

6. RAIL COMPETITION

Competition on x for the market

- **Competition for the market** = where entry to the network is restricted, it is possible to organize competition for the exclusive right to service individual routes
- **Competition on the market** = this occurs where there is no restriction on entry. Operators are competing directly against each other.

Competition for the market

- Enables creation of long-term **contracts** between operator and public authority, including investment liabilities
- Contracts may include **specification of services** (frequency, quality, punctuality and so on)
- Competition for the market may be organized for wider **regions** and therefore it may internalize more network externalities than open access operators on single

Competition on the market

- **Direct impact** on efficiency and costs
- **Entrepreneurship** spirit and flexibility regarding entry and exit
- **No arbitrary borders** of franchises

European rail

Competition for the market:

- British franchising
- Germany regional traffic
- Many others

Competition on the market:

- Praha – Ostrava; Praha – Brno
- Wien – Salzburg; Roma – Milano
- Stockholm - Goteborg

British buses

- **Competition for the market** – London
- **Competition on the market** – rest of England

Case study: How to liberalise passenger rail services? Lessons from European experience

Nash, C., Smith, A., Crozet, Y., Link, H., & Nilsson, J. E. (2019). **How to liberalise rail passenger services? Lessons from European experience.** *Transport Policy*, 79, 11-20.

Introduction

Passenger rail services may be liberalised in two ways.

- The first is by means of **competitive tendering** for public service contracts. (*competition for the market*)
- The second is by **open access** for the operation of commercial services. (*competition on the market*)

Competition for the market

- **Britain** has adopted competitive tendering for almost all passenger services, subsidized and commercial; state-owned British Rail was not allowed to bid and ceased to exist as a train operator.
- **Sweden** has adopted tendering for virtually all subsidized services; most are procured by the regions, and 45% of all services in Sweden are now operated by new entrants.
- In **Germany**, the federal states are responsible for procuring all subsidized services; there is a trend toward competitive tendering and 18% of regional services are operated by new entrants

Competition on the market

- All three countries have **at least some** commercial **open access** operation, but this is on a limited scale.
- The countries that have taken open access competition furthest are:
 - **Italy**, where an entrant NTV provides services in competition with the state-owned Trenitalia on the high-speed network,
 - **Czech Republic**, where there RegioJet and Leo Express compete with ČD on the busiest domestic routes as well as on international routes to neighbouring countries.
 - **Austria** with the frequent competition on the crucial Wien – Salzburg line (WESTbahn and OBB)

France – no competition

By contrast, France has **no competitive** tendering or open access competition (except on a couple of international routes).

Has passenger rail market liberalization been a success?

Existing evidence on:

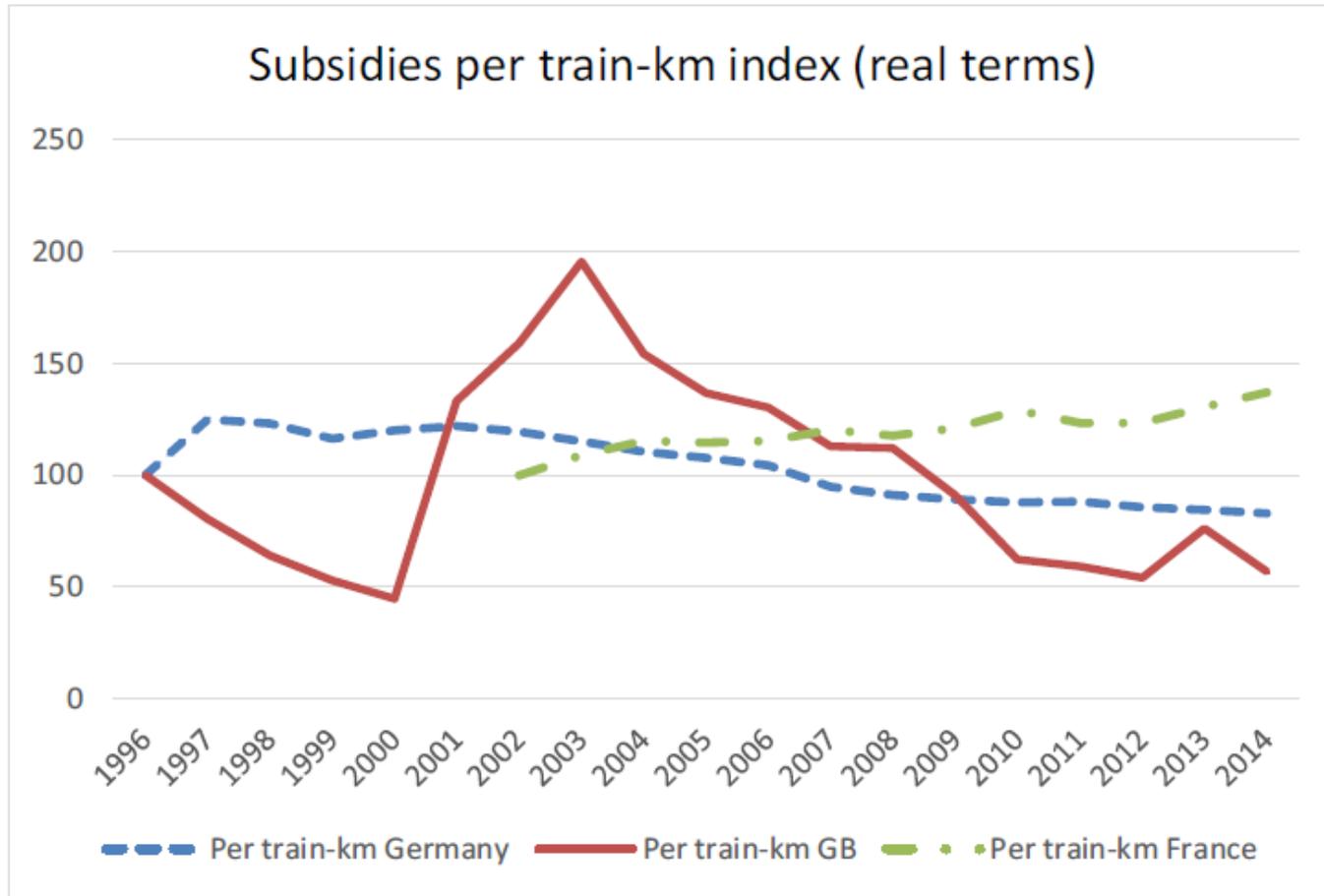
- Growth of **traffic**
- **Subsidies**

Traffic

Trends in total rail passenger traffic (in bill. Pass-km).

	Rail Passenger km 1995–2013				
	1995	2005	2013	2013/2005	2013/1995
France	55.1	77.5	90.1	1.16	1.63
Long-distance	40.2	52.1	63.1	1,21	1,57
Regional	14.9	25.4	27.0	1,06	1,81
Germany	71	76.8	89.6	1.16	1.25
Long-distance	36.3	33.7	36.8	1.09	1.01
Regional	34.7	43.1	52.8	1.22	1.52
Sweden	6.8	8.9	11.8	1.34	1.75
Long-distance	4.6	5.2	6.1	1.17	1.33
Regional	2.2	3.7	5.7	1.54	2.59
UK	30.3	44.6	62	1.39	2.05
Long-distance	10.5	14.7	20.8	1.41	1.98
Regional	19.8	29.9	41.2	1.38	2.08

Subsidies



Empirical evidence

- In all three countries – there has been rapid growth in **demand** for regional services, and **subsidy** per train km has generally fallen.
- By contrast in **France**, with no competition, subsidies have risen substantially.
- Whilst in Germany and Sweden **costs** have been reduced, in Britain train operating costs have actually risen, although this has been more than offset by increased revenue.
- In Britain the **winner** of a tender takes over an existing company including its staff, wages and conditions. In Germany and Sweden, the winner is responsible for assembling its own staff.
- For France the issue of how to handle existing **staff** is the biggest challenge

Conclusions

- The evidence is that introducing competition (for the market) to date has been a **success**.
- Tendering has contributed to the provision of improved services carrying **more traffic**, particularly in the regional market
- At the same time, in Germany and Sweden tendering has led to stabilising or **declining support** per train km.
- Even in Britain, a substantial increase in **cost** per train km has been offset by a rise in revenue, due both to increases in traffic per train km and in fares, leading to reducing support.
- All this is in marked contrast to the experience of **France**, where under a state monopoly support per train km has increased by 60%.

Update: France

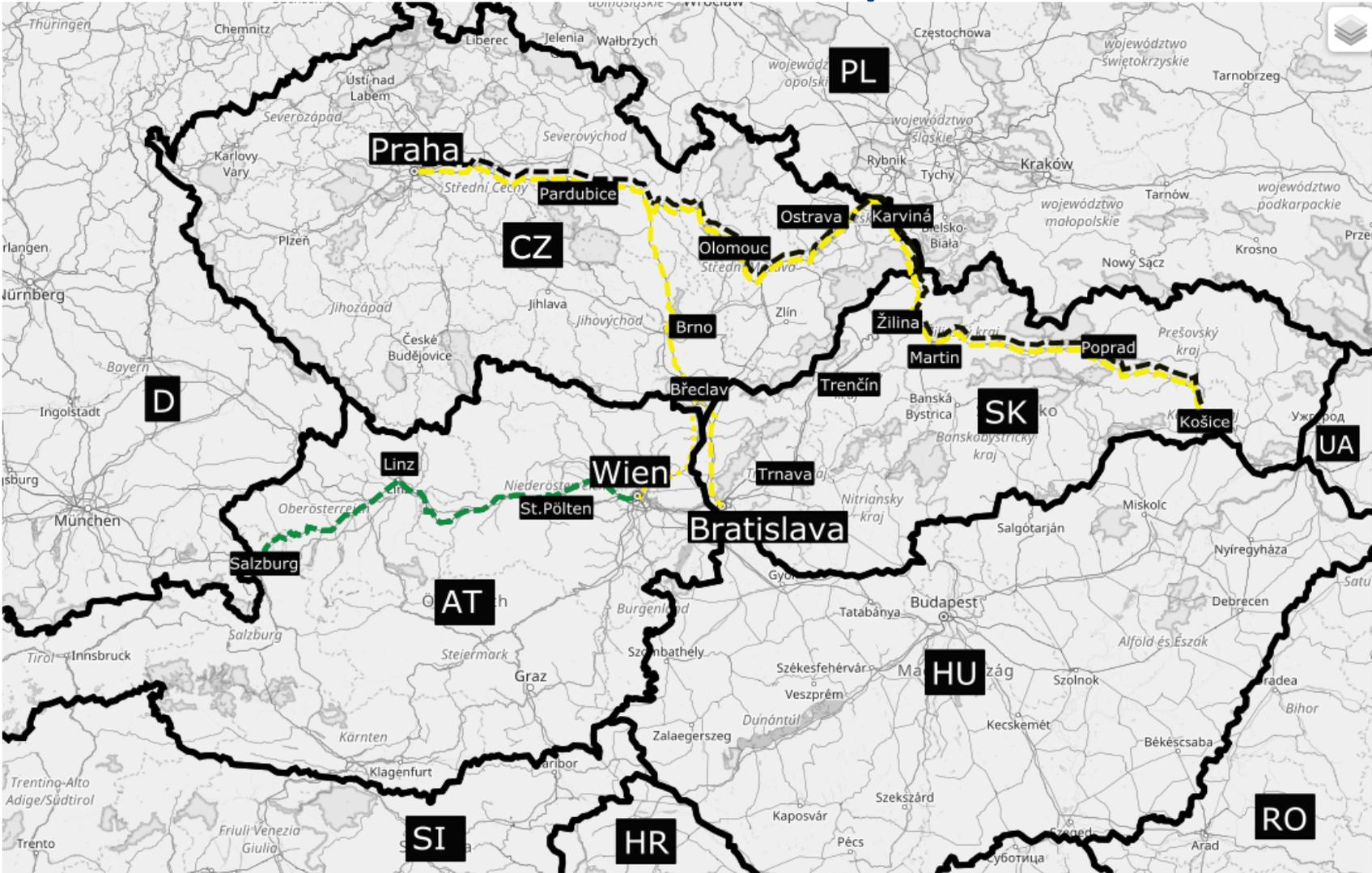
- France introduced competition on the busiest line HSR line **Paris – Lyon** in 2020
- Against the incumbent **SNCF**, the **Trenitalia** started to operate its services
- The impact of increased competition has been **15% increase in frequency** and **23% decline in prices** (*Source: Laroche 2022: Goodbye monopoly*)

Greater role for open access?

- In **Britain**, open access has been limited by a 'not primarily abstractive' test; only open access operations where revenue new to the rail industry is at least 30% of that abstracted from existing operators are permitted.
- **Germany** has had very little new entry in practice, perhaps because of the relatively high track access charges and strong competition from DB, air and now intercity bus.
- Open access has only applied in **Sweden** for a short period of time, but already there is intense competition on one key intercity route, between Stockholm and Goteborg.
- For more experience of on-track competition, we have to look outside our case study countries, to **Italy, Austria and the Czech Republic**.

Open access rail services in Central Europe

Competition on the rail market in Central Europe



Fares

- The entries of new private operators were distinguished by the introduction of **lower ticket prices**.
- This **triggered** competitive **responses** from the incumbents and usually a subsequent reaction by the new entrants.
- This hot **price war** stabilized after some time, however, with prices down about 25–50% as compared to the situation before the entry of private operators.
- The pressure of competition has decreased **fares** on competitive lines well **below** national averages.

Market shares

- The share of new operator's services on the total departures in 2018 was **45%** on Vienna-Salzburg, **47%** on Prague-Ostrava, 26% on Prague-Brno and **21%** on Žilina - Košice.
- The **number of connections** rose between 2010 and 2018 on Vienna-Salzburg from 37 to 64, on Prague-Ostrava, from 23 to 36, on Prague-Brno from 26 to 34 and on Žilina-Košice from 20 to 24

Market effects

	Δ Prices	Δ Ridership	Δ Revenues	Δ Frequency (proxy for Δ Costs)
Austria 2010–2016 Vienna–Salzburg	-(20..25)%	+(20..25)%	-10%..0%	+35%
Czech Rep. 2010–2016 Prague–Ostrava	-42%	+97%	+14%	+65%

Tomeš, Z., & Jandová, M. (2018). Open access passenger rail services in Central Europe. *Research in Transportation Economics*, 72, 74-81.

Conclusions

- **Demand** → undoubtedly positive impact of open access services (innovations, marketing, frequency, quality, prices, ridership)
- **Supply** → questionable/negative impact of open access services (rising unit costs, stagnating revenues, financial losses, cherry-picking, long term sustainability)
- **Regulation** → significant challenges (vertical structure, infra capacity, priority rights, operators' disputes, predatory pricing, anticompetitive behaviour)

Open access on Prague - Ostrava

- **Before September 2011** → high density of traffic, low intermodal competition, two brands of ČD services – SC (Pendolino), IC (standard), high fares, subsidies, no competition
- **September 2011** → withdrawal of public subsidies; the open access entrance of the first private competitor RegioJet
- **January 2013** → the entrance of the second private competitor Leo Express
- **2011 - 2023** → intensive price and non-price competition of the operators

Czech railway passenger market

	2000	2005	2010	2015	2018
Passenger-Kilometers (billions)	7.3	6.7	6.6	8.1	10.2
Modal Share of Railways (%)	8.4	7.3	7.5	8.6	9.6
Private Operator's Market Share (%)	0.0	0.0	0.2	5.0	12.5

Geography



* density of rail passenger flows; year 2009

Service differentiation



Passengers

	ČD SC	ČD IC	Regiojet	LeoEx	TOTAL
2010	1,3	2,3			3,6
2011	1,3	2,3	0,1		3,7
2012	1,1	2,1	1,1		4,3
2013	1,0	1,8	1,5	0,7	5,0
2014	1,2	1,5	2,4	0,9	6,0
2015	1,3	1,5	3,0	1,1	6,9
2016	1,3	1,6	3,1	1,1	7,1
2017	1,4	1,7	3,3	1,1	7,5

* millions; own estimation

Assessment of the Czech case

- + **better quality** of services
- + **higher frequency** of trains
- + **lower prices** for customers

- **strains on infrastructure capacity**
- **regulatory challenges**

Tomeš, Z., Kvizda, M., Jandová, M., & Rederer, V. (2016). Open access passenger rail competition in the Czech Republic. *Transport policy*, 47, 203-211.

Open Access Passenger Rail Competition: the case of Italy

Angela Stefania Bergantino
University of Bari, Italy

Round Table On Open Access Passenger Rail Competition 2016
Masarykova Univerzita, Brno
11th November 2016

A brief history of HSR in Italy: the entry of NTV



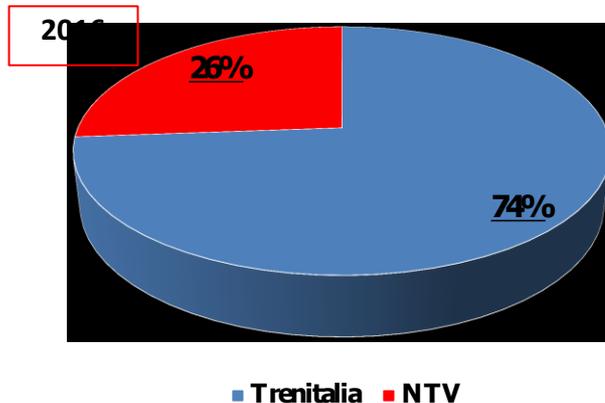
- Italy is the first country in Europe to open its HSR network to «on track competition»;
- Nuovo Trasporto Viaggiatori (NTV), first private operator:
 - established in December 2006, by a number of Italian private entrepreneurs (Montezemolo, Della Valle, Punzo and Sciarrone);
 - The French national incumbent (SNCF) acquired NTV shares as a “technical partner”, without any involvement in the management (initially 20%; now 1.4% due to an increase in capital);
 - It entered the market in regime of “Open Access” in December 2012;
 - The high-speed train of NTV is called “Italo”

The effect of Open Access: Demand

Italian HSR: NTV and Trenitalia's market shares					
	2011	2012	2013	2014	2015
Passengers (million)					
Trenitalia	23.4	25.1	26.2	29.1	31.2
NTV	0.0	2.0	6.2	6.5	9.1
Share of passengers					
Trenitalia	100%	92.4%	80.9%	81.6%	77.4%
NTV	0.0%	7.6%	19.1%	18.4%	22.7%

Source: ART first Annual Parliament Report (2014, p.70); EC (2015); Trenitalia; F. Croccolo.

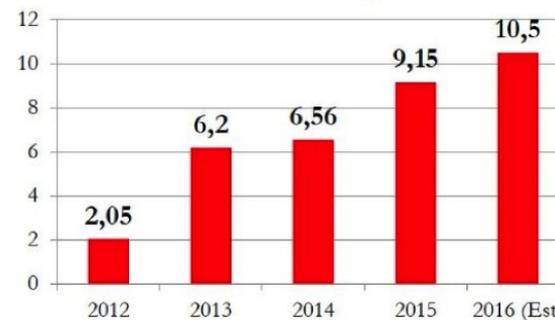
Expo effect: in 2015 Italo's pax increased by 2.6 million (+39.5% of growth rate) and Trenitalia by 2.1 million (7,2%) mainly on the routes directed to Milan. **Ryanair left the market!**



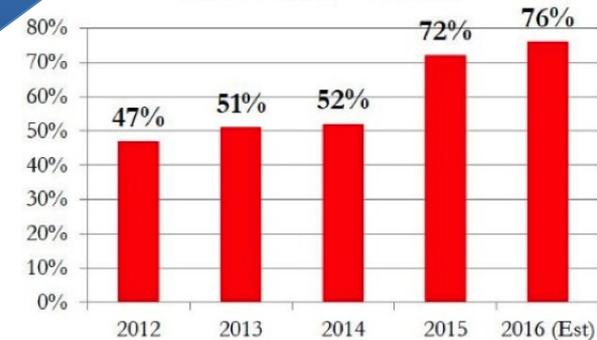
NTV continues to grow

2016

Italo Passengers



Italo Load Factor



The effect of Open Access: Demand

- From air to HSR. Substantial modal shift.

Route ROME-MILAN	2008	2012	2014	2016*
Plane	50%	32%	24%	15%
Train	6%	58%	65%	74%
Road	14%	10%	11%	11%

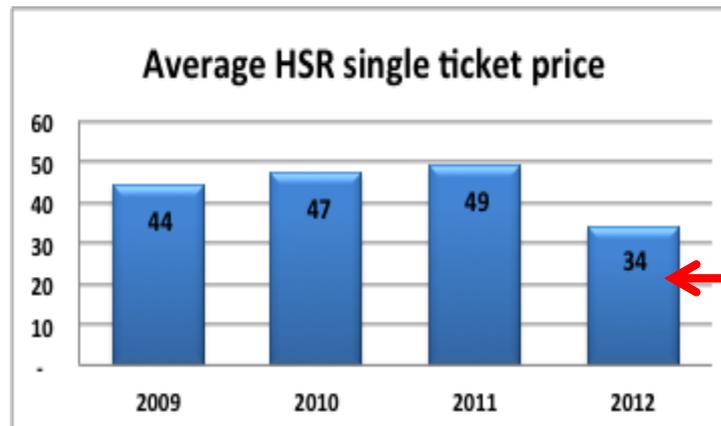
Source: ART 2016; Trenitalia, NTV, Crozet (2016)



In 2015, Ryanair, operating on Rome-Milan Orio al Serio moved out of the market.

The effect of Open Access: Prices

- Competition pressured prices down...
 - effect of price discrimination strategies (promotional fares and new price structures), **PRE ENTRY**:
 - On the Milan-Rome (MI-RM) route, one-way fares reduced an average of 31% between 2011 and 2012 (the year of entry into operation of NTV; Cascetta and Coppola, 2014; p. 184)



Strategic
behaviour:
-31%

The effect of Open Access: Supply

- The main routes experienced a **change in the structure** of supply:
 - The **number of HS connections grew by 26.7%** over the period 2009-2013 (from 30 daily connections in 2009 to 38 in 2013) and by **53% over the period 2009 to 2016** (with a total of 45 daily connections);
 - Instead, the **number of *conventional rail services* fall by 22%** (from 9 daily connections in 2009 to 7 in 2013) by 44% to only 4 in 2016 → ***substitution effect* (create demand for HS)!**
- It seems that Trenitalia implemented an ***entry-deterrence strategy by increasing its supply*** (as Alitalia did for the airline industry), with the purpose to ***pre-empt the rival about the allocation of slots***.

Competition or Privatization?

Tomeš, Z. (2017). Do European reforms increase modal shares of railways?. *Transport Policy*, 60, 143-151.

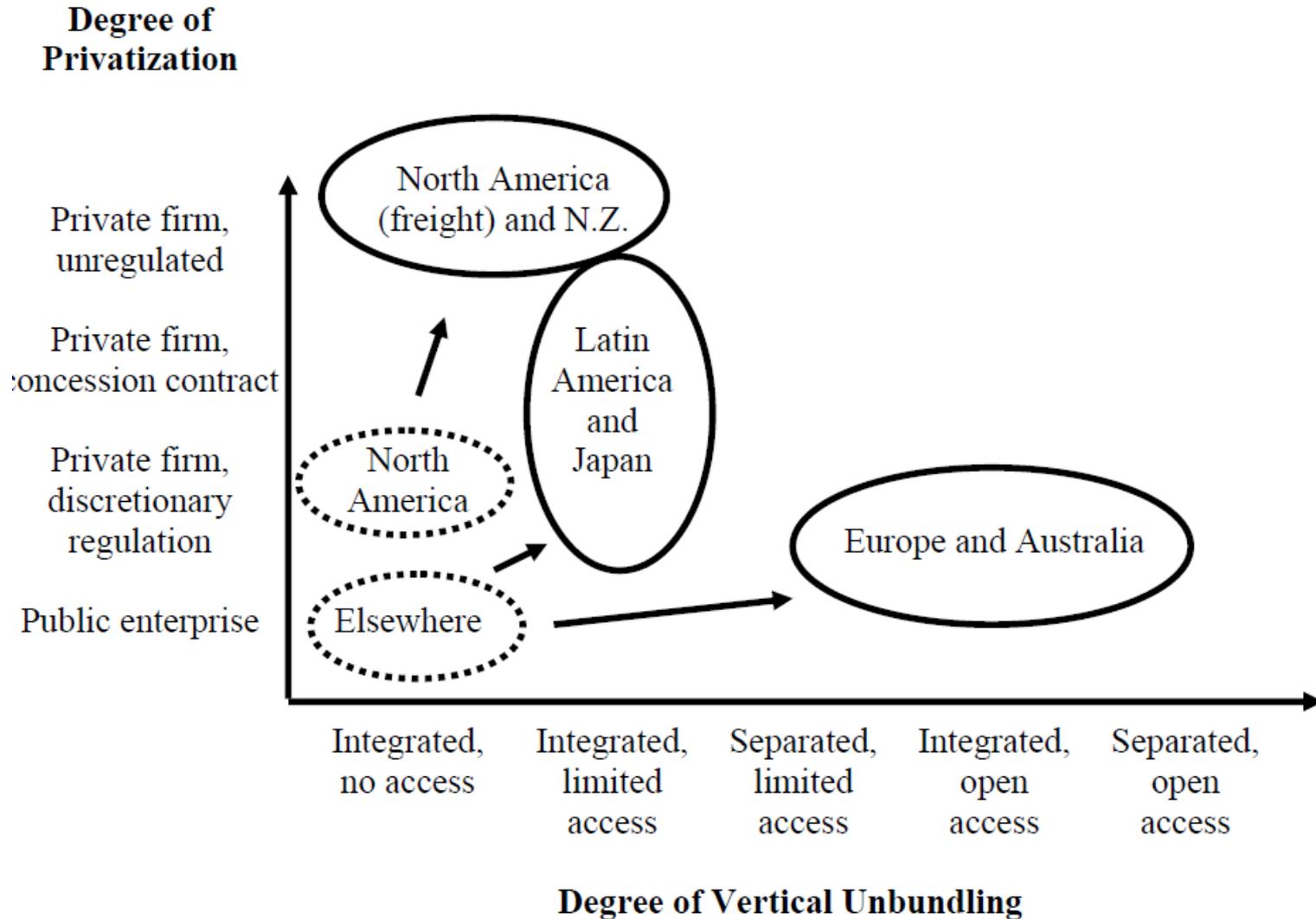
Motivation

- 50% of road freight over 300 km should **shift to rail** and water and the majority of medium distance passenger transport should go by rail by 2050 (EC, 2011)
- These goals underpinned by **reform initiatives** (vertical separation and especially competition entry)
- However, there are many factors causing long term **structural decline** of railways (DiPietrantonio – Pelkmans, 2004) and net benefits of **vertical separation are questioned** by some scholars (Pittman 2003, van de Velde et al. 2012)
- Do **European reforms** actually increase modal share of railways? Or could be privatization more effective?

Railway reforms in the EU

- **Vertical separation** = a complete institutional separation of the infrastructure manager and the incumbent operator
- **Competition entry** = actual entry of the non-incumbent operators on the freight and passenger rail market
- **Horizontal separation** = institutional separation between passenger and freight operations of the incumbent
- **Freight privatization** = privatization of freight operator

Reform options



Results

Dependent variable: MODAL SHARE PASSENGER
 Estimation method: Fixed effects

Dependent variable: MODAL SHARE FREIGHT
 Estimation method: Fixed effects

	(1)	(2)		(1)	(2)
Reform variables			Reform variables		
VERTICAL	-1.685**	-0.7033*	VERTICAL	-3.337*	-3.192*
SEPARATION	(0.7730)	(0.4126)	SEPARATION	(1.747)	(1.786)
COMPETITION	-0.1281	0.06591	COMPETITION	-0.5381	-0.6265
	(0.3153)	(0.2649)		(0.4716)	(0.4410)
HORIZONTAL	0.3559	0.9653**	HORIZONTAL	2.669*	
SEPARATION	(0.5712)	(0.4757)	SEPARATION	(1.471)	
			- WITH		3.426**
			PRIVATISATION		(1.705)
			- WITHOUT		1.201
			PRIVATISATION		(2.325)

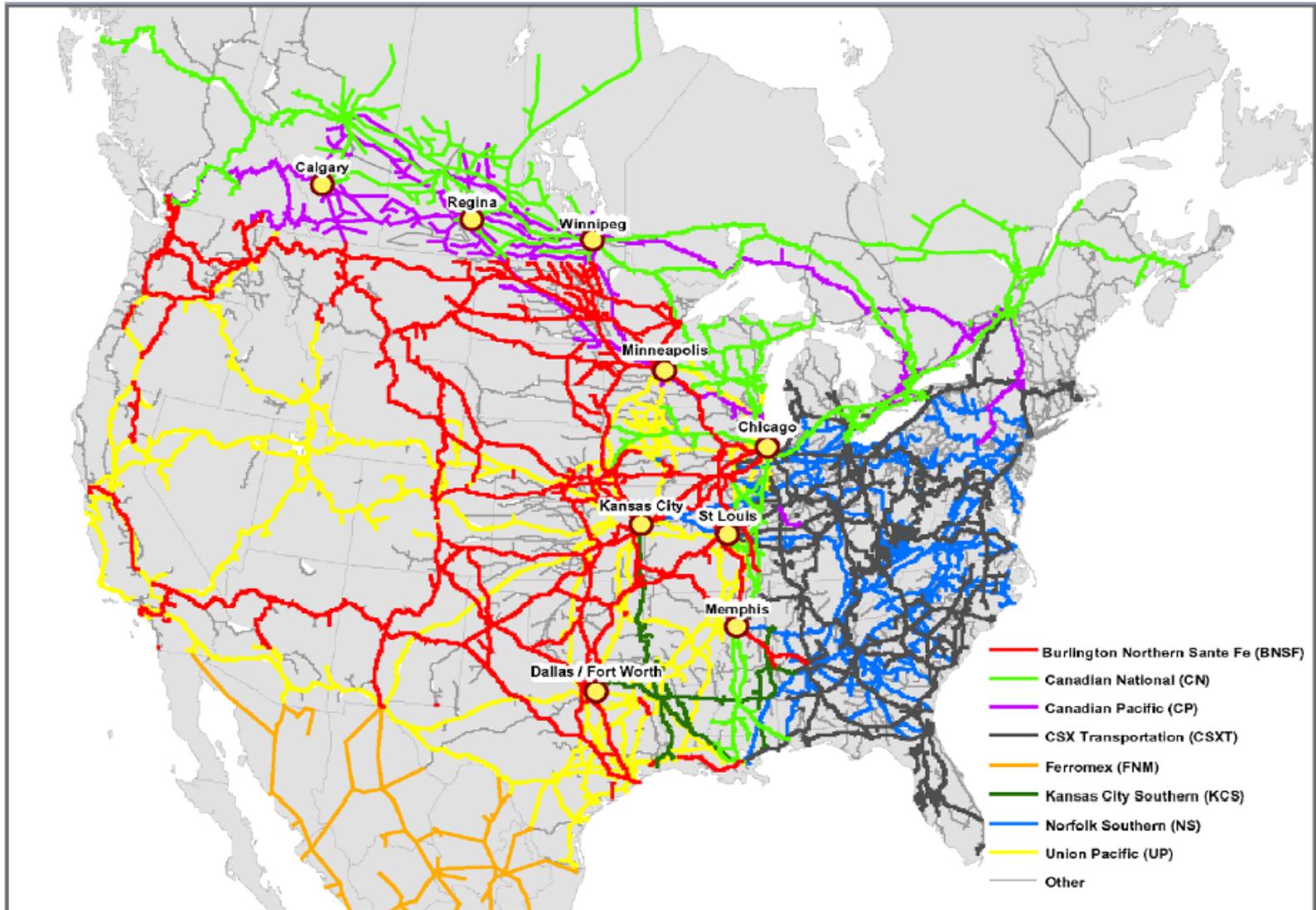
Conclusion

- There is no evidence that principal European reforms (**vertical separation and competition entry**) are increasing modal shares of European railways.
- The more promising reform strategy seems to be **horizontal separation**, especially when followed by freight privatization.
- There are significant differences in the long term development of railway's modal shares between **Western and Eastern Europe**.

COMPETITION OR PRIVATIZATION?

Canadian freight railways

North American rail freight market



Source: Rodrigue (2008)

Canada rail sector

In the 20th century two big transcontinental railroads:

- Canadian **National** (CN) – public
- Canadian **Pacific** (CP) - private

Canada (1980): Public ownership does or does not matter?

- The **efficiency** of public and private firms is usually compared in industries which have heavy regulation and limited competition.
- In this paper we present a case study in which the effects of **property rights** can be isolated from the effects of regulation on noncompetitive markets.
- We **compare** the postwar (1956–1975) productivity performance of the Canadian National (public) and Canadian Pacific Railroads (private).

Caves, D. W. – Christensen, L. R. (1980): The Relative Efficiency of Public and Private Firms in a Competitive Environment: The Case of Canadian Railroads. Journal of Political Economy

Estimates

Table: Average annual growth rate of productivity of CN and CP

	CN	CP	CN relative to CP
1956-63	1.9	1.7	0.2
1963-74	4.4	3.3	1.1
1956-75	3.1	2.5	0.7

Conclusion (1980)

- Contrary to the predictions of the property rights literature, we find **no evidence** of inferior performance by the government-owned railroad.
- We conclude that any tendency toward inefficiency resulting from public **ownership** has been overcome by the benefits of **competition**.

Privatization of CN

- In **1995** was Canadian National **privatized** after careful three years preparation
- Can we **infer** any interesting information out of this privatization?
- Hypothesis: If Caves and Christensen were right than we can **expect no change in performance** of CN due to privatization

Evaluation of CN privatization (2013)

- This article describes and analyses the **privatization** of Canadian National Railway (CN), a large railroad privatization.
- It uses data from **1990 to 2011** to compare CN's post-privatization operating performance with its pre-privatization performance.

Boardman, A. E., Laurin, C., Moore, M. A., & Vining, A. R. (2013). Efficiency, profitability and welfare gains from the Canadian National Railway privatization. *Research in Transportation Business & Management*, 6, 19-30.

Infrastructure, prices, output and market

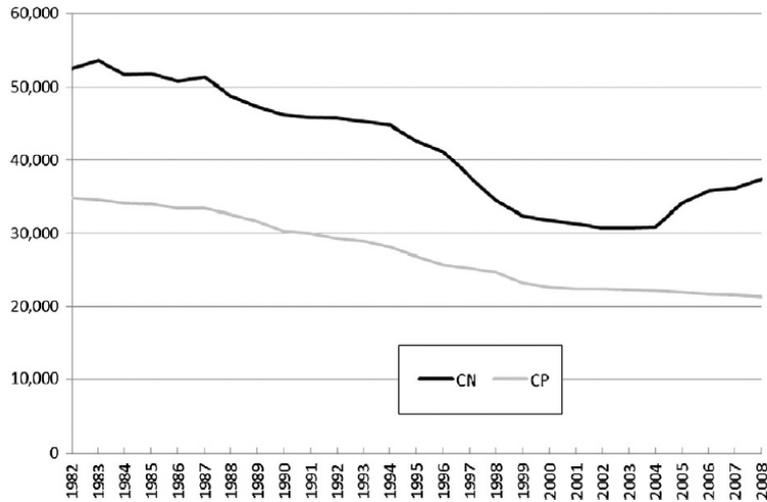


Fig. 1. CN and CP Canadian track operated (kilometres).

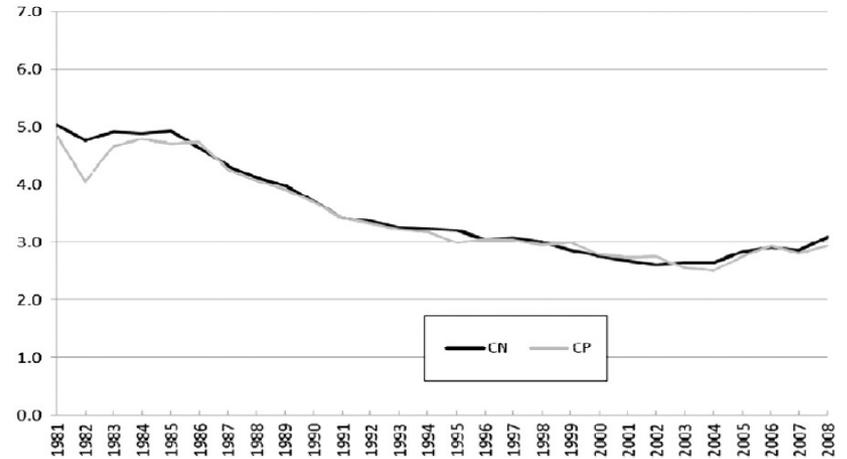


Fig. 2. CN and CP freight prices per revenue tonne-kilometres in Canada (2011\$).

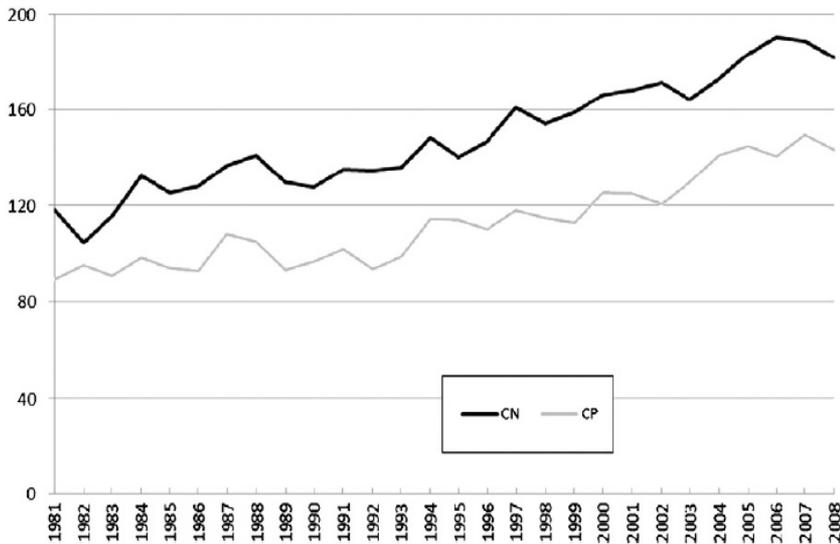


Fig. 3. CN and CP freight output in Canada (millions of revenue tonne-kilometres).

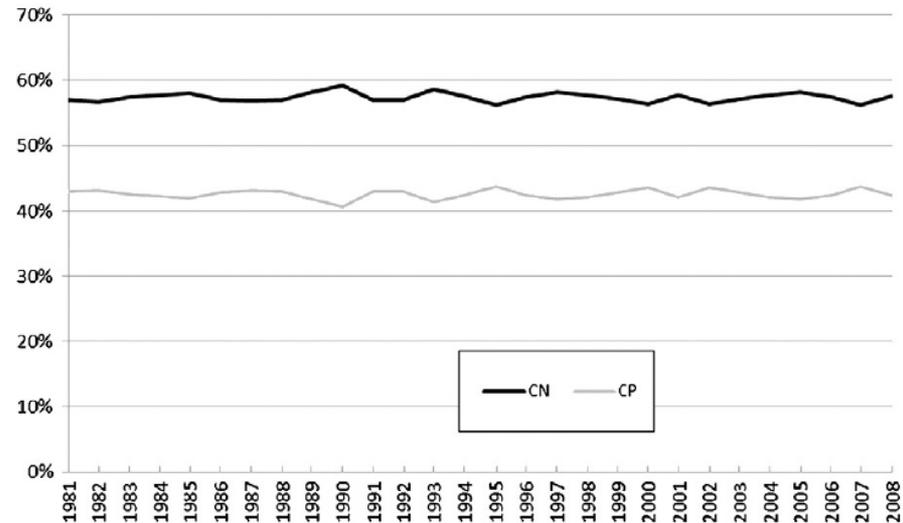


Fig. 4. CN and CP market shares in freight in Canada.

Employment and costs

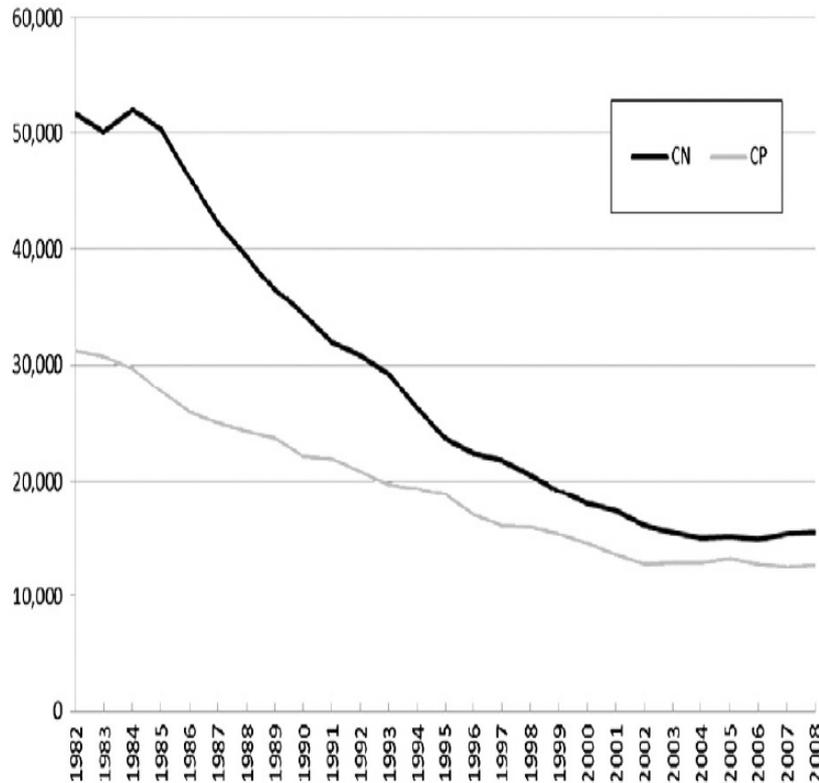


Fig. 5. CN and CP rail employment in Canada.

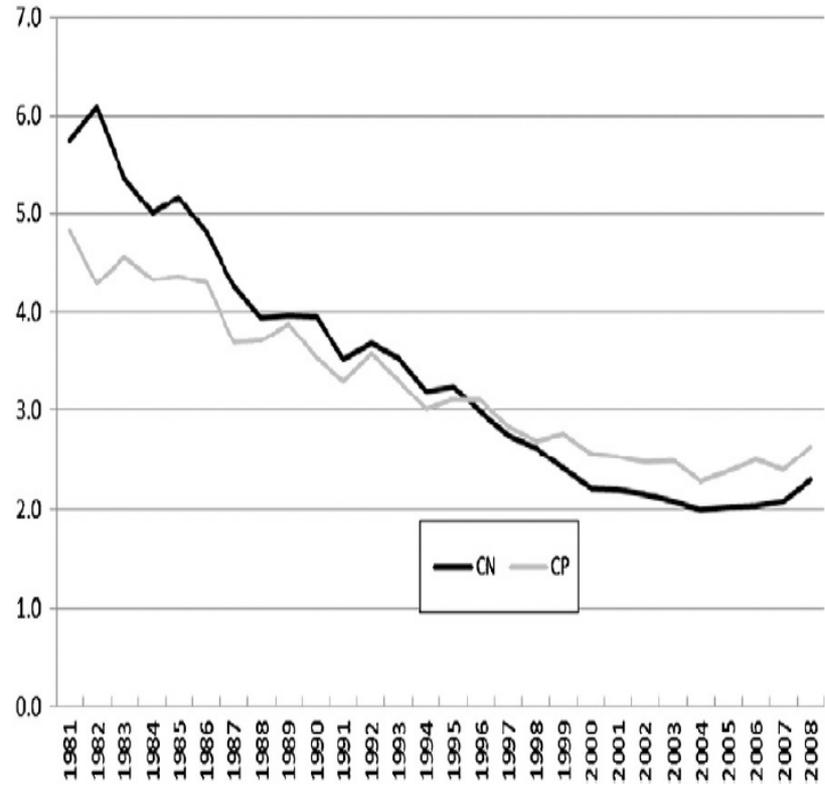


Fig. 6. CN and CP average total costs per revenue tonne-kilometre (2011\$).

Boardman, A. E., Laurin, C., Moore, M. A., & Vining, A. R. (2013). Efficiency, profitability and welfare gains from the Canadian National Railway privatization. *Research in Transportation Business & Management*, 6, 19-30.

Ownership does matter?

- The results demonstrate that CN **performed** substantially **better** following privatization,
- We find statistically **significant increases** over the long term (16 years following privatization) in sales, capital investment, assets, profit, profitability, productivity, dividends and corporate taxes paid.
- There was little change in the capital structure of CN and a significant decrease in employment.
- Using Canadian Pacific Railway as a basis for the counterfactual, we estimate that CN's privatization generated **social welfare gains** of approximately \$25 billion in 2011 Canadian dollars.
- The **Canadian government** received almost half of these gains, while CN's shareholders (most of whom were non-Canadian) captured the rest.

Summary

- Caves - Christensen (1980): found **no evidence** of inferior performance by the government-owned railroad CN. They conclude that any tendency toward inefficiency resulting from public ownership has been overcome by the benefits of competition.
- Boardmann et al. (2013): The overall results demonstrate that CN performed **substantially better** following privatization, both from an operational perspective and from a broader social welfare perspective.