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Evolving long-distance passenger services. From planned monopolies to deregulated competition



Evolving long-distance passenger services. From planned monopolies to deregulated competition

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- Introduction and aims
- Geography of LD transport in Italy
- Trend 1: specialisation
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Introduction and aims

EU policy pillars in the long-distance

Long-distance transport has been central in the EU agenda since the beginning (EC, 1992), around three pillars

- a. Infrastructure → **trans-European networks programme** → only limitedly met
- b. Liberalisation → **creation of a level-playing field** → much more visible to the citizens
- c. (Environment)



However, to obtain *a smooth functioning of and effective competition in the internal market*, there is further work to do to eliminate *all residual barriers between modes and national systems, easing the process of integration and facilitating the emergence of multinational and multimodal operators* (EC, 2011).



Introduction and aims

Air transport market

Today, EU air market is, *de facto*, a domestic market.

- Airlines compete in the market, without any prescription in terms of fares, network, timetables, ownership
- Exceptions are allowed to guarantee a minimum level of accessibility for remote regions through PSO contracts.
- In addition, start-up contributions are allowed to support the launch of new routes.
- Intercontinental routes are ruled by bilateral agreements except for those areas where Europe has contracted specific “open sky” agreements, such as for the North Atlantic.



While airlines are almost fully liberalised, airports instead require regulation. One issue, in some cases acting as a significant entry barrier, is that of slot allocation. The rule adopted in Europe is that of “grandfathered rights”, i.e. slots are not traded but are maintained by a company as long as it uses it continuously.



Introduction and aims

Railways



The liberalisation process of European rail industry, despite following similar principles, has been much longer.

- Basic model: vertical unbundling of the entire network, without privatisation.
- The separation is the pre-requisite for competition, being it *for the market* (in the regional transport) or *in the market* (as first option for the long-distance).
- Since 2010, any European rail company to operate any international service including domestic relations of an international service.
- Domestic services are liberalised in a few countries.

The most interesting things have happened in a limited group of countries, which liberalised the domestic segment before the European deadlines: Italy, Czech Republic, Sweden, Slovakia and Austria (Beria and Grimaldi, 2016) and possibly Germany (Flixbus) and Spain (recently announced: Porto-A Coruña) in the future.

In all of these cases, the newcomer is not a foreign incumbent, but a private company, often just founded.



Introduction and aims

Coaches

Coach transport has historically been marginal in most of European countries, dominated by rail, usually constrained in limited niche markets without rail.



- Basic principle: authorization regime, no exclusive concessions, head-on competition.
- Very limited barriers to entry and exit (see Megabus...), mobility of productive factors.

Early cases of domestic coach liberalisation show that after a period of steep growth, also in markets that were originally captive of rail or plane, evolution slowed down when maturity was reached.

The most impressive cases of coach liberalisation has happened recently and evolved extremely quickly. German, Italian and French (Augustin et al., 2014; Dürr et al., 2016; Dürr & Hüschele, 2017; Blayac & Bougette, 2017; Grimaldi et al., 2017) coach sector passed in a few years from an unknown niche to the headlines of newspapers, partially reproducing what has happened ten years ago with the low-cost airlines.



Introduction and aims

Paper aims

Despite its importance, the analysis of long-distance transport dynamics and policies has not reached the same understanding and dedicated study effort as the local transport services.

The aim of this paper is to contribute to **focus on some trends occurring in the long-distance markets** consequent to liberalisation and intermodal competition:

1. Operators and modal specialisation
2. Competition and price reduction
3. Mismatched infrastructure planning.

To do that, we will mainly refer to literature and to **Italy** case-study. Italy is an interesting case because it is one of the European countries where liberalisation in the long-distance is more advanced and more pervasive, showing how future continental markets could become.





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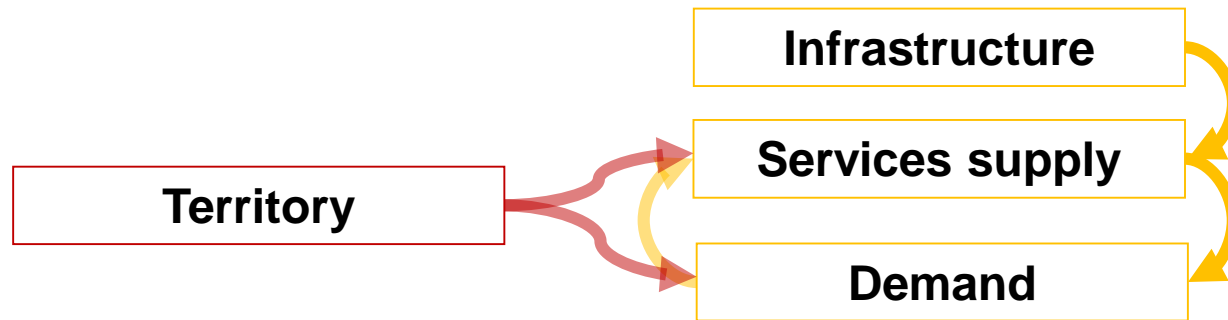
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Geography of LD transport in Italy

A missing picture

The overall picture of Italian long-distance transport was basically missing. No demand and flows available, no complete description of supply.



Even more than for local transport, in the LD **supply** and **demand** are strictly interrelated and only partially depending on the **infrastructure**.

Territory is also influencing (geography, demography, urban structure...)



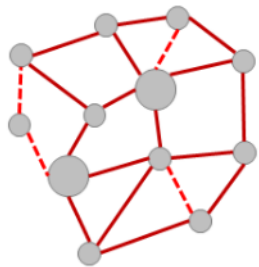
Geography of LD tr. in Italy

Demography

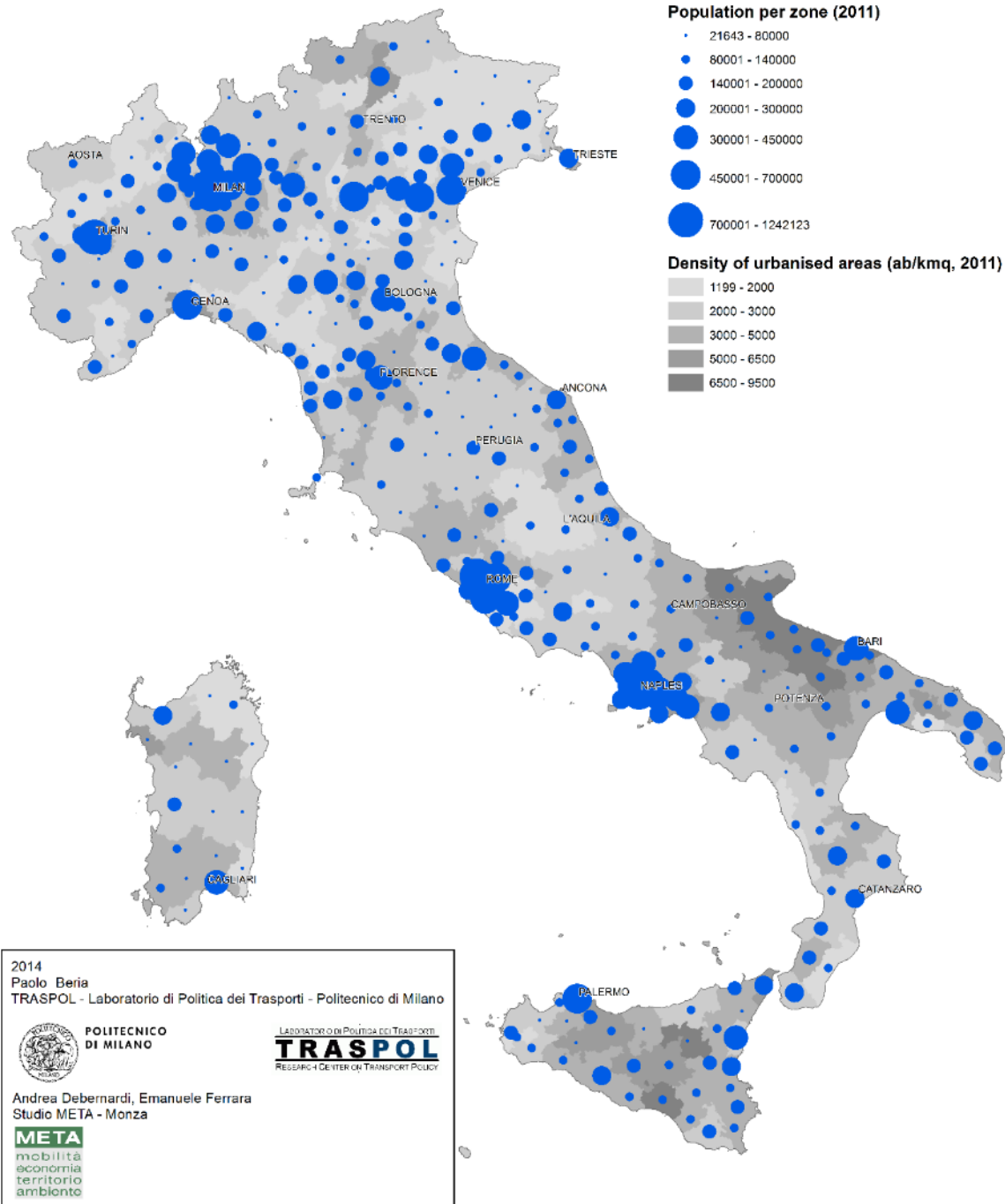
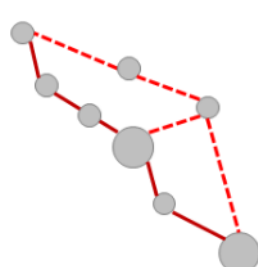
Italian population is unevenly distributed. Most of it live in the North, Rome and Naples.

Centre and South population is mostly along the coasts, while in the North the urban structure is more net-shaped.

B. Network structure



C. Linear structure





Geography of LD tr. in Italy

Rail supply

Long-distance rail services in Italy

→ One backbone line, a few main lines, some barely served lines and many regional-only lines.





Geography of LD tr. in Italy

Rail supply

Long-distance rail services in Italy, per municipality, in relation with the size of the city served.

→ Scarce correlation between size and supply, which concentrates along the Milano – Naples and Torino – Venice.

Source: QUANT project database, META-TRASPOL database





Geography of LD transport in Italy

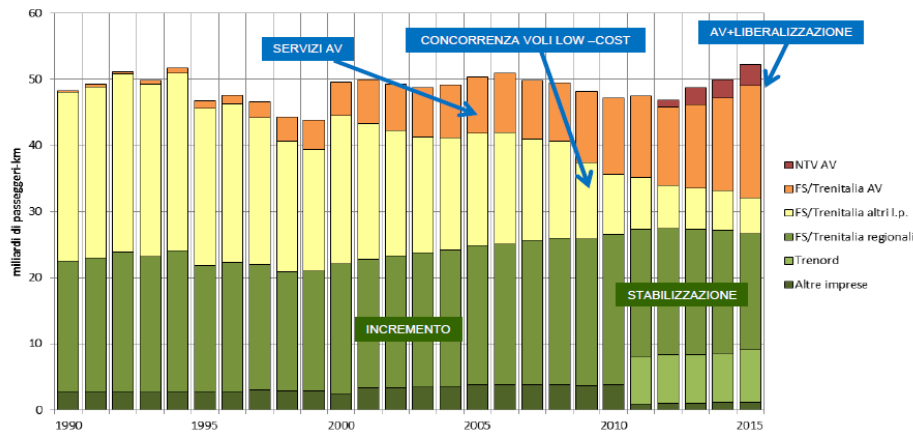
The strange case of Italy

ITALO is the only non-incumbent operator in a fully HS-segment. It is also, by far, the largest private long-distance pax company in Europe.

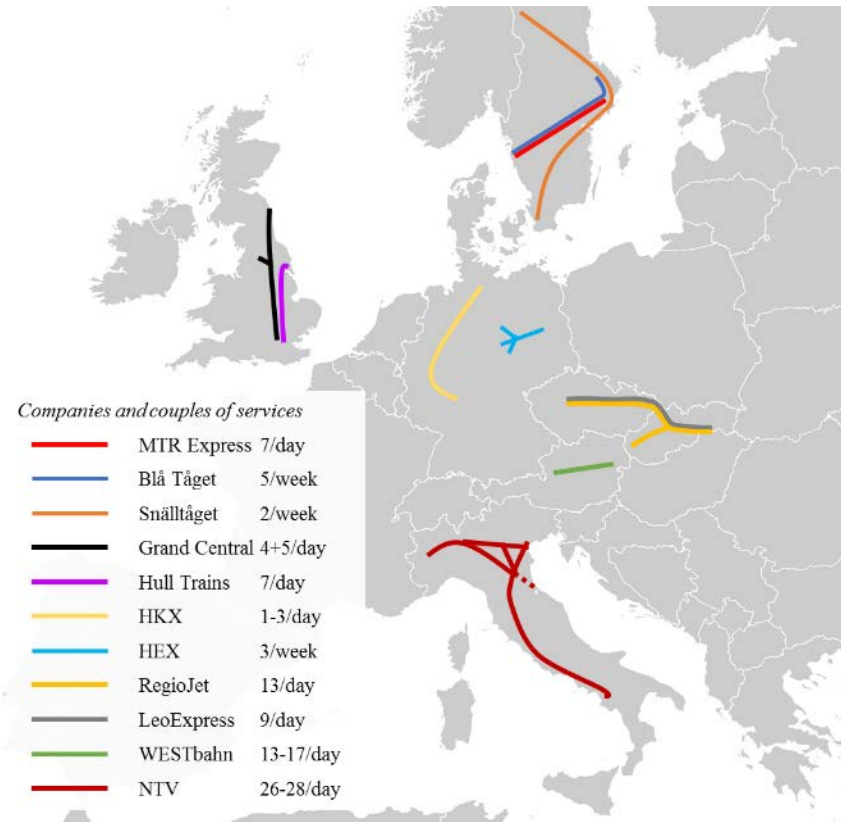
Competition has undoubtedly:

1. Lowered prices
2. Increased quality
3. Increased supply
4. Increased passengers

FIGURA V.2.6: ANDAMENTO DEL TRAFFICO FERROVIARIO PASSEGGERI (1990-2015)



Fonte: Elaborazioni su dati CNIT, ISTAT, NTV, Trenord.





Geography of LD tr. in Italy

Coach supply

The historical coach network, before the rise of liberalisation, bus per week.

→ Mostly in the deepest and sparsest territories of the South. There, almost every village has a handful of direct rides per week to Rome, Naples and sometimes also Milan/Turin.

→ Only partially been changed by the “revolution” occurred with the entry of large international operators

Source: QUANT project database, META-TRASPOL database





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Trend 1: specialisation

Routes vs. speed

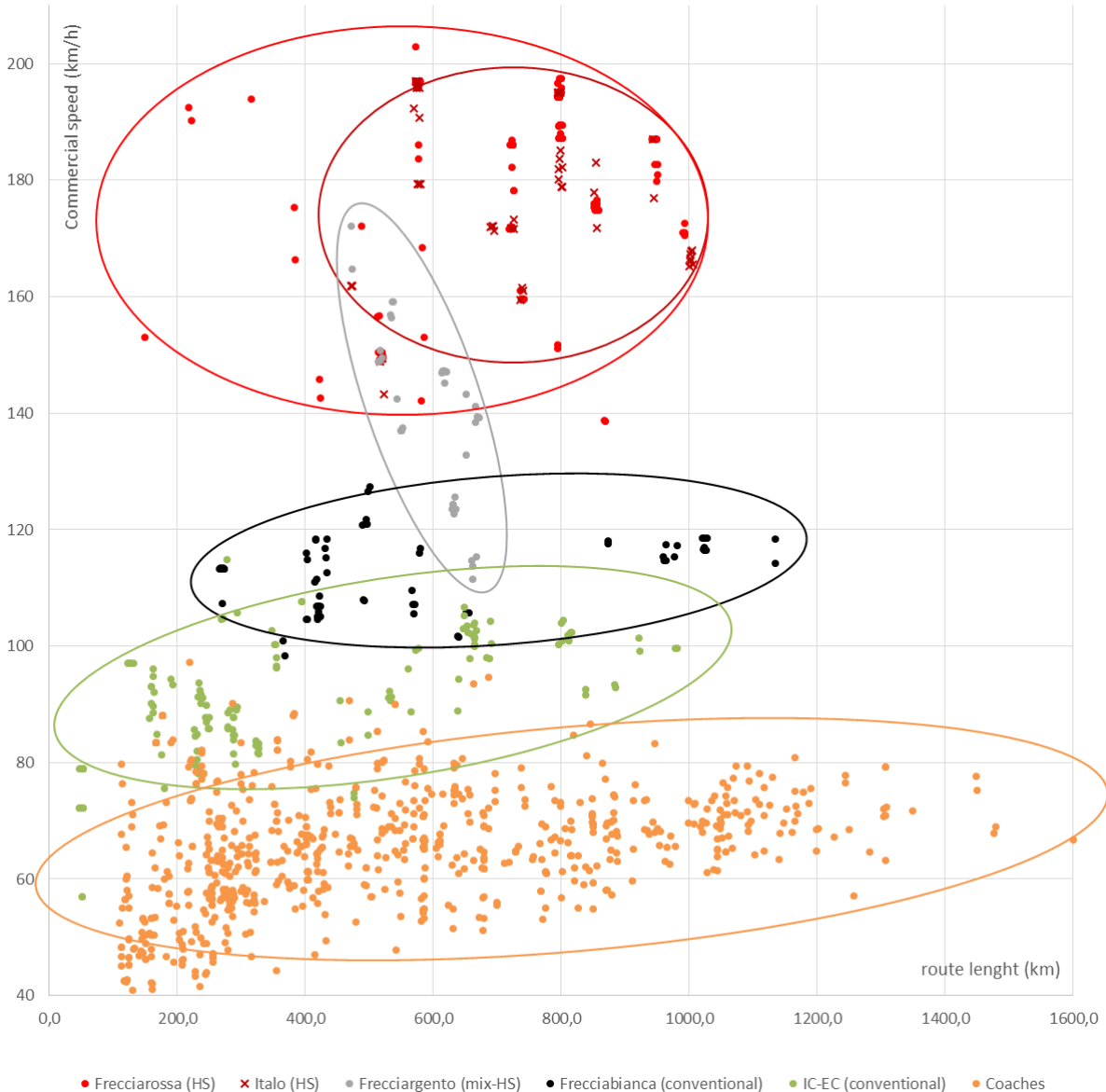
Modes and service types are quite specialized in terms of range and speed.

IC trains are clearly different from market conventional trains (FB) in terms of speed

Except few cases, HS (FR) is clustered between 400 and 1000 km, with commercial speed above 150 km/h. But recently FR trains are going out the HS network, reducing speed.

Mixed HS-conventional trains (FA) are all 600 km long (all centered in Rome) but different speed

Coach not specialized





Trend 1: specialisation

Routes vs. speed

However, easily-recognizable schemes such as air p2p or H&S are not yet present in land transport.

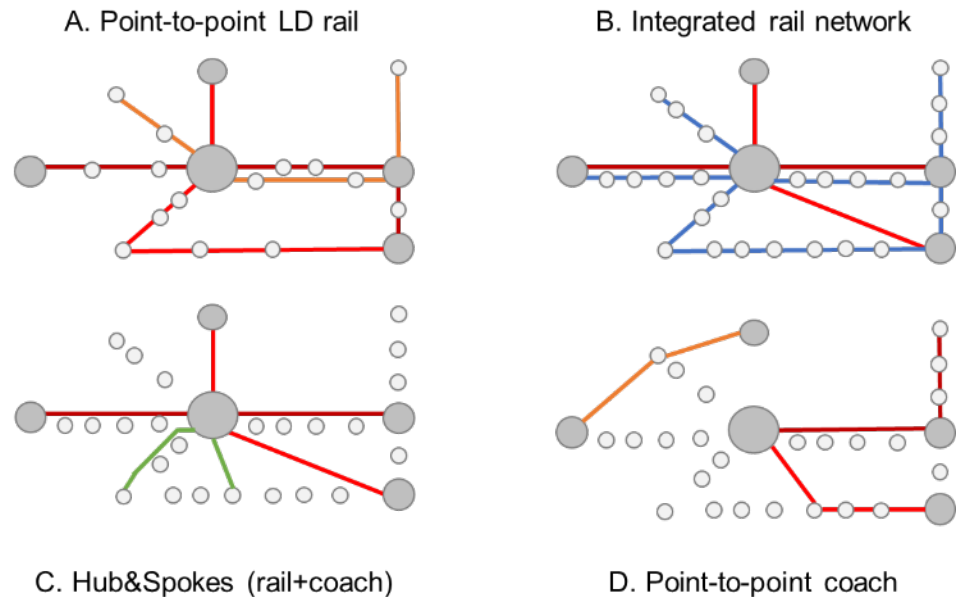
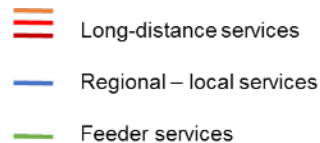
- a. How minor destinations are connected (directly, indirectly)
- b. If there is a hierarchy among services (fast vs. slow services)
- c. If there is coordination among different lines in a hub&spokes network.

Rail

A → B (Trenitalia), C (Italo, Freccialink)

Coach

D, but H&S is rising (Flixbus)

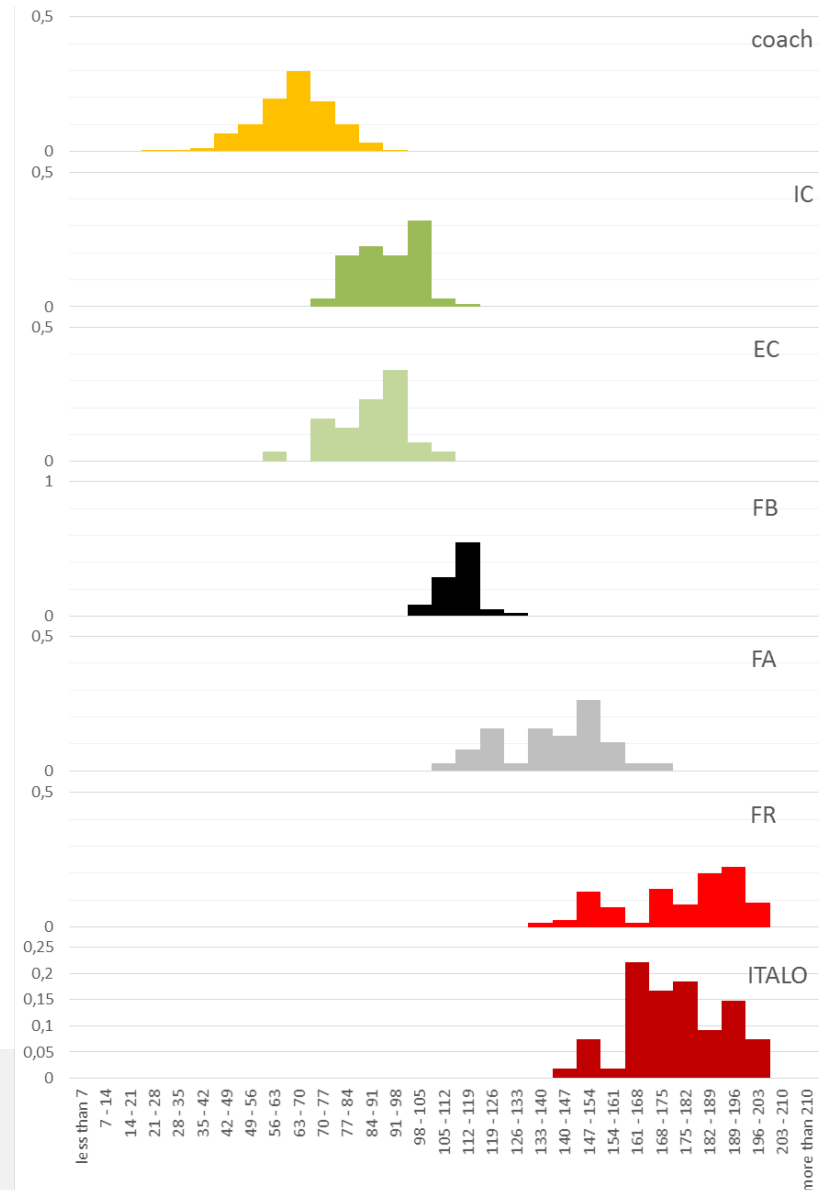




Trend 1: specialisation

Commercial speed

Commercial speed [km/h]

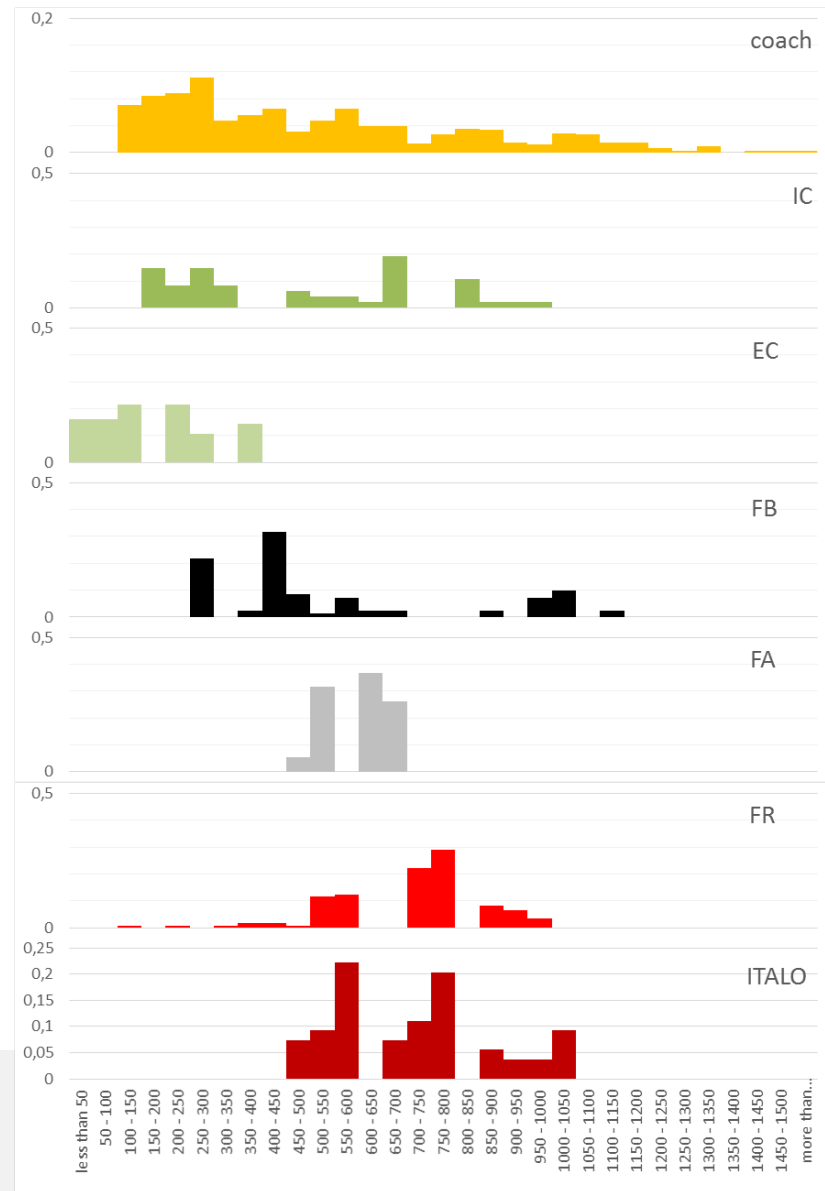




Trend 1: specialisation

Route length

Route length [km]

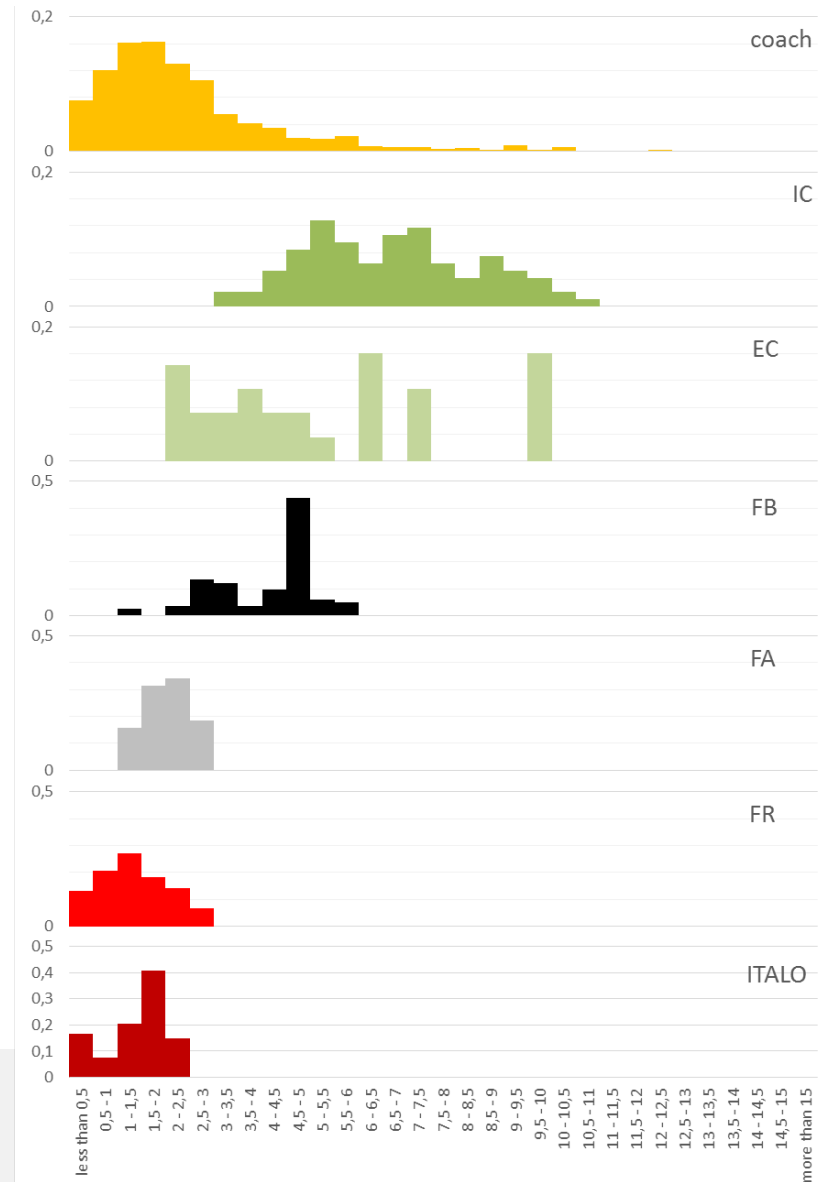




Trend 1: specialisation

Capillarity

Capillarity [stops/100km]





Trend 1: specialisation

Main facts

1. From coach to HS trains, land transport is clearly segmented.
2. “unspecialized” trains still exist: the IC, calling at many stops, low speed, subsidised. They serve as social service, but how effective?
3. International trains are the slowest
4. Some coach lines are faster than slower trains
5. The competitor is quite similar to the incumbent(’s top class services). This is not obvious, as theory suggests specialization to enter in a market and other newcomers in EU did it



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Trend 2: competition and prices

Different prices

The end of regulated prices did not match with price differentiation, as the incumbent did not push too much towards yield management before competition has started.

Pricing is now central in companies' strategies.

There is evidence that **rail and coach prices are mutually influenced, which means that the long-distance market is becoming a unique market.**

For example, coach prices are influenced by high-speed services (which is not obvious, given the “distance” in terms of performance!).

*...coaches position themselves an option for last-second purchases and for economy users. However our model tells us an interesting fact, probably unique of the Italian case. **Where there is a high-speed service, coach companies price less than on routes without high-speed competition (-6.33%).***

Source: Beria et al, 2017. Intercity coach liberalisation in Italy: fares determinants in an evolving market



Trend 2: competition and prices

Methodology

Thanks to a huge database of coach and rail prices, we computed four measures:

$$\text{Average min. daily fare (Train LD)} = \frac{\frac{1}{n} \sum_{i=1}^n a_i}{km}$$

minimum tariff, observed on a route, for all the trains operating on day i

$$\text{Average min. daily fare per service (Train LD)} = \frac{\frac{1}{n} \sum_{i=1}^n \left(\frac{1}{m} \sum_{l=1}^m b_l \right)_i}{km}$$

Minimum daily tariff, observed on one single train

$$\text{Average fare (Coach LD)} = \frac{\frac{1}{n} \sum_{i=1}^n \left(\frac{\sum_{l=1}^m c_l w_l}{\sum_{l=1}^m w_l} \right)_i}{km}$$

Avg. Monthly fare * tickets sold

$$\text{Average fare (Carpooling LD)} = \frac{\left(\frac{\sum_{i=1}^n d_i w_i}{\sum_{i=1}^n w_i} \right)}{km}$$

Database consistency:

RAIL all trains connecting 60 origin-destination pairs in Italy for 130 days

COACH all companies, 188 routes in Italy, 18 months between 2016 and 2017

BLABLACAR March to Nov 2015 (81 days), every OD relation, 356,000 trips



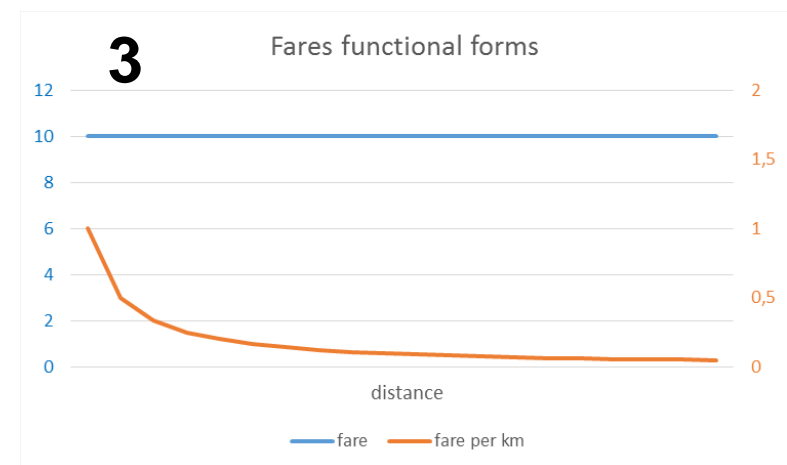
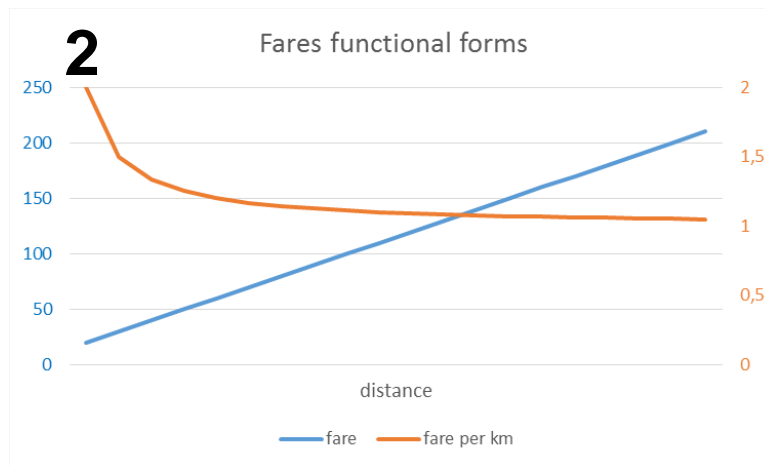
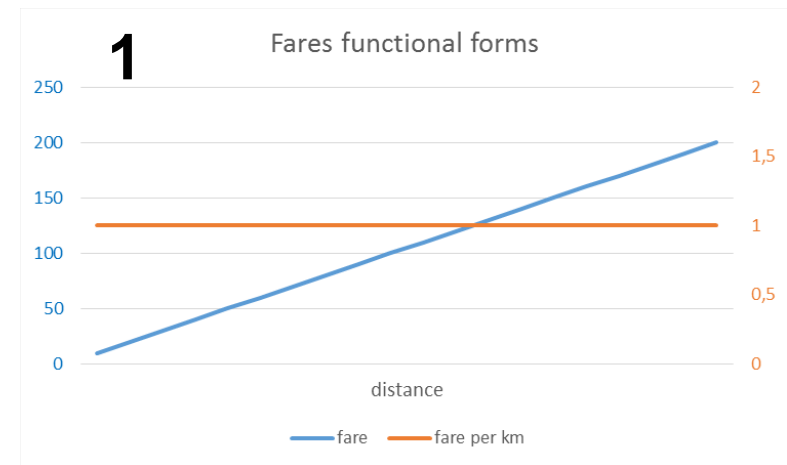
Trend 2: competition and prices

Fares functional forms

We can assume three functional forms for fares, generalised as

$$\text{FARE} = \alpha + \beta \cdot \text{distance}$$

1. Linearly distance-dependent ($\alpha=0$)
2. Distance-dependent with entry price
3. Flat ($\beta=0$)





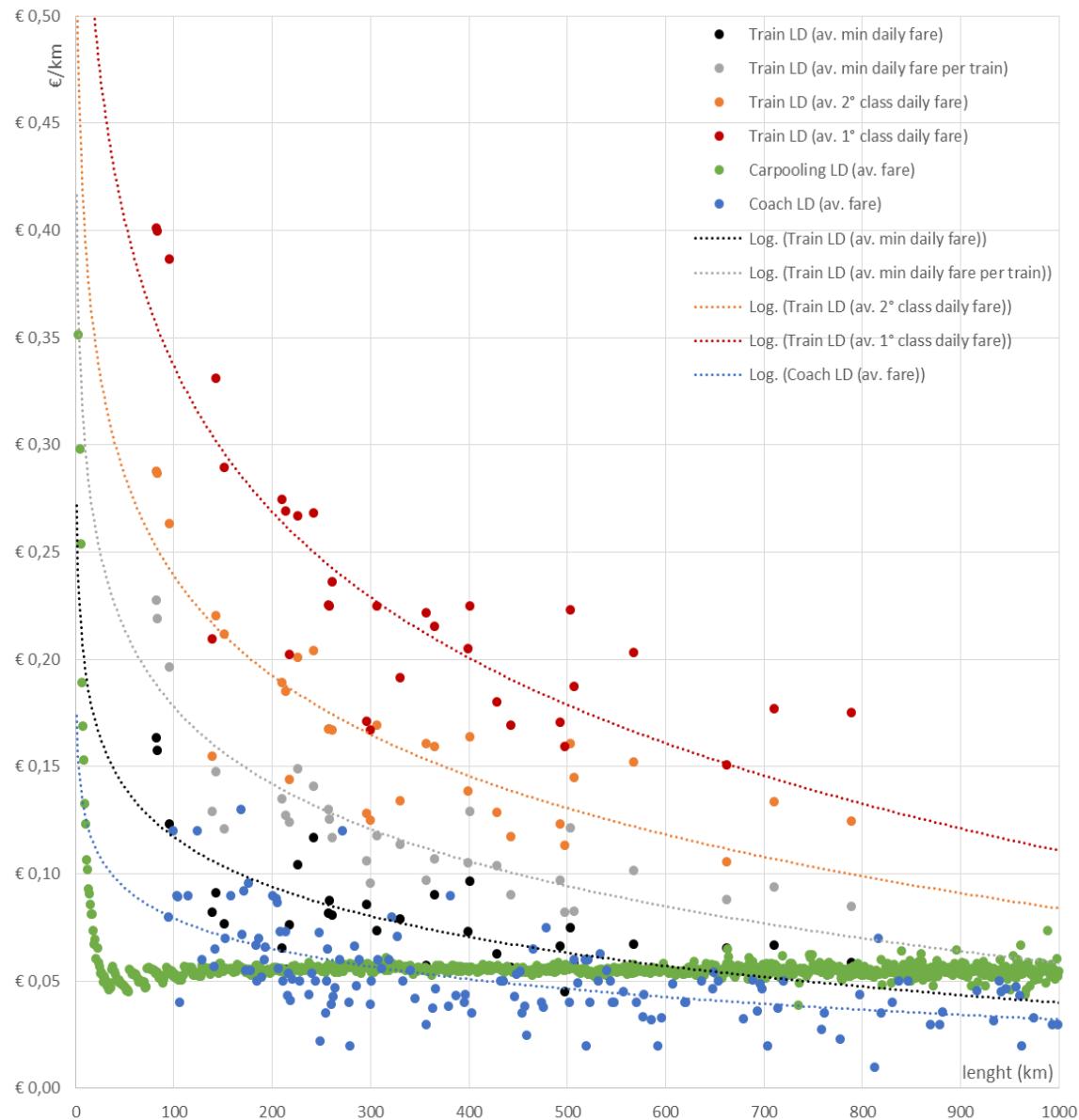
Trend 2: competition and prices

Price profiles per mode

Italian train fares are **distance-dependent with entry price**, but with a significant dispersion: according to OD couple, average prices vary up to $\pm 25\%$.

This depends on:

- **Availability** (promotional fares may not be available or disappear soon)
- **Route and competition** (routes in competition cost significantly less: Milan-Rome -40% with respect to before competition; -15% Milan-Ancona. Beria et al, 2016)





Trend 2: competition and prices

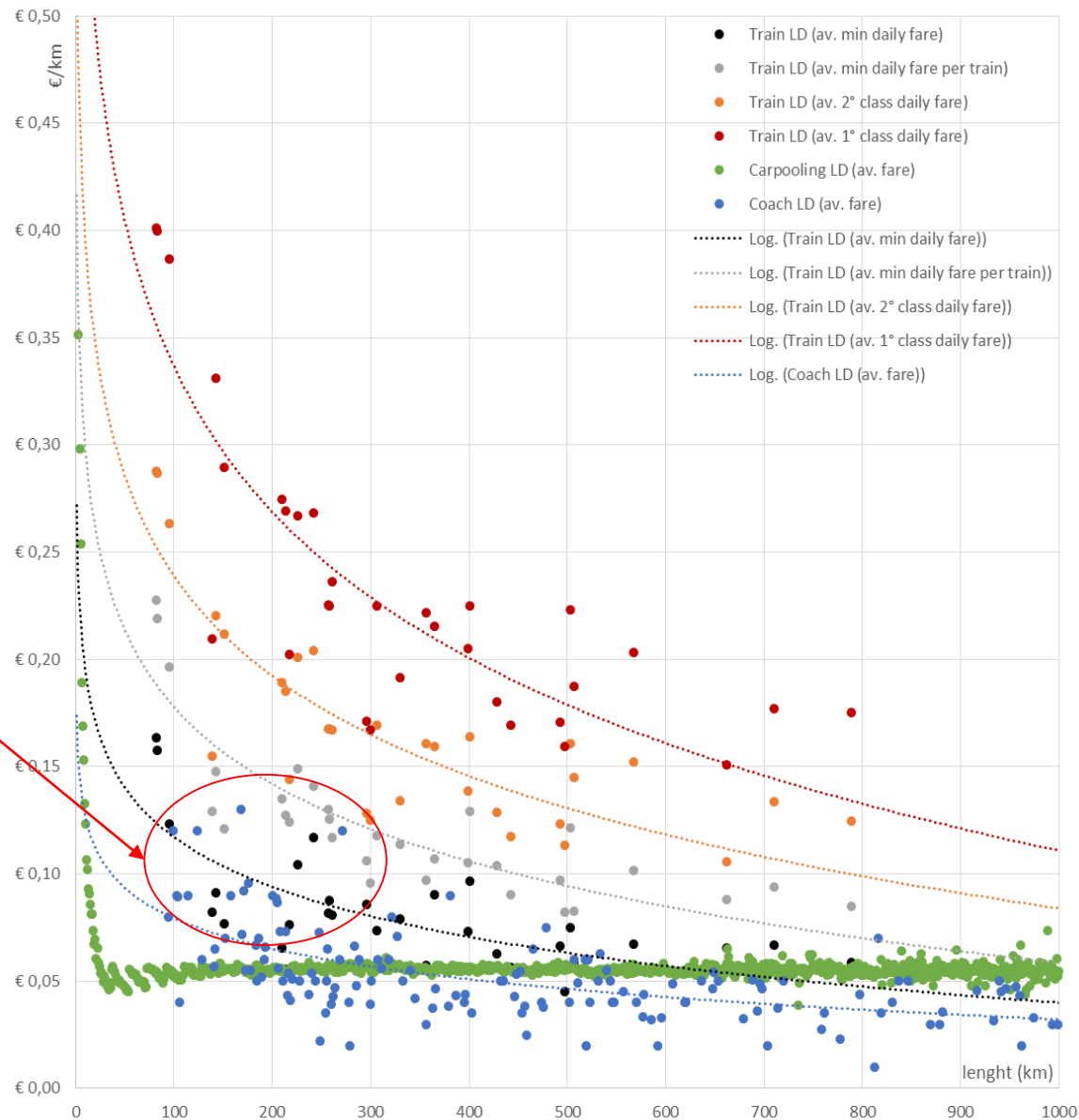
Price profiles per mode

Coach fares are **distance-dependent with entry-prices**, but with a proportionally larger variability.

Dispersion is obvious, as companies are many and services extremely differentiated.

Significantly, the **lower boundary of rail prices is lower than higher coach prices**. This is probably rare elsewhere.

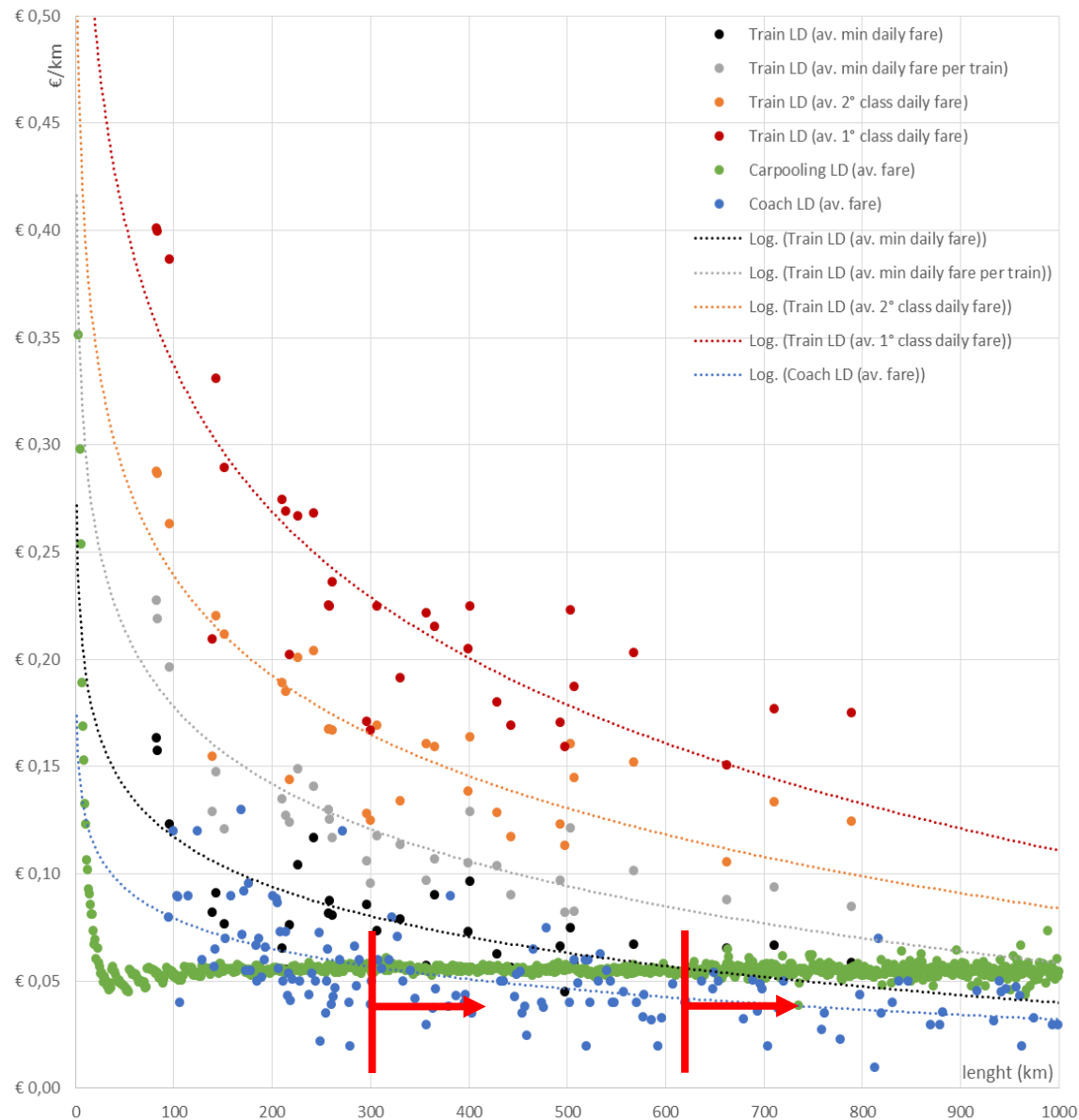
- Rail competition
- Coach could be faster on some routes





Trend 2: competition and prices

Price profiles per mode



Carpooling is, instead, a typical example of **linearly distance-dependent fare**: the entry fare is so small that it is soon invisible in the price.

Rather, there is a slight increase with distance: drivers accept lower revenues for shorter routes.

Blablacar is often seen as a competitor by coaches (in Spain in particular).

This is partially true, but **coach is cheaper above 3-400 km!** (and often also below 200). Also cheapest trains on >600 km!



Trend 2: competition and prices

The effect of competition

We analysed 3 routes in Italy:

Milan – Rome (580km): high speed, a lot of competition (Trenitalia vs. Italo)

Milan – Venice (260km): fast conventional, no competition, rich route

Milan – Pisa (280): “not-so-fast” conventional, no competition, subsidized route (prices are capped).

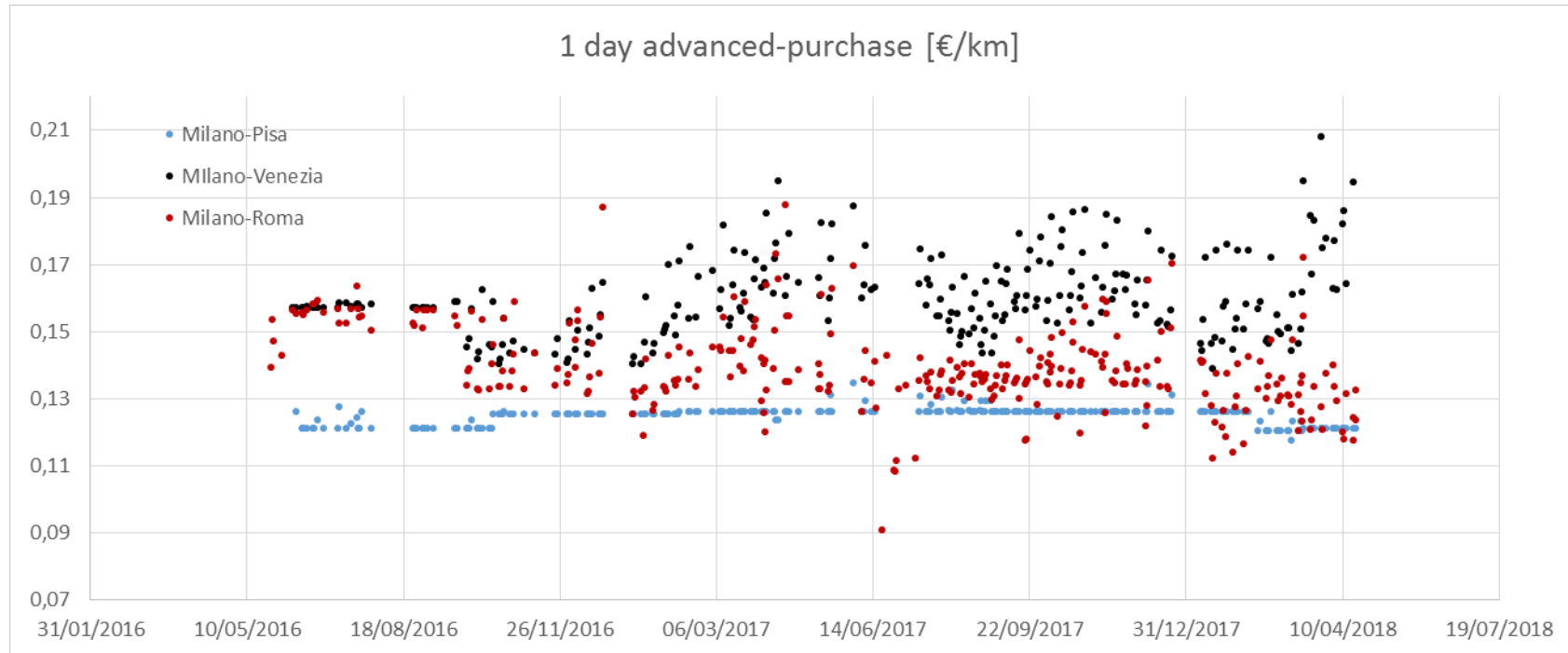
We represent the trend of **average daily minimum price (the average of the lowest price of each train)** across the period of analysis, for 1 and 10 days of advanced purchase.



Trend 2: competition and prices

The effect of competition

1 day advanced-purchase



Mi-Ve prices much higher than any other (and not HS!)

Normally, the Milan-Rome price is 13-15 cent/km, Milan-Venice is 15-19.

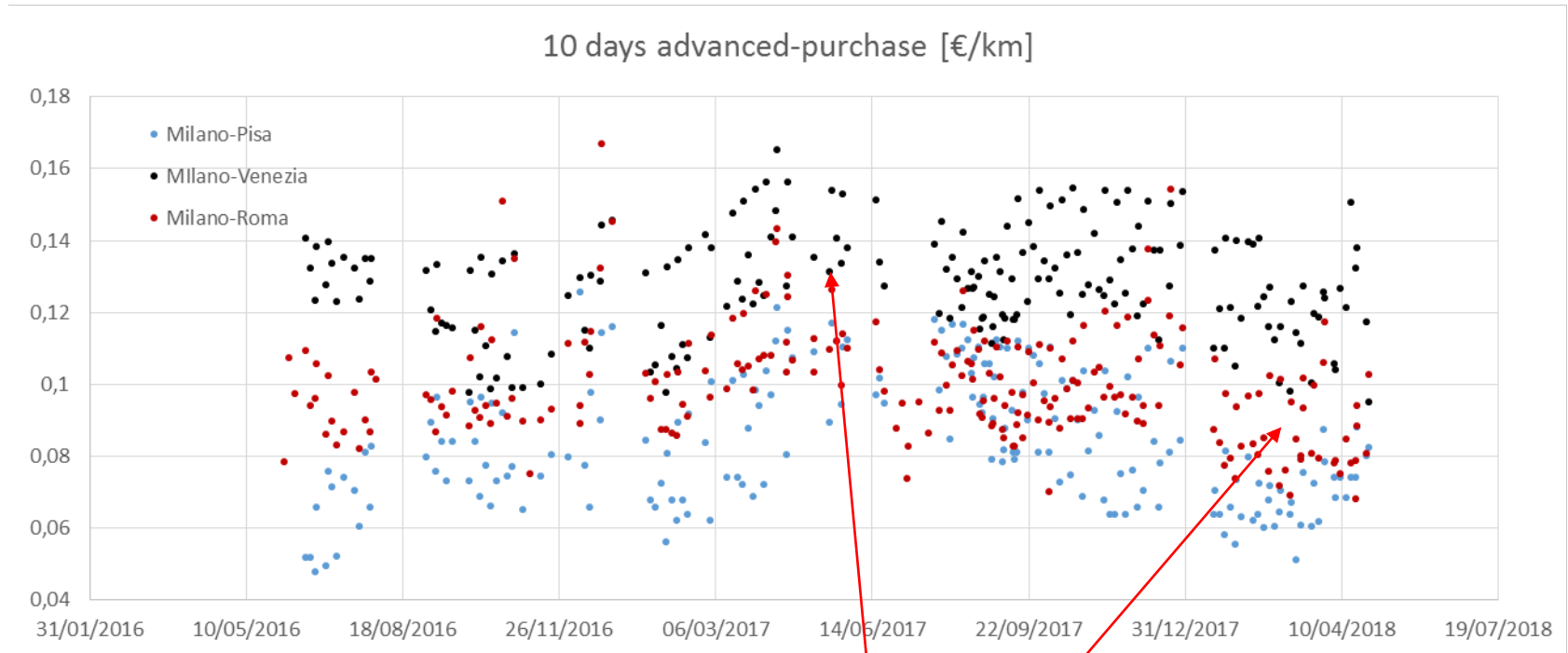
Milan-Pisa, prices reach the cap and no variability



Trend 2: competition and prices

The effect of competition

10 days advanced-purchase



Mi-Ve remains the most expensive, but the gap is smaller: promotional prices exist and serve to fill the trains (2/hour per direction)

Typically routes in competition cost proportionally less when demand is lower, with respect to peak periods when all supply is used.



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Trend 3: mismatched planning

Infrastructure planning vs. market driven supply

To date, most of long-distance markets are under market conditions and not subject to any centralized planning.

However, **infrastructure planning** remains in the hands of the Ministry of Transport and, limitedly, to regional governments. This fact translates into **a potential mismatch between the real needs of market players (and ultimately of users) and the planning and design choices related to infrastructure.**



Trend 3: mismatched planning

Italian planning history

We can recognize three phases in the recent (>1990) infrastructure planning:

We can recognise three phases of national infrastructure planning:

- i. 1991-2001: the national transport plans;
- ii. 2001-2016: the non-plan, the “Legge Obiettivo”;
- iii. 2017-now: programming and evaluation.

The most significant phase in terms of expenditure and expectations is the 2001-2016, even if HS has been planned during the previous phase.

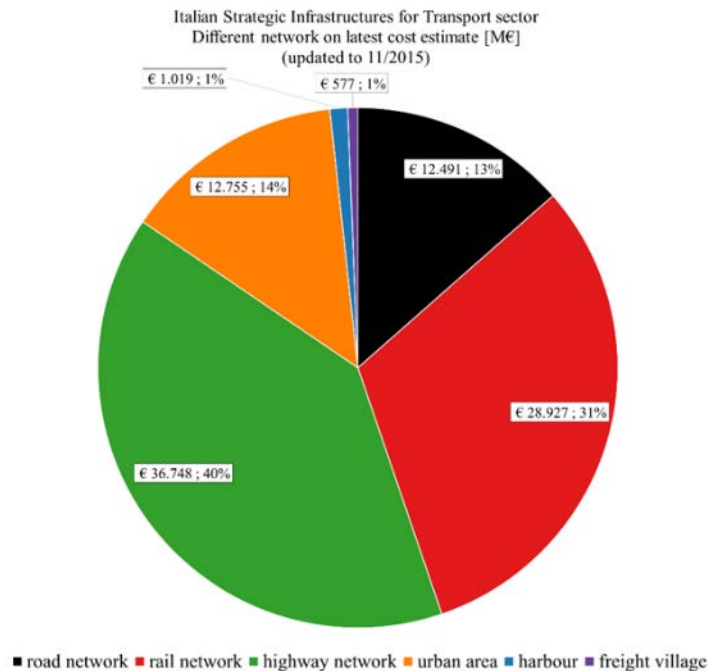
That is the season of the **megaprojects**.



Trend 3: mismatched planning

The "Legge Obiettivo" focus

Excluding highways (where part of the investment is undertaken by the concessionaires), the largest share is held by **rail network (31%) of planned works**.



Type of investment	%	Total cost [M€]
Freight node	1%	1.148
Port	1%	737
Highway, capacity expansion	4%	4.141
Highway, local connection	2%	1.983
Highway, national corridor	42%	38.536
Road, capacity expansion	1%	478
Road, local connection	3%	2.479
Road, national corridor	1%	1.340
Local public transport	13%	11.901
Fixed links	0%	26
Rail, capacity expansion	1%	872
Rail, high-speed line	20%	18.255
Rail, international corridor	8%	7.525
Rail, node	3%	2.495
Rail, regional line	1%	601
TOTAL	100%	92.517

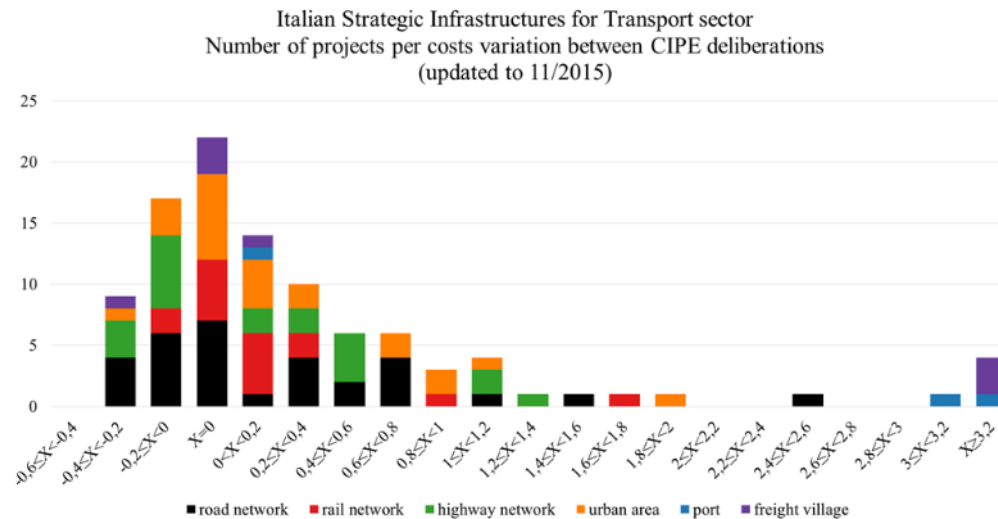
→ Almost all planned infrastructure (especially rail) is for the long distance, but long-distance is a minority share of Italian mobility.



Trend 3: mismatched planning

Cost overruns

Literature about cost overruns is only partially confirmed. Cost overruns exist, but the main problem is overdesign (Beria et al., 2018)



	N° of projects	First cost estimate [M€]	Latest cost estimate [M€]	Difference [M€]	Difference [%]
road network	31	€ 9.756	€ 12.491	€ 2.735	28,0%
rail network	16	€ 22.269	€ 28.927	€ 6.658	29,9%
highway network	20	€ 30.514	€ 36.748	€ 6.234	20,4%
urban area	23	€ 8.853	€ 12.755	€ 3.901	44,1%
port	3	€ 442	€ 1.019	€ 576	130,2%
freight village	8	€ 318	€ 577	€ 259	81,6%
TOTAL	101	€ 72.153	€ 92.517	€ 20.364	28,2%



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Conclusions & further research

Conclusions

We see that **long-distance market is increasingly specialised**, with levels of supply ranging from HS trains to low-cost buses. Every type of service tends to stay in well defined boundaries (e.g. luxury bus or low cost HS does not exist).

There are evidences that **all prices are interdependent**: sub-markets are actually one single market (train, HS, coaches, air, blablacar...) or tend to be. No *indian reserves*.

There is evidence of **significantly different price behaviour under competition**.

Infrastructure planning seems totally unlinked with services and demand needs.



Many improvements can be done (and will)

- a. **Calculation of competition level** (different years, 3 modes, HHI)
- b. Description of **price dispersion**
- c. Detailed analysis of prices (**econometrics**) to control all significant parameters (type of service, distance, inter- and intra-modal competition, speed, etc.)



Thank you for your attention!!!

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Beria P., Bertolin A. (2018). *Evolving long-distance passenger services. From planned monopolies to deregulated competition*. Mimeo.