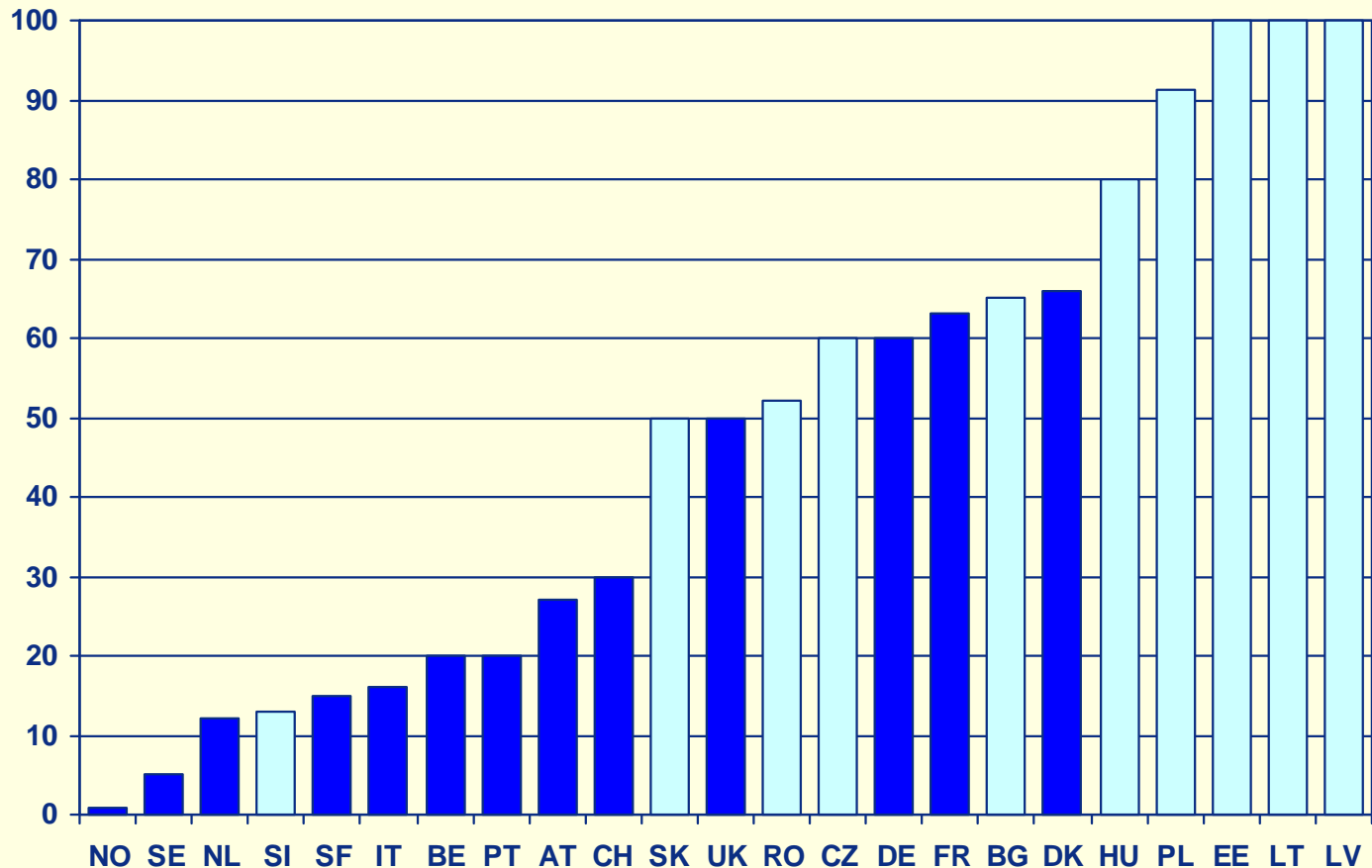
The E.U. and Australian Objectives

- Neutral access for freight versus passenger
- Breach the “national fortresses” by promoting operation across boundaries to get competitive (open) access for international freight and passenger. The General EU objective applied to rail
- Clarify the economics of infrastructure, passenger and freight, restrict subsidy to social services (promote trade)
- Make infrastructure fully sustainable through the sum of public support and user charges
- Australia also wanted single gauge national network, primarily for competition with trucks, also for national development (Darwin line, East-West, and North South)
- Australian infrastructure charges do not recover fixed costs, sometimes do not even recover operating costs

EU Rules

- Access charges should, at a minimum, cover “marginal cost”
- To maximize efficiency of use, government should make up the difference between marginal versus full cost
- Networks may have financial objectives to cover some or all of full costs, but these should be based on “non-discriminatory” mark-ups over marginal cost
- No advantages for national or public (vs. private) operators
- Accounts (infrastructure and operators) must be separated and, ideally, infrastructure should be institutionally separated (“arm’s length relationship”) to prevent favoritism and discrimination in charging **and** scheduling/dispatching
- Removal of technical and regulatory barriers to cross-border traffic and operation

Examples of the Target Percentage of total cost recovered from access charges



Note: EU10 tend to have higher targets

Some Interesting National Differences

- UK chose to subsidize operators, not infrastructure, so that full cost recovery access prices would send right signals to users
- Because of full separation and privatization, UK has the most complex system of contract relationships for costs and responsibilities. Experience might have value for VALEC
- EU10 are freight dominant, EU15 are mostly passenger dominant. NO EU railway is single shipper or single commodity dominant
- EU10 countries (former socialist) have higher financial targets and chose to push up freight access charges in order to lower passenger access charges
- Only four countries have 2 part tariffs, largely to deal with capacity in congested suburban areas. Other countries have simple tariffs (R\$/gross tonne-km and R\$/train-Km)
- Some network managers are institutionally separated (UK, NL), others are not (HU) but have regulated access charges, others are part of a holding company (DB)

Key Issues for Multiple Access

- How to calculate “marginal cost” (rule of thumb 20% of total costs). Economists can’t agree (do they ever?)
- Setting the financial objective. Varies widely, from marginal costs to full financial cost including rate of return on asset base.
- Designing Access Charges that will: a) ration capacity effectively; b) recover at least marginal cost; c) meet the financial objective through “mark-ups,” and d) not discriminate. Can’t all be done at the same time. The problem is in the markups!
- Ensuring appropriate access conditions (priority, dispatching/scheduling) for all. Hard to do unless clear rules are agreed and unless there is an “arm’s length relationship” between infrastructure and ALL operators

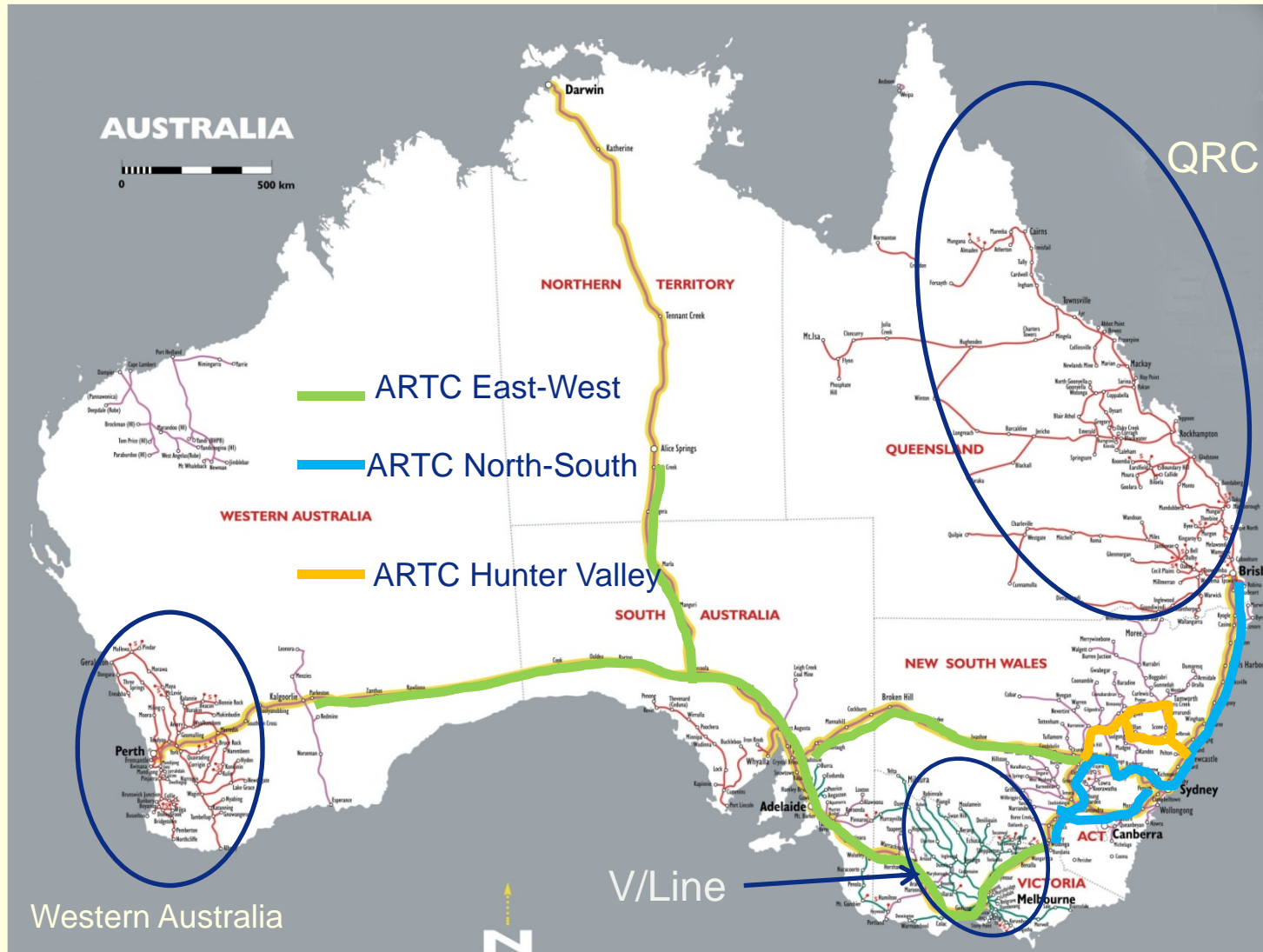
Freight Access Charge Regimes (R\$)

Country	Line categories	Type of service	Time of Day	Freight Reservation Charges per train path-Km (low-high)	Per 000 Gross ton-Km (low-high)	Per Train-Km (low-high)		Per Train
Charges only by Train-Km								
Belgium	1	Yes	Yes	None		5.04		
Denmark	1	No	No	None		0.67		
Germany	12	Yes	No	None		3.28	17.41	
Italy	specific	Yes	Yes	None		6.17		
Latvia	1	Yes	No	None		16.82		
Portugal	9	Yes	No	None		3.40	4.79	
Romania	1	Yes	No	None		10.11		
Hungary	3	Yes	No	None		2.02	5.96	64.23
Charges only by Gross Tonne-km								
Finland	1	Yes	No	None	5.63			
Norway	1	Yes	No	None	6.40			
Charges by BOTH Train-Km and Gross Tonne-Km								
Austria	5	No	No	None	2.82	3.15	7.35	
Czech	3	Yes	No	None	4.61	7.17	4.45	5.45
Estonia	1	Yes	No	None	7.42	9.70		
Lithuania	1	Yes	No	None	12.03	5.12		
Netherlands	1	No	No	None	4.35	1.23		
Poland	6	Yes	No	None	2.64	6.55	19.66	
Sweden	1	Yes	No	None	0.77	0.25		
Switzerland	1	Yes	No	None	6.40	0.64		
Slovakia	3	Yes	No	None	1.79	15.56	22.68	113.02
ARTC E-W	9	Yes	No	None	5.66	9.70	1.01	7.49
ARTC N-S	5	Yes	No	None	5.25	8.48	0.81	3.64
ARTC Hunter	4	Yes	No	None	4.75	7.21	0.20	10.30
V/Line General Req.	1	Yes	No	None	3.33		1.78	
V/Line Bulk Grain Req.	1	Yes	No	None	11.55		15.35	
V/Line granted	1	Yes	No	None	45.65			
Has Path Reservation Charges								
Bulgaria	2	Yes	No	6.2976	5.38	3.38		
France	8	Yes	Yes	0	38.40	1.18		
Spain	4	Yes	Yes	0.8192		0.15		
UK	1	Yes	Yes	None	5.27	9.60	0.74	

Notes:

- In E.U., 960 gross tonnes is a large train
- E.U. axle loadings are low
- UK considering some commodity-based rates
- In Australia, Max length 1800 m (~13,000 gt)
- V/Line recently changed to gross ton-km only (had proposed different rates for grain)
- Neither ARTC nor V/Line recover fixed costs, but Hunter Valley might

ARTC Network



ARTC Access Charges (in A\$)

(Do Cover Operating Costs, May not Cover Fixed Costs)



ARTC PRICING SCHEDULE

Applicable Rates - Effective from 1 July 2011

TRACK ACCESS PRICES	22 Operators EAST - WEST ~6500 Km										21 Operators NORTH - SOUTH ~2800 Km					21 Operators HUNTER VALLEY & INLAND ~1200Km			
	PARKES JCT - BROKEN HILL	BROKEN HILL - CRYSTAL BROOK	ADELAIDE - PARKESTON	TARCOOLA - ALICE SPRINGS #	PT AUGUSTA - WHYALLA	ADELAIDE - PELICAN PT	ADELAIDE - MELBOURNE	APPELTON DOCK JCT - FOOTSCRAY RD	FOOTSCRAY RD - APPELTON DOCK / SWANSTON DOCK	ACACIA RIDGE - ISLINGTON	TOTTENHAM - ALBURY	ALBURY - MACARTHUR	COOTAMUNDRA - PARKES JCT	MOSSVALE - UNANDERRA	MAITLAND - MUSWELLBROOK	MUSWELLBROOK - MERRYGOEN	MUSWELLBROOK - WERRIS CREEK	PARKES - WERRIS CREEK	
All Freight	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
VARIABLE PRICE PER '000 GTK	3.747	3.747	2.873	5.383	4.846	4.231	3.215			3.349	2.633	2.633	3.688	4.234	3.568	3.148	3.568	2.345	
FLAGFALL PRICE per TRAIN KM																			
Passenger	1.609	1.609	3.939	4.835			2.425												
Express Freight	1.053	1.053	3.729				1.949			1.109	1.109	1.109							
Regular Freight	1.121	1.121	3.715		2.499		2.263	45.537	19.505	1.824	1.767	1.767	1.461	1.077	4.994	5.108	4.352	0.567	
Super Freight	1.034	1.034	3.704	4.488	2.499	2.660	1.994	45.537	19.505	0.970	1.048	1.048	0.999		0.453	0.491	0.453	0.102	
Standard Freight	0.528	0.528	2.642		1.805	2.214	1.897	45.537	19.505	0.858	0.649	0.649	0.441	0.542	0.453	0.442	0.453	0.087	
Heavy Freight																			
VARIABLE PRICE PER '000 GTK										5.108	5.108		6.812						
FLAGFALL PRICE per TRAIN KM																			
Heavy Freight										1.767	1.767		1.077						
Express Passenger																			
VARIABLE PRICE PER '000 GTK	3.666									3.278	2.633	2.577		4.143	3.492		3.492	2.294	
FLAGFALL PRICE per TRAIN KM																			
Express Passenger	1.854									1.957	2.136	2.091		1.886	1.848		1.865	1.868	

May cover marginal costs

Below marginal costs

Covers full costs

FLAGFALL	TRAIN TYPE AND DESCRIPTION	TRAINS
Express Passenger	Max train speed above 115kph / Max Axle Loading up to 19T	XPT, Intra Urban Passenger, Intra State Passenger
Passenger	Max train speed 115kph / Max Axle Loading up to 19T	Long Distance Passenger
Express Freight	Max train speed 115kph / Max Axle Loading up to 20T	Bi Modal
Regular Freight	Max train speed 80kph / Max Axle Loading up to 23T / Length to corridor standard max	Scheduled Services including Steel, Ore, Cement, Concentrates
Heavy Freight	Max train speed 80kph / Max Axle Loading up to 25T / Length to corridor standard max	Limestone
Super Freight	Max train speed 110kph / Max Axle Loading up to 21T / Length up to corridor standard max	Intermodal, Land Bridging
Standard Freight	Max train speed 80kph / Max Axle Loading up to 23T / Length to corridor standard max	Non Scheduled services including Grain, Minerals

The V/LINE Access Structure

	R\$/Train-Km	R\$/000 gross ton-km
V/LINE Proposed		
Bulk Grain	11.55	15.49
All Other Freight	1.77	3.32
The Commission Granted		
All Freight	0	45.65

Note: Proposal was Commodity-Based. UK considering specific rates for coal

QRC Access Charges for Coal



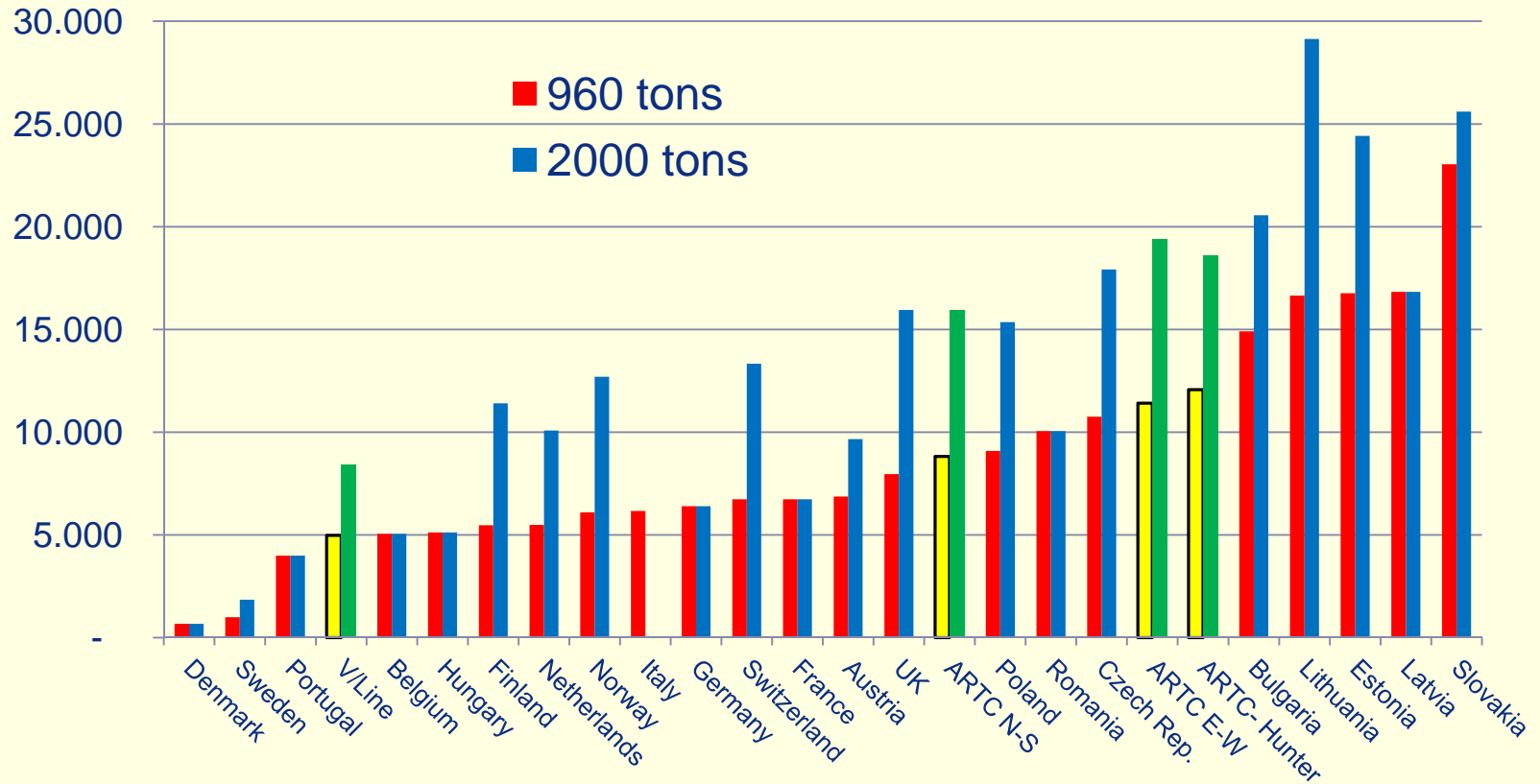
Queensland Rail Coal Access Charges			
		Surat Basin	Ebenezer
Use Charge	R\$/gtkm	17.96	35.88
Path Charge	R\$/trip	8,457.52	0
"QCA Levy"	R\$/net ton	0.0252	0.0252

Note: Other access charges are negotiable based on cost recovery

Comparable US Class I Track Costs in 2010 (R\$)

	R\$/000 Gross tonne-Km	R\$/Km of line
Maintenance only	1.75	54,806
Maintenance plus depreciation	3.38	105,697
Maintenance plus depreciation plus capital investment	6.68	209,011

Access Charge per Train-Km (R\$/Train-Km)

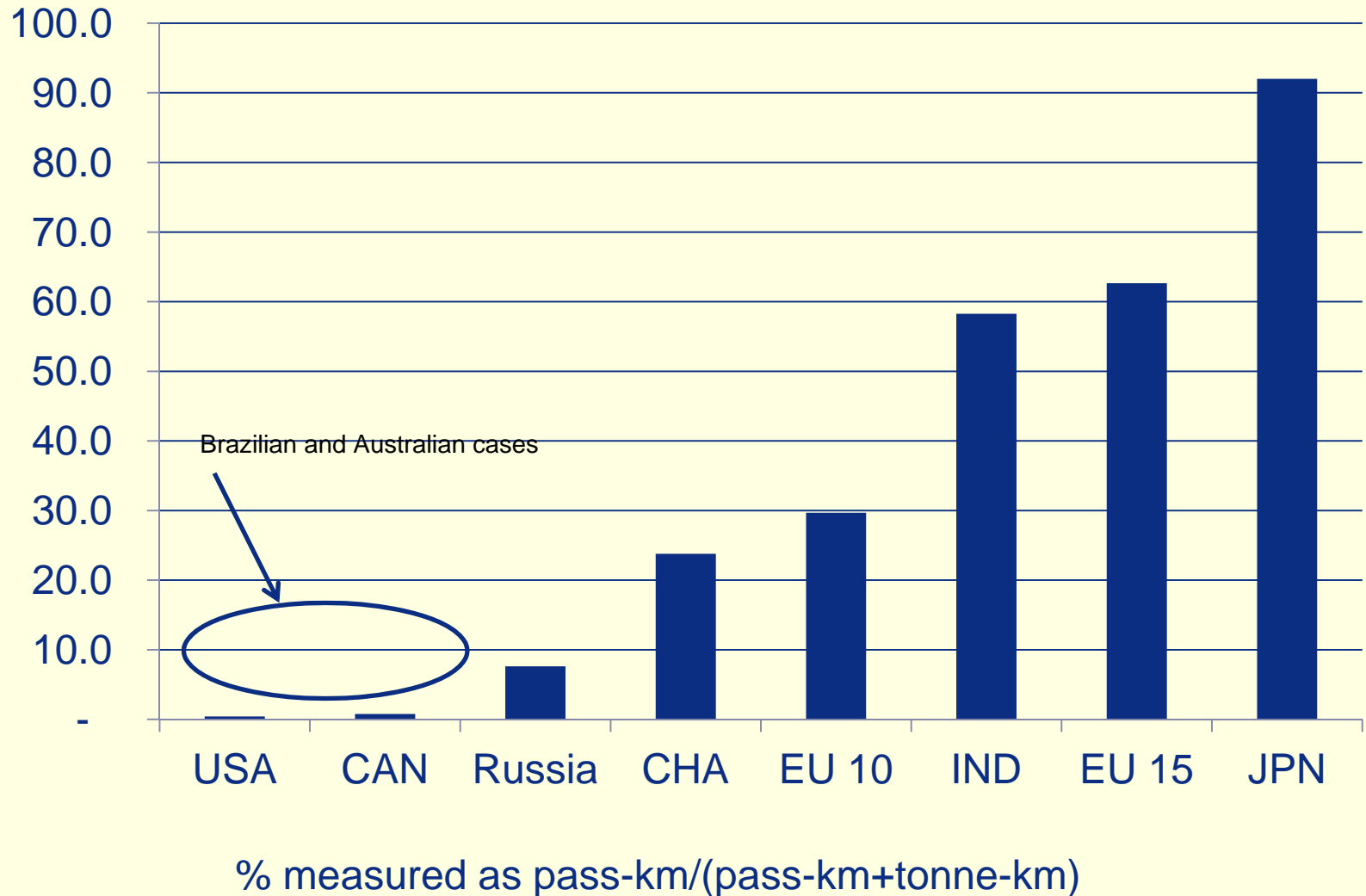


What Could be the VALEC Access Objectives?

- Neutral access for:
 - Passenger services (like Amtrak/VIA)? *And you may have them.*
 - Non-competing freight (ores, agriculture, manufactures, containers)
- Competitive access for cargoes that compete in the market (iron ore carriers, ethanol).
- BUT, **commodities** don't compete, **carriers** compete, so what **carriers** do you expect: private, general cargo, specialized cargo, J.B. Hunt (U.S. intermodal container)?
- Will VALEC have its own carrier(s)?
- What are VALEC's and Brazil's access objectives? Where is the efficiency versus financial recovery balance point for Brazil?

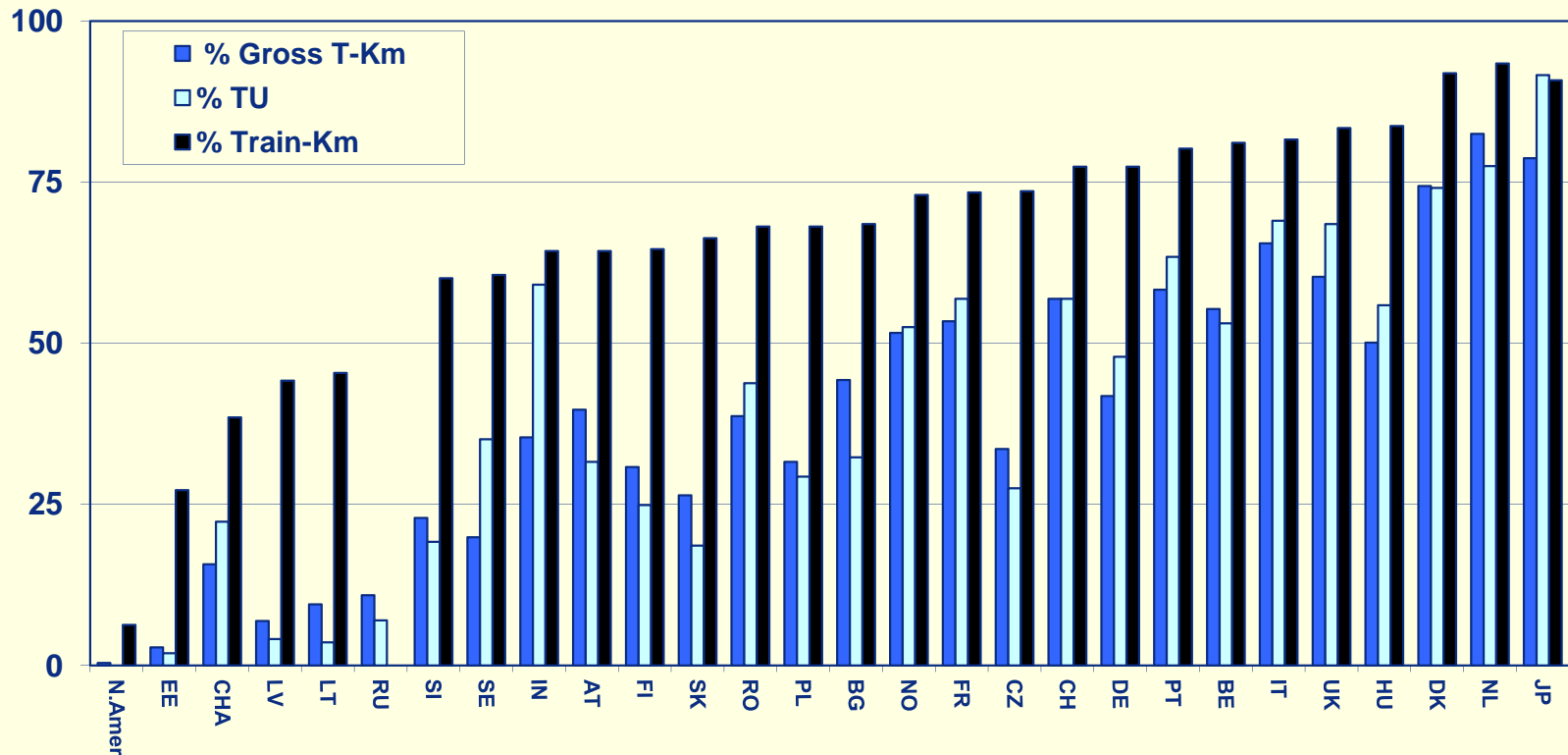
What Kind of Railroads Are There?

Passenger Traffic as % of Total Traffic Units



Various Measures of Traffic Mix

(Percent Passenger Traffic)

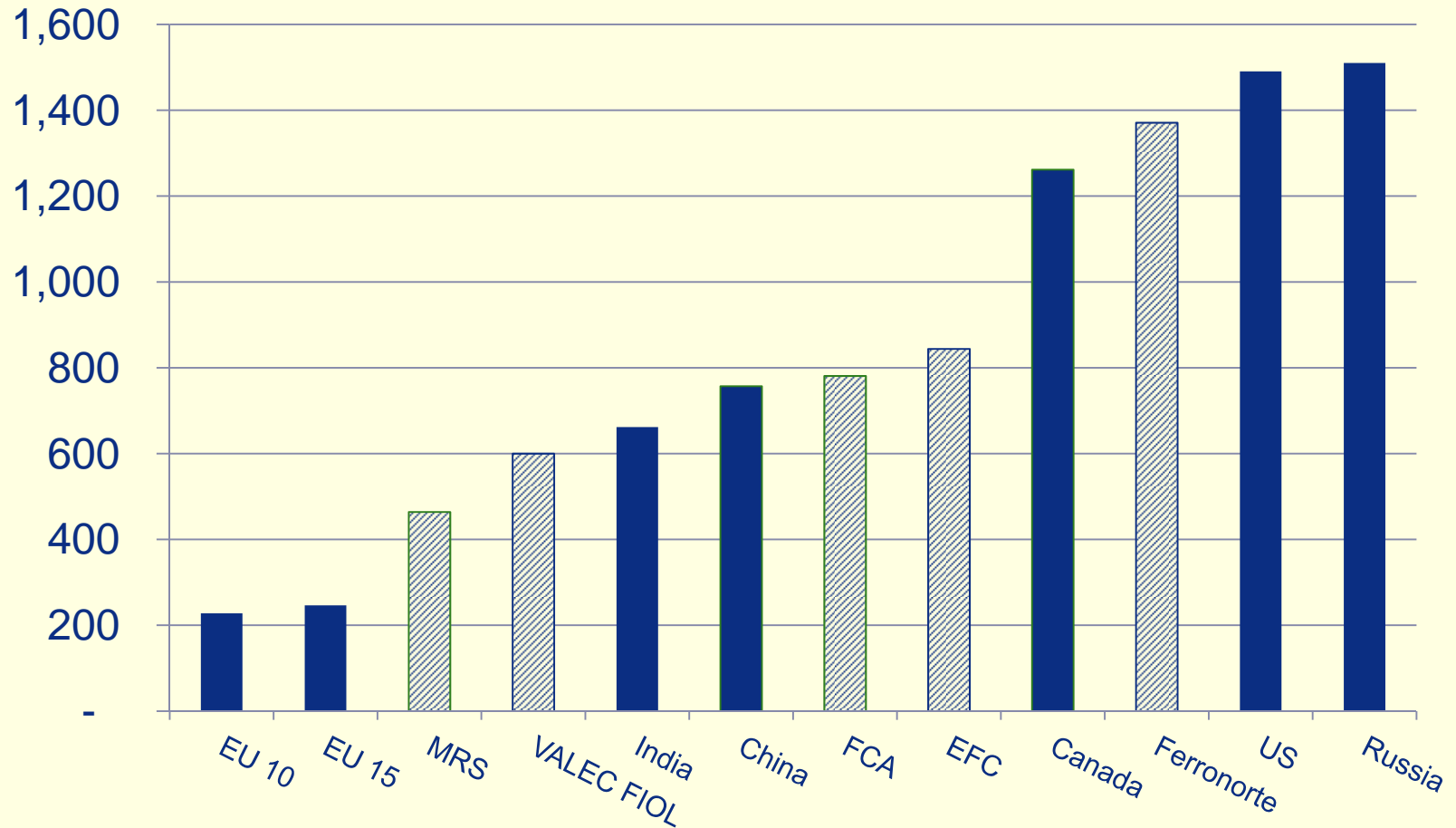


$TU = P\text{-Km} + T\text{-Km}$

Train-Km ~ Capacity
Gross tonne-Km ~ Maintenance

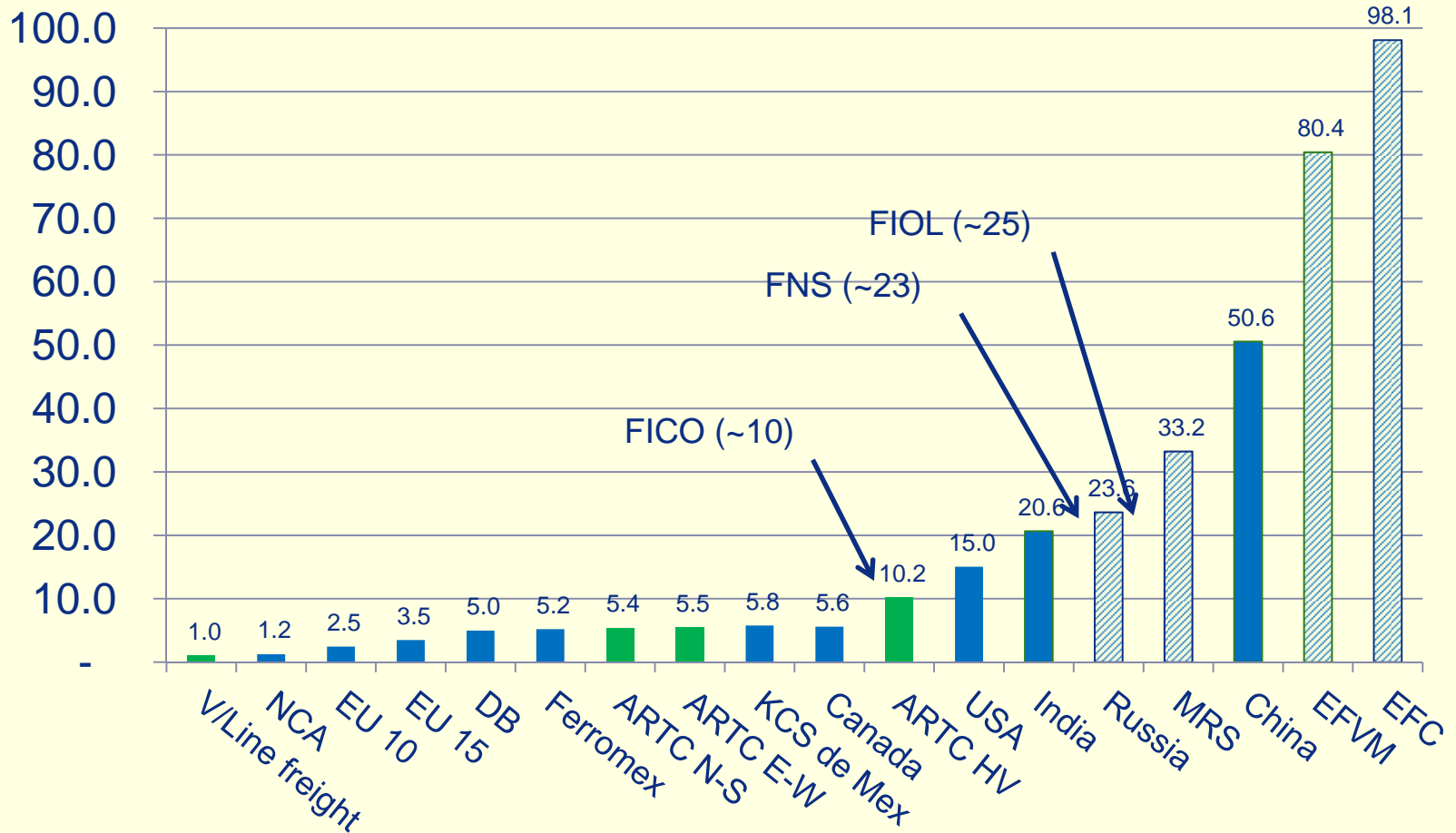
Average Freight Length of Haul

(Tonne-Km/Tonne) Km

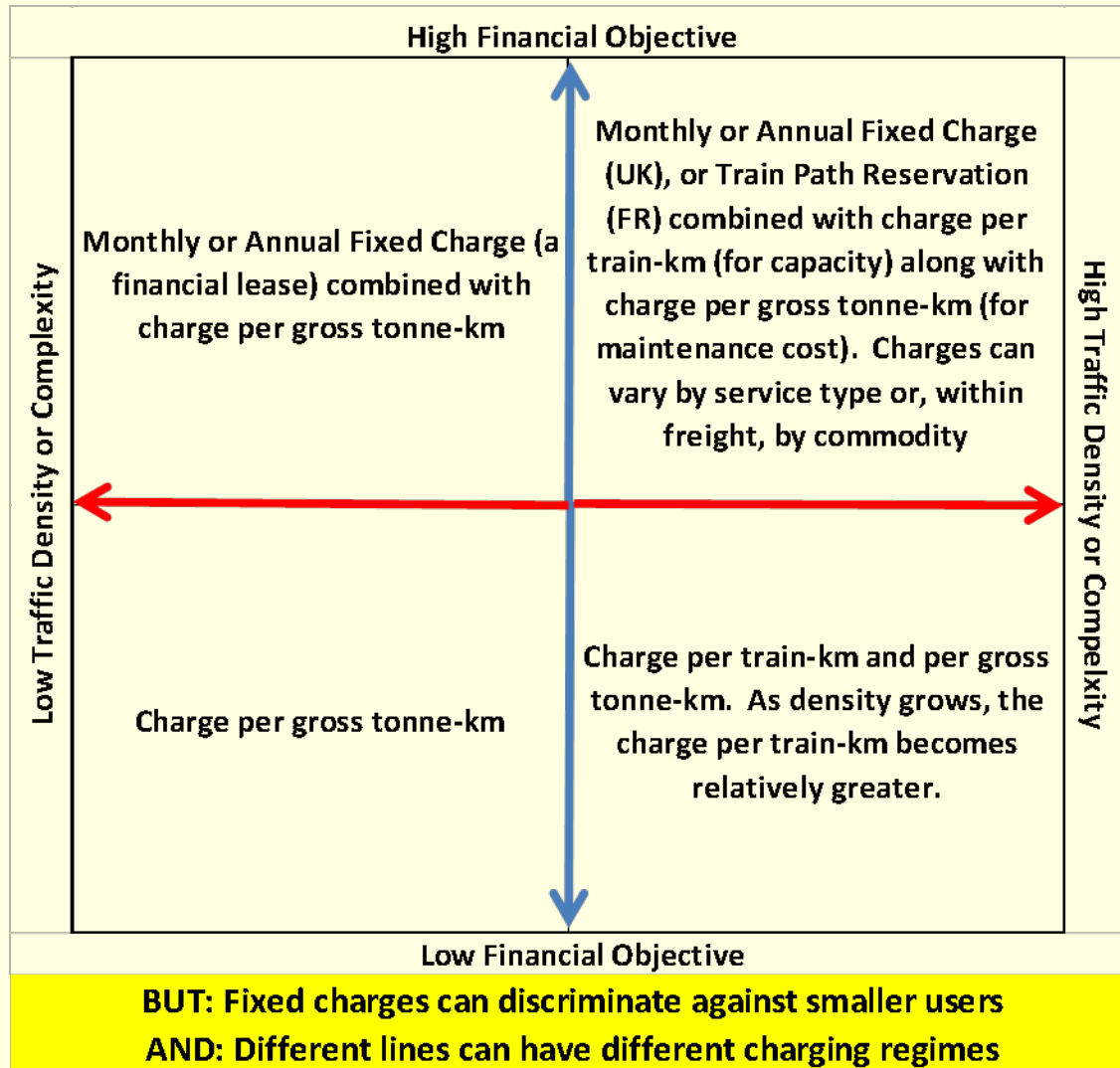


Total Traffic Density

(million Ton-Km + P-Km/Line Km)



Access Charge Drivers: Traffic Density/Complexity Combined with Financial Objectives



Access Priority Management

- Essential tool if capacity is an issue: good operations and capacity simulator for identification and resolution of conflicts
- If there are conflicting slot requests, what are the rules for resolution:
 - Government set based on social needs
 - Set by access charges (with financial objectives)
 - Slot auction?
 - Answer could vary by line
- How will neutral dispatching be enforced transparently?
- How to handle responsibility for failure by VALEC or by operators (Network Rail). This applies both to schedule reliability and to loss and damage from accidents. Who bears what responsibility?

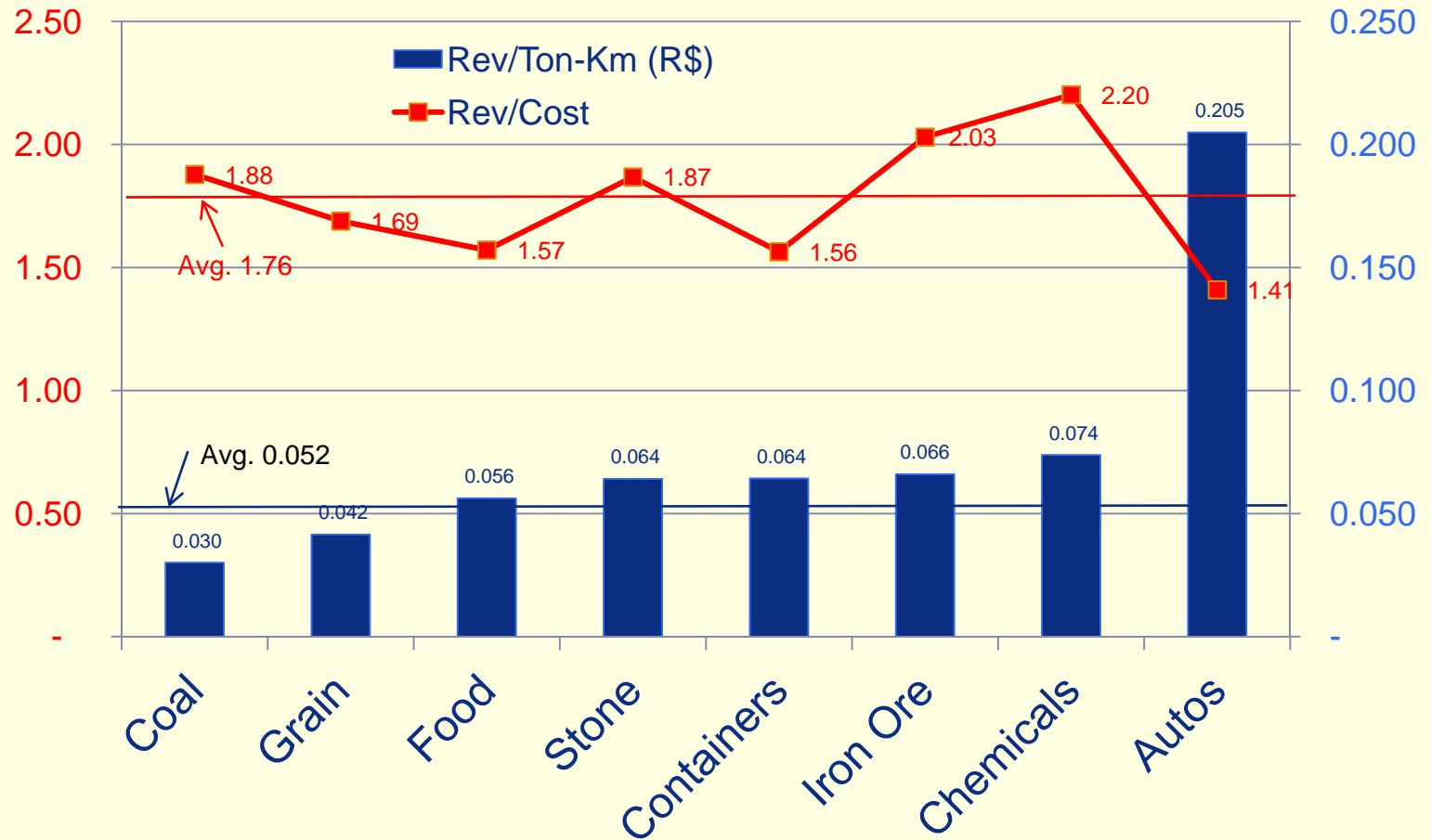
Managing the Separated System

- Key question: who dispatches (and controls access and maintenance slots)?
- Who will maintain the system (in-house or contract) and how to resolve maintenance coordination issues?
- Key technology: wheel impact detection, automated track inspection (jointly with EFC and/or ALL MP?)
- Information system should be designed (waybills, system models, signaling system) to collect information needed for billing, consistent with access charges

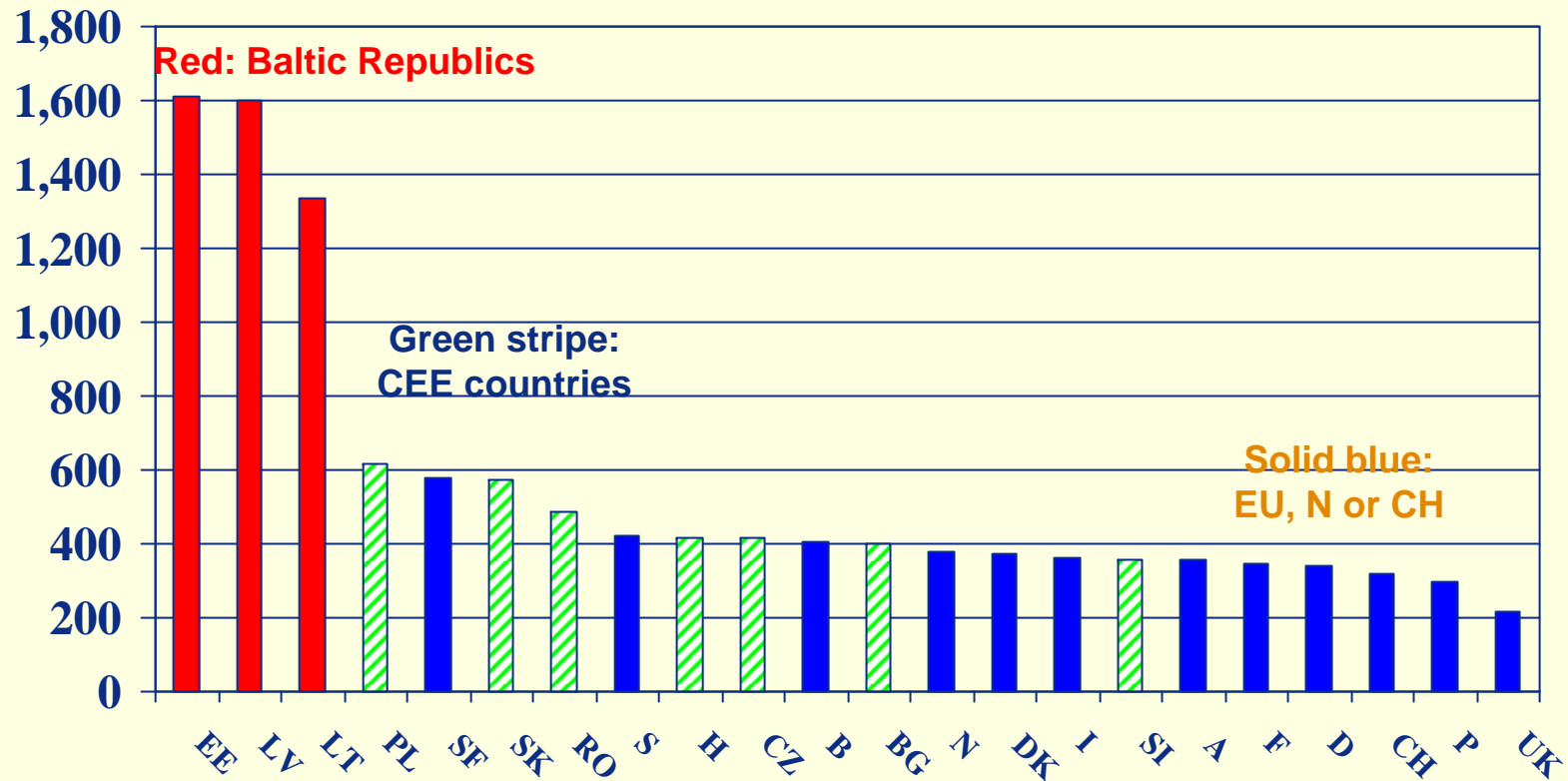
Regulating the Separated System

- WHO will regulate access charges, and with what objectives:
 - Ensure VALEC cost coverage?
 - Ensure VALEC rate of return on rate base?
 - Capacity usage and efficiency: access priorities and neutral access?
 - Public data for regulation?
- Safety

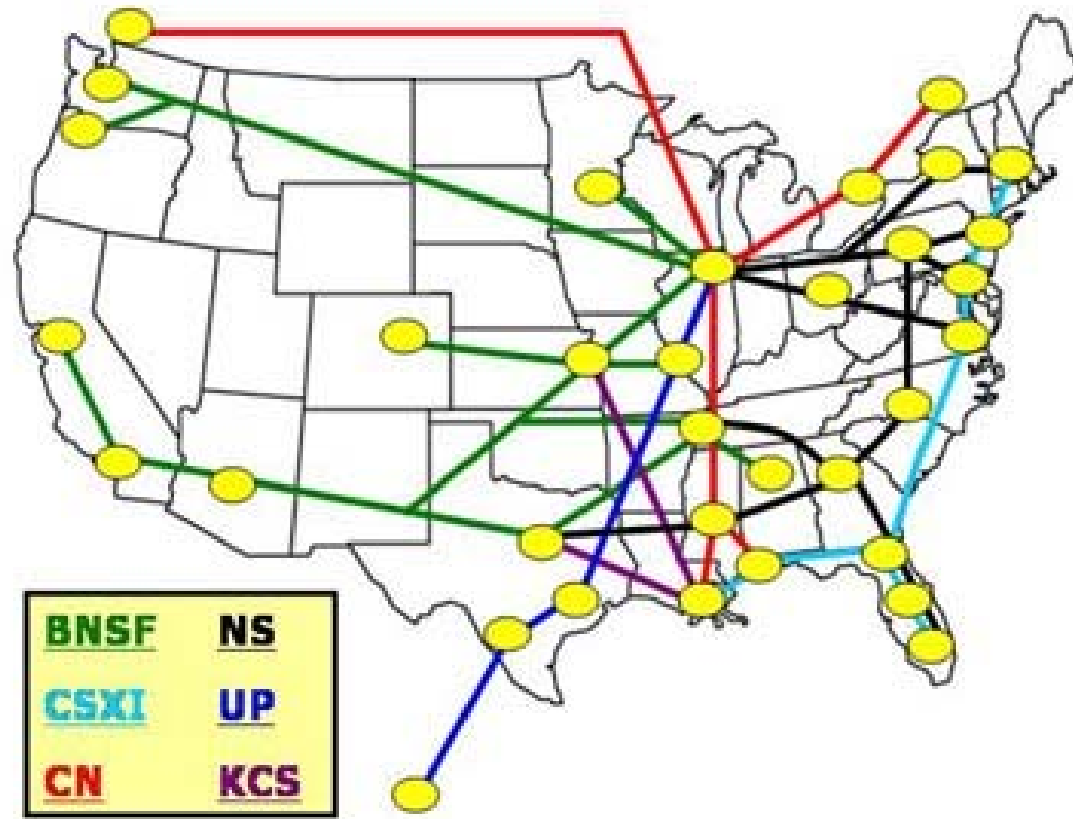
U.S. Freight Railway Tariff Structure: R\$ (2009)



Average Freight Train Size (net tons): The Baltics are Different



The J.B. Hunt Truck/Rail System



JB Hunt Traffic



Loads (000, 53 ft. containers)

