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# **A COMPARISON OF RAIL LIBERALISATION LEVELS ACROSS FOUR EUROPEAN COUNTRIES**

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## **ABSTRACT**

The paper presents the results of a research on railway regulation and liberalisation in Italy, France, Germany and Spain. The analysed fields of regulation are the relationship between the State and the rail companies, network access conditions by operators, slot allocating and pricing schemes and how public service obligations are defined, paid and regulated.

The aim of the paper is to give a comparative overview of the rail regulation from a critical point of view, rather than descriptive. The regulatory frameworks are outlined and then assessed according to their implications on the liberalisation level and on the effective market opening.

The conclusions are that the actual level of liberalisation is still scarce and only in some cases the opening level is increasing. Market penetration of newcomers is significant only in niche markets. An issue emerging from the work is the opposing attitude of incumbent railways against liberalisation and the role of decision makers in backing this behaviour. The strategies followed to limit the outcomes of the liberalisation process are different across the country sample. However, all the incumbents argue with the self-referential declaration of efficiency, public service obligations and they claim to be under an excessive and unfair foreign competition. These arguments are yet embedded in legislative, organisational and economic settings supporting these positions like the common ownership of network and services, the permanence of dominant positions and favourable financial conditions.

*Keywords: railways, liberalisation, regulation, Europe, Italy, France, Germany, Spain*

## **1 INTRODUCTION**

The principles of European railways liberalisation covered in the directives EC 2001/14 and EEC 91/440 are supposed to be applied in the European countries in a similar way, driving to similar outcomes. In reality, the national interpretations vary substantially and this difference is deepened by the different starting point of the national rail companies (European Commission, 2006).

The issue of rail liberalisation is quite vast. Literature deals both with cases and theoretical aspects. A limited number of comparative works is also available, providing a sort of comparison among liberalisation levels.

There is some evidence available on railway liberalization and the set of options for restructuring which has already been implemented in different countries and circumstances. There are also international comparisons on the status of market opening in the European rail markets of the EU. The review of this evidence shed some light on the understanding of railway liberalization policies.

In a comprehensive review of productivity and efficiency for the rail industry, Oum, Waters and Yu (1999) found that practically all the studies surveyed concluded that competition and deregulation improved productive efficiency. "For example, Canadian railways have achieved higher productivity growth than their US counterparts during the 1960s and the 1970s because Canada liberalized its rail pricing regulation in the 1960s. US rail productivity growth has been significantly higher following the extensive deregulation implemented by the Staggers Act of 1980".

In the case of freight deregulation, Winston (2006) and Pittman (2007) describe the changes in the American railway industry after the introduction of competition. It is important to remember that companies were already private when deregulation started. The key element of deregulation is the introduction of freedom and competition, and how this affects the way companies take short-term and long-term decisions on pricing, quality and investment in capacity and new technology.

Intermodal competition appears crucial. From a shipper's perspective, the intensity of competition at the route level among alternative modes is far more important than the number of railroads at the national level. No large railroad entered the industry following deregulation, while the number of railroads at the national level declined substantially as carriers consolidated through end-to-end (vertical) mergers and parallel (horizontal) mergers' (Winston, 2006).

This is common in the deregulation of railways. No big number competition is expected and competition between different modes of transport is one of the essential elements of the reform. Deregulation helped the railway companies to improve their productivity and financial results, reorganizing their networks through mergers, cutting unprofitable services, reducing the staff and negotiating new contracts with shippers.

One of the most rewarding facts following deregulation was that productivity gains and cost reductions benefited shippers also, and therefore were not capitalized as monopoly rents as some sceptics with the new policy expected. Intermodal competition played a major role in the final distribution of the efficiency gains.

There is some econometric evidence on the effects of deregulation in the railway industry. The main point with the econometric analysis reported below is the difficulty to capture key

elements due to the differences in types and intensity of the implementation<sup>1</sup>. We know that European governments have pursued, with different degree of enthusiasm (and with the resistance of the former railway monopoly) the reform decided in Brussels; therefore, the variable “reform” in the econometric analysis is unable to account for the factual content (effort, commitment, credibility) of the legal reform (see Quinet, 2006; Campos, 2006).

Empirically, the evidence so far does not allow concluding on what is the best option for the restructuring of national railways. At least, we already know that more efficiency is associated with financial and managerial autonomy (Oum and Yu, 1994; Gathon and Pestieau, 1995; Cantos, Pastor and Serrano, 1999; Cantos and Maudos, 2000), competition (Rivera-Trujillo, 2004), and the gradual introduction of reforms (Friebel, Ivaldi and Vibes, 2004); on the contrary, subsidies contribute to inefficiency (Oum and Yu, 1994; Cantos and Maudos, 2000).

Regarding vertical unbundling, the empirical evidence is inconclusive: Cantos, Pastor and Serrano, (1999) find that the separation of infrastructure and operations increases efficiency. The opposite result is reported in Rivera-Trujillo (2004) and in Friebel, Ivaldi and Vibes (2004) is found no significant effect. It is worth noticing that in Friebel, Ivaldi and Vibes (2004), United Kingdom is excluded due to data availability.

In Sweden vertical unbundling seems to work well and in the UK, referred as the paradigm of how the separation of infrastructure and train operation has more costs than benefits, it is difficult to disentangle those problems associated to generic technical difficulties from those linked to the lack of political commitment or crude opposition to reform (Glaister, 2006).

In the case of the European Union, the slow path of the liberalization process, compared with other network industries, also points to the existence of interest groups opposing the lack of privileges in a heavily protected industry. As Nash (2006) points out “...relatively little progress had been made in introducing more competition to the railways and virtually no open access operations had emerged. Many argued that this was because the existing legislation only provided for minimal rights of access for international rail freight operators, and left the administration of those rights, and the charges to be levied, in the hands of the existing rail operators, who had a vested interest in preventing them from being exercised.

In practice, looking at the European Union experience concerning the attitude of member countries to rail restructuring, there is another reason to support vertical separation, even in the presence of coordination problems and transaction costs. The case for vertical unbundling is stronger when the existing public monopoly has some privileges and it is politically difficult to pursue the reform without reducing its actual power.

Besides, former comprehensive regulation and political interference, and the bureaucratic culture embedded in the productive structures of the former public monopolies, make it very difficult to go ahead with the modernization of the rail industry without eliminating the former railway-government link, and modifying the way investment and operating decisions are taken.

In a recent comparison of the liberalization in the rail markets of the member states of the EU, Switzerland and Norway (Kirchner, 2004), it is considered that the introduction of competition continues to develop at a slow pace. Some of the conclusions of this

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<sup>1</sup> See Friebel, Ivaldi and Vibes (2004).

international comparison are eloquent with respect to the inconsistency between the declared objectives of the reform and actual government policies:

- Many countries, even though they grant documented, non-discriminatory access to the market, in practice do not allow this due to expensive and complex licensing and approval processes. In particular, the approval of rolling stock still represents a considerable market access barrier.
- In many Member States, the structural changes announced over the last two years in essence frequently incorporate existing institutions under a different name.
- The regulatory bodies to be set up are frequently located in the ministries of transport of the Member States without the necessary resources, which is inadequate in regard to the functions to be exercised and the present initial stage of the liberalisation process.
- In spite of the distinct trend towards internationalisation observed, the market shares of external railway operators remain only marginal.
- only one third of the countries is, in a positive sense, clearly distinguished from the rest of Europe in regard to market access barriers.

Recently, Nash (2008) provides a review of EU countries deregulation models, with particular respect to the topic of unbundling and the effect on competition. He recognizes the existence of three different models, namely the complete separation of infrastructure from operations, the separation of key powers and the holding company structure. Countries completely unbundled (UK, Sweden and Estonia) present now the broadest competition, but could face transaction costs in the future. In general, passengers service open access must face the problem of barriers to entry caused by the existence of large incumbent network operators and seem thus to have a limited future. Rather, franchising appears as more realistic for the large majority of markets, characterised by a limited dimension.

With independence of the chosen model for railway reform, the restructuring of national railways requires the redefinition of the role of the government. The different models for the introduction of competition requires a government committed to play a new role in the railway industry: promote and enforce competition, limiting the regulatory tasks to protect consumers from monopoly abuse (when competition is not feasible or undesirable), and to guarantee fair competition between different operators, leaving productive decisions to the private sector. All existing barriers have to be reviewed; their factual impact on closing or impeding market access has to be analysed, so that such barriers can be eliminated or at least been reduced in order to open up former national railway markets and achieving the goal of a single and competitive European railway market.

The purpose of this paper is to draw a picture of the railway sector liberalisation in four European countries: Italy, France, Germany and Spain. The aim is to describe, compare and comment the most relevant aspects related with railways regulation and economics.

In particular, the topics discussed are:

- the relationships between the state, owner and client of the national railways, and the company itself;
- the conditions for the access to the network;
- the way slots are allocated and priced;
- the way “social services” (or “public service obligations”, or “universal service”) are defined, paid and regulated.

## **2 THE INSTITUTIONAL AND ECONOMIC RELATIONSHIPS AMONG ACTORS**

### **2.1 The permanence of monopoly conditions**

Germany and Italy are the two countries where the actual separation between infrastructure operator and service operator is wider. However, in both cases the network manager is still part (in Italy totally) of a public holding, together with the train company, and this makes the separation rather formal<sup>2</sup>. In Italy the owner of FS Holding is the Ministry of Economy, while the responsibility of contracts and regulation is the Ministry of Transport.

In the Spanish model the Ministry of Public Works is, in practical terms, in charge of everything, directly or by means of its regulatory agencies. Also, both rail infrastructure and services are managed by public bodies (ADIF and RENFE-op), owned by the same ministry despite controlled by different state secretariats and operating under a Program Contract.

Using a different model, France can be considered as a country where separation is high, as RFF and SNCF are totally independent and are not two branches of a holding. However, they are in conflict in two fields: first on the field of infrastructure charges and slot allocation, as in other countries, but also in maintenance management: RFF is obliged by law to use SNCF as a sub-contractor for infrastructure maintenance operations through a contract which is discussed between them and both are struggling on the clauses of this contract, in terms of finance and in terms of quality achievement. At the beginning, SNCF benefited of a large information asymmetry, but this superiority is shrinking along the years.

Moreover, in the four countries, the owner of the companies is the State (through different ministries) and, as we have already stated, is also the planner, the regulator and one of the main clients (when paying for public service obligations). This determines the existence of strong conflicts of interests that tend to slow down the liberalisation process.

### **2.2 Economic relationships**

The national railways may receive substantial transfers from state or regions, in various forms: investments, subsidies for rolling stock, for service, for maintenance, public service obligations contracts, etc. and other hidden subsidies. The structure of these public interventions is complex, slightly different according to the country and partially evolved over time.

From this point of view, the most important distinction is between the state aids, usually accorded “footing the bill” at the end of the year, and subsidies ruled by some form of contract. The first form is no more available, at least explicitly, because distorting the present and potential competition. Moreover, the distinction tends to be blurry because state owned rail companies benefit from the sovereign credit and there are strong political pressures to avoid bankruptcies of large companies.

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<sup>2</sup> The intended partial privatisation of German railways is the most “advanced” case of unbundling in the sample: even if still under the auspices of a unique financial holding (Deutsche Bahn AG Holding), the train operator company will be partially privatised. Of course, also in this case, the fact that the state is by far the main shareholder will probably neutralise the effect of this privatisation in terms of separation.

Table 1 summarises the different sources of explicit public funding.

Table 1. The structure of public support (tills) to the national railways.

	<i>Investments</i>	<i>Network maintenance</i>	<i>Services</i>	<i>Rolling stock</i>
Italy	State → RFI (Program Contract)	RU → RFI (access charges)	State → Trenitalia (long distance universal service)	No state subsidies before 2009 <sup>3</sup> .
	State → RFI (special laws for single investments)	State → RFI (Program Contract)	Regions → Trenitalia (regional services)	Large subsidies expected in 2010.
France	State → RFF (for those investments not financially profitable)	RU → RFF (access charges)	State and Regions → SNCF (for public service obligations)	For regional services, rolling stock amortization is a part of the financial arrangement of the contracts
		State → RFF (contractualised subsidies)	State and Regions → SNCF (for pension integration and for past debts)	
Germany	Fed State → DB Netz (BSchWAG act and VIFGG act)	RU → DB Netz (access charges)	Regions → DB (regional services only, RegG Act)	No subsidies
	Regions → DB Netz (GVFG act)	No subsidies		
Spain	State → ADIF	RU → ADIF (access charges)	State → RENFE-Op (public service obligations)	State → RENFE-Op (40% of investments)
		State → ADIF	Regions → RENFE- Op (regional contributions)	

There are some relevant differences among countries, not only in the total amount of subsidies (see section 0), but also in the structure of the public intervention. The public budget can finance railways in four main fields, or “tills”: infrastructural investments, network maintenance, public service obligations and rolling stock. Assuming that rail infrastructures always need public investment, the straightest structure of transfers implies the financing of the social services only, with train access charges (TACs) sufficiently high to recover maintenance costs.

The German system goes in this direction, despite of the complexity of the federal asset. There are no multiple tills, since the state explicitly finances only investments and some services. Two exceptions should be mentioned. Firstly, some regional tenders explicitly say “new rolling stock expected or preferred”, but this cannot be defined as a subsidy if there is an explicit request for new trains. Secondly, the network operator does not have, nowadays, direct subsidies. However, it must be noticed that transfers it receives for new investments include also “renovation” work, meaning e.g. track renovations of more than 1km or other

<sup>3</sup> Only 43M€ in 2007 from regions for regional rolling stock.

renovations with a long amortization period. According to how one defines the ambiguous concepts of “renovation” and “maintenance”, this may be seen as an implicit subsidy for maintenance<sup>4</sup>.

In France the State and the Regions provide funds to the railways for infrastructure investment and maintenance, for public service obligation and for past debt related to infrastructures<sup>5</sup>. The French case presents a relevant peculiarity: the strong and conflictual link between RFF and SNCF, with the first one largely dependent on the second. RFF, in fact, must use SNCF as unique contractor for the maintenance of the network RFF is responsible for. However, SNCF is also its main (nearly the only) client.

In Italy, the state transfers covered up to now three “tills”, except the rolling stock. This kind of subsidisation however is not forbidden; rather, the financing of rolling stock has been very limited until 2008 because resources are very scarce and regions cannot (or do not want to) subsidise. In 2009, in fact, a huge (2 b€) mid-term investment plan has been launched, half of which is paid by the Regions and the State. The state transfers are partially defined by service contracts and partially paid by lump sum transfers related to specific issues<sup>6</sup>.

The Spanish case is characterised by the nearly total absence of regional contributions (considering FEVE and other local companies as metropolitan). The largest share of public transfers comes from the central state. Similarly to France, in Spain the public purse provides significant contributions for all the four cost types (services, investment, maintenance and rolling stock). According to the current Program Contract, RENFE receives subsidies in exchange for PSO in Cercanias and Media Distancia services, not for Long Distance, HS or Freight services. These subsidies represent about 15% of revenues. The State also covers operating losses (about €150M per year in 2006-2010). Moreover, according to the Program Contract the state is contributing also by a co-financing of rolling stock.

## **2.3 Total transfers**

The total amounts of transfers for 2007 from States to the railways are collected in the following Table 2. For simplicity’s sake, the table groups the various kinds of transfers used in the countries, according to three categories: the transfers subject to a tender (comparable to market revenues), the non-tendered ones and those for infrastructural investments. The infrastructural investments are not fully comparable among countries because they may include both renewal and maintenance, depending on the length of the network, and new developments. Moreover, the ordinary network maintenance is grouped differently across the sample, being in some cases partially included into investments instead of ordinary expenditure. The total demand in the countries is given just to help a comparison of the orders of magnitude, but not to provide a punctual indicator of unit transfers.

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<sup>4</sup> The ambiguity of this definition is reinforced also by the fact that the subsidised monopolist is interested in defining the maintenance as “investment”, showing that the assets are increasing and not simply maintained.

<sup>5</sup> The part of the debt related to infrastructure has been calculated when RFF was created, in 1997, and when the asset of the former SNCF was split between SNCF and RFF.

<sup>6</sup> See next paragraph for further discussion.

Table 2. Total public transfers to sample railways

[M€/year]	<i>Italy</i>	<i>France</i>	<i>Germany</i>	<i>Spain</i>
Tendered transfers	approx. 100	0	4147	0
Non-tendered transfers	3224	6089		1772
<i>Demand (billions traffic units/y, excluding bus)</i>	<i>79,7</i>	<i>122,3</i>	<i>173,6</i>	<i>31,3</i>
Infrastructural investments	approx. 3900	2151	4270	2125

Sources: our elaborations on official balance sheets: Ferrovie dello Stato (2007), Cambini et al. (2005) and CESIT (2008); MEEDDAT/SESP, 2008; DB, 2007; RENFE, 2007.

## 2.4 Contractual relationships

The European railway system is slowly moving from a framework based on concessions to another based on licenses or contracts. Before European liberalisation the national railways were considered as a tool to provide citizens with a service, which was partially paid by the state by annual transfers. This mechanism usually drove to go beyond the available budget, that was annually balanced off-budget by additional transfers. This situation was seen as clearly not acceptable for services both for efficiency reasons (inefficient use of resources) and for market reasons (a subsidised sector is not compatible with market conditions).

Due to the unbalanced penetration of *market services*, the most evident evolution until now is the issue of *contracts of service*. Instead of transferring to the railways the requested resources, every transfer should be defined in a contract of service between the State and the provider, as if the state were one of the clients of its agency, together with users.

The issue of the respect of these contractual agreements seems not to be a major problem in the analysed countries, except Italy and Spain. In France and Germany, in fact, the law guarantees a more stable regulation concerning minimum duration and financing of public service contracts. It allows regions and railway undertakings to better plan quality and quantity of the services provided and investments in rolling stock. The effectiveness of contracts, in both directions, is strictly linked to the enforcement system related. In case of lack of enforcement, like in Italy, *both* contractors can disobey the contract signed, since no major negative consequences would occur. When this reciprocal contract enforcement is missing, the railways tend to spend more than the promised amount (rising their debt, like in Italy, or requiring the State-owner to pay the red at the end of the year, like in Spain) or produce less in quantity/quality or reduce investments (in the ways permitted by the Program Contracts).

## 2.5 Independent regulatory agencies

A rail regulatory agency is supposed to have at least two different roles, in addition to the safety aspects. On the one side it must ensure a non discriminatory and fair access to the network, i.e. the monopoly component of the system. On the other side, the same regulator (or another subject) is in charge of regulating the level of passengers' fares in case of competition *for the market*.

Concerning the network, in France an independent network regulator has been decided recently, at the end of 2009<sup>7</sup>; it is mainly concerned with infrastructure charges (advice to the State which decides) and access. It will also work as an appeal for conflicts between the rail operators and the infrastructure managers (in case of discrimination, non transparency, etc.). In Germany the Eisenbahnbundesamt regulates technical specifications and the BNetzA enforces the track charging and anti-discrimination rules set in the “Allgemeines Eisenbahngesetz (AEG)” and the “Eisenbahninfrastruktur-Benutzungsverordnung (EIBV)”. Italian and Spanish networks’ access non-discrimination is controlled by the Ministry, which also has a role in deciding the toll level applied. In Germany and Italy there is also a second controlling subject: the Antitrust authority has power to intervene in case of complaints by private companies, as recently happened in Italy with the newcomer NTV.

In France, the regulation on passengers’ fares is managed by the ministry for intercity transport. Regional passengers fares are fixed by the contract for regional services between SNCF and the regions. In Germany the regional services fares are defined in the contracts, while all the rest of the supply is market driven even if only one single provider exists. In Italy formally there is a price-cap rule, showing that the State wants to keep fares controlled for social reasons (see below). However, this rule is unattended and disappearing and the majority of long distance services is not-subsidised. In many cases FS changed historical capped services to “market” Intercity or High Speed services, sharply rising one-side their fares. Only for few services fares are kept artificially low upon Ministry request, despite not subsidised, as a consequence of arrangements between the two contractors and the local administrations<sup>8</sup>.

## **2.6 Comments**

The previous analysis allows to point out some important issues.

Firstly, despite differences across the sample, the actual level of unbundling is still quite scarce everywhere. In particular, the separation of the ownership of network and train company is missing, except in France. Also if the ownership separation is not foreseen by the European directive, it is commonly believed that this fact may slow down or even block (under certain conditions) the implementation of a fully liberalised environment at which the European directives were aiming to. In fact, we cannot exclude, *a priori*, that the common ownership of track manager and service provider may induce cooperative strategies in limiting the effects of competition.

Secondly, the structure of all the four analysed national railways is still strongly linked to the former “*command & control*” scheme, where the railways tends to be a pure technical instrument of political decisions rather than real enterprises. This fact is much more evident for SNCF and RENFE, while DB is a little more advanced (not particularly for the recent decision on privatisation, but for the better regulation apparently in force in Germany). Italian FS is in a legal framework that could help to move FS towards a genuine competitive

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<sup>7</sup> Through a law creating the “*Autorité de régulation des activités ferroviaires*” (Authority for railways activities regulation)

<sup>8</sup> It is likely that fares regulation will be kept fictitious also in the future, being it applied on very few “social” long distance subsidized trains.

behaviour, but strong resistances from politicians opposed to the evolution, partially driven by firm's wills. SNCF is developing a policy of a private management type, making a large use of yield management for TGVs and using mergers with other freight operators in order to become a worldwide logistic operator.

In all the analysed countries the state has still too many conflicting roles: planner, client, owner and regulator. Also in this sense the German situation is more advanced than in the other countries, even if part of the conflicts still exist. For example, the vertical unbundling is everywhere limited to the separation of the former monopolist into two companies, but the infrastructure manager and the train operating company are still part of the same holding. The lack of separation in the ownership, together with the scarce power of independent regulatory bodies, most likely induces a convergence of interests even if every formal aspect were accomplished.

Fourth, infrastructural investments are always paid by the public purse, except for minor shares of some large infrastructures. In the four countries the largest share of public transfers for operations goes to social services, mainly regional. Explicit direct subsidies for long distance services are present only in Italy. Infrastructure maintenance is not explicitly subsidised only in Germany, even if investments cover also part of ordinary maintenance. Direct subsidies for the all four cost areas (infrastructure building and maintenance, services and rolling stock) exist both in France and Spain.

Finally, in the past (and sometimes also in the present), large debts burden the railway companies. The way these debts are covered is various (capital increases, equities, subsidies, new infrastructures, etc.), but all are based on the assumption that the railways cannot go bankrupt, cannot fire employees and must always respond to objectives of industrial policy. Market loans are either explicitly or implicitly state guaranteed and thus less expensive, returns on invested capitals are low or negative, capital increases may periodically cover past debts, etc. These conditions are very far from true competitive market conditions, even if often they are inherited from past behaviours.

### **3 MARKET ACCESS CONDITIONS**

The countries' conditions for the access of new operators into the national networks should accomplish with the general European rules. Their aim is to provide full and open access to every licensed operator. Despite the common legal framework, the level the European regulation has been implemented is quite different depending on the country.

#### **3.1 Conditions for licensing**

With "conditions for licensing" we define the necessary conditions that must be respected in order to obtain the license to operate.

The basic conditions to obtain the licence vary across the sample, but are commonly present in all countries: certifications for the staff, technological equipments, characteristics of the enterprises, etc.

A different system is present in Italy, where requirements for licensing are less strict. It is necessary only a declaration that the required characteristics and certifications will be present at the moment of starting operation and not at the moment of the request.

The German case showed that some access conditions may be too strict and thus discriminatory, in particular those concerning technological and staff requirements.

Situations of Spain and France are less meaningful until now, due to the condition of statutory monopoly that prevented a significant access to the market from competitors, especially in the passenger sector. In the freight sector, shares remain limited but this seems not to be due to the ex-ante access rules. Rather, the narrowness of the market (in Spain) and short time from market opening (in France) explain better the lack of actual competition, together with incumbent's power in the market, though in France the market share of new entrants in freight rose to near 15% in about 3 years.

### **3.2 Access conditions for slots, services and terminals**

Once a new operator obtains the license, different rules exist to operate on a national network. All four countries have a “network statement” to rule the access to the infrastructure, i.e. to the natural monopoly components. The open access under licensing is not limited to tracks, but include also stations, depots, maintenance units, freight terminals. These elements are not strictly natural monopolies, in the sense that they could be duplicated, but may behave as barriers. In fact, the need of duplicating such facilities may prevent especially the entrance of smaller competitors or can constitute a relative advantage for the incumbent. For this reason, the regulator may decide to grant the access to these elements to all the competitors, whoever is the owner of it.

Table 3. Access conditions to fixed assets

	<i>Italy</i>	<i>France</i>	<i>Germany</i>	<i>Spain</i>
Tracks and service tracks to depots	Open to new entrants	Open to new entrants	Open to new entrants	Open to new entrants
Stations	RFI, open to new entrants	Divided into "technical" part (owned by RFF and accessible) and "commercial" part (owned by SNCF)	<i>DB Station und Service</i> , open to new entrants	ADIF, open to new entrants
Freight terminals	RFI, open to new entrants Some of them are transferred to Trenitalia and access is subjected to its approval	Owned by RFF and rented out to operators, other competitors must apply to use them	The majority is owned by <i>DB Netz</i> and rented out to Railion, few private owners, Container terminals are open to new entrants	ADIF, open to new entrants
Maintenance units	RFI, open to new entrants	Light maintenance units for rolling stocks are operated by SNCF but are considered as an essential facility and competitors have access to them.	Open to <i>DB Netz</i> and private companies	RENFE, not open
Train depots	RFI, open to new entrants	Owned by SNCF, not open	Open to operators and <i>DB Dienstleistungen (Services)</i>	ADIF, open to new entrants

In France train depots and maintenance units are owned by SNCF. However, only the access to maintenance units must be granted to all the competitors, similarly to what happens in Germany. It is likely that, if the owner is the train operating company, it will be difficult to demonstrate the lack of capacity even if the use should be granted as essential facilities. In Spain the national operator owns the maintenance units, not open to competitors. The Italian situation showed until 2009 the highest accessibility, as required by art. 20 of D.Lgs 188/2003: all the facilities were owned by the network manager and not by the train company (even when access must be granted to all the competitors)<sup>9</sup>. However, recent legislative modifications go in the opposite direction of closing-up the system again, by allowing RFI to transfer back to Trenitalia some freight terminals. For these facilities the access to competitors will be subject to incumbent's approval<sup>10</sup>. In general, the absence of any rule to manage the capacity of these facilities (pricing, etc.) should be clarified.

<sup>9</sup> Trenitalia has a contract with RFI for the management of the maintenance facilities.

<sup>10</sup> The modification are introduced by Directive of Council of Ministries, dated 07/07/2009. The Senate of Republic debated on the norm on November 25<sup>th</sup> 2009, requiring a pronouncement of the Government on the fact that it reduces the right to neutral access to the network and a threat for private newcomers. No answers have been given at our knowledge.

It is likely that in the situations where the owner of facilities is the train operating company the access will be granted via contracts. However, in case of lack of capacity the owner can refuse access and some examples of controversy already raised. Recently, the Italian Antitrust authority received a notification against RFI made by the newcomer NTV, asking for the access to some maintenance facilities. The dispute has been solved in favour of RFI because it already signed a contract with the incumbent for the whole capacity one year before newcomer's request. Similar problems have been claimed in France and Germany concerning the freight facilities.

### **3.3 The issue of rolling stock**

The issue of the ownership of the rolling stock has never been properly discussed in the recent past, since legislators' action mainly focused on the separation between infrastructure and services. However, its availability can prevent or hinder the access to newcomers, especially for large tenders.

The rolling stock is not considered an *essential facility* in any of the countries considered, except for some German *Bundeslaender* (like Niedersachsen), that own the rolling stock and lease it out to the train operating company that wins the tender. In other tenders, and for long distance trains, the company remains the owner of the rolling stock, which is amortised during the contract period. In general the national railways of the sample do not provide other companies with its own rolling stock in case of loss of a tender.

The ownership of trains is however seen by theory (and by practice, in other sectors) as a competitive advantage, especially if financed or co-financed or guaranteed with public funds. This is the case of Spain, where a newcomer must purchase new trains with own funds while the incumbent enjoyed large public interventions. In France, the regions pay indirectly for the amortization and use of rolling stock through the financial arrangements of the contracts between them and SNCF<sup>11</sup>. In Italy, Trenitalia (between 2001 and 2009) self-financed the rolling stock expanding its debt, but it is finally guaranteed and supported by the State-owner. The German situation is clearer, since the new trains are paid by own funds or are explicitly included into the tenders, despite who is the train company.

In general we can say that rolling stock is *not* strictly an essential facility, since some form of imperfect market of new and used trains exists. However, the ownership of rolling stock is often a *barrier* to the entrance of newcomers in the four countries, because:

- in the case of passengers, the purchase of new trains takes some years, due to the low standardisation of rolling stock and because of the absence of a relevant secondary market;
- trains owned by the incumbents are already partially amortised and in some cases co-financed by the state;
- the state guarantee, that all national railways have on their debts, allows to obtain better conditions in the capital market (sovereign credit).

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<sup>11</sup> However SNCF is a statutory monopoly. In the freight market, instead, which is, when this text is written, the single market open to competition, there is no public intervention for rolling stock.

We do not claim that the barrier completely prevents newcomers from the entrance into the market<sup>12</sup> or that the entrance should be risk free, but that the regulator should consider whether an unfair advantage exists and try to minimise it.

### **3.4 Comments**

Some comments can be drawn on the topic of the access rules and on the presence of barriers.

Firstly, the licensing system is quite similar in the four countries except Italy. Italian norms for the obtaining of the licence are the least restrictive of the sample considered. Adequate experience and an appropriate level of the equity/assets ratio are not required, so the licence can be given some years before the actual starting of operations to almost any potential competitor.

The analysis shows that, in the countries where the market is open, no major constraints exist due to access conditions to the network. In the four countries there is no evidence of problems related to *grandfathers' rights* in the ownership of slots, but mainly because there are very few true capacity constraints except in nodes. The tool of auctions is never stated nor used to allocate capacity. Rather, the conciliation process provided also by European Directive among train operating companies, track operator and (if existing) rail authority is common. In countries where it is maintained, the common ownership of network and incumbent is, once again, a source of distortion.

Concerning the open use of other rail facilities, in France and Germany the new operators experienced some difficulties in obtaining the use of the terminals, especially related to freight<sup>13</sup>. The other two countries did not show any constraint until now, but this does not mean that the system is able to grant access without any discrimination<sup>14</sup>. To the contrary, this simply means that there were no cases of conflict that were not settled by contracting with the network operator.

The issue of the property of the rolling stock is present in all the countries. Newcomers must provide their own ones. This fact constitutes a barrier and a competitive advantage for the incumbent, especially for large regional tenders with no quality requirements. However, rolling stock cannot be considered as an essential facility and the problem must be gradually solved by the regulator. This issue would be less relevant if the newcomer is another national (or local) rail operator, which has the same dimension and the same public financing for rolling stock (as happens in Italy and France, see below in this paragraph for a comment) and can more easily afford a large fleet renewal.

It is common (and easier than obtaining licence and slots) across Europe that a foreign newcomer with financial capabilities prefers to take over an existing local company to enter in another market. This fact is theoretically positive, if promoting competition. However, in the present conditions, it may occur that a protected monopolist with large financial resources may easily enter in other markets simply buying companies and in due time building up a dominant position in the continent. This is the case of French and German railways, which

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<sup>12</sup> The recent agreement between the Italian newcomer NTV and Alstom ( 650 M€ for the supply of 25 passenger HS trains) goes in the same direction, but it is not expected that many small entrants may arrive.

<sup>13</sup> This is obvious in France, since passenger market is not yet opened to competitors.

<sup>14</sup> For an example in Italy, see the case of NTV, discussed above (section 0).

entered in Spain (DB Schenker and SNCF are majority owner of TRANSFESA since 2008) and Italy (for example, NordCargo is 60% owned by DB and, for passengers, NTV is 20% owned by SNCF) where the incumbent operators suffer from financial problems and are not fully able to react. The practice of taking over foreign companies is far from simple. If large economies of scale exist, the overall efficiency of the system may increase, to the final advantage of the users. But this scenario is both unlikely and undesirable for several reasons: first, large economies of scale are not realistic at this level and very difficult to ascertain; second, contestability will severely suffer; finally, the risk of abuse of the dominant position remains high (i.e. the risk that the benefits of the possible economies of scale are not transferred to the final users). Therefore, fair and enforced rules of reciprocity seem to be in this case a mandatory policy, in order to accelerate a homogeneous competitive context at European level.

## **4 LICENSED OPERATORS AND MARKET SHARES**

Some years after the liberalisation of part of the markets (in particular the cargo one, but also the passengers' business in some countries), it is possible to verify the actual level of competition looking at how many competitors exist and what is their market share. Of course the absence of competitors is not necessarily demonstrating the lack of liberalisation principles, for example because the market is too small and unprofitable. However, given the demonstrated presence of inefficiencies in national railways due to the burden of past public procurement, one can suppose that if the market is normatively liberalised and no significant barriers to entrance exist, a number of competitors will rise to exploit their better efficiency and "cherry picking" the most profitable services or introduce new products as happened in the air sector.

For these reasons, this section is analysing the state of the market in terms of competitors and market shares in the four countries. The figures are limited to the national networks only.

Table 4. Overview of competitors' shares in the sample.

<i>National network</i>	<i>Licensed operators (2008)</i>	<i>All operating? (2008)</i>	<i>Passengers market share</i>	<i>Freight market share</i>
Italy	49	16 (2006)	<1% <sup>A</sup> (2009)	13,0% <sup>A</sup> (2008) (30% in the North-South alpine market)
France	some	no	0% <sup>B</sup> (2008)	10% <sup>B</sup> (2008) 15% <sup>C</sup> (2009)
Germany	350	330	Regional: 15,2% (2006); Long distance: <1% Overall passengers: 10,1% <sup>B</sup> (2008)	19,7% (2007) 22% <sup>B</sup> (2008)
Spain	8 plus some new licenses recently awarded	no	0% <sup>B</sup> (2008)	5% <sup>B</sup> (2008)

Sources: if non specified, balance sheets data. <sup>A</sup> Internal source from FS. According to European Commission, 2009a the share for 2006 freight was 11,5%. No official 2008 data available in 2009. <sup>B</sup> European Commission, 2009b. <sup>C</sup> internal source.

In France and Spain the passengers transport is a statutory monopoly of the incumbent national railways and no actual competition can exist. Since 2010 only the international market will be opened to competition. The two countries did not anticipate anything with respect to European deadlines. Germany is much more open and experiences already competitors in both freight and regional passengers services through tenders. Italy has not yet competition on passenger market, but the legislation allows it and a couple of important newcomers are planning to enter before 2011<sup>15</sup>. Freight market is normatively open, but actually significant competition rose only in the cross-alpine market.

In the passenger transport, differences among the countries are evident, in particular between the situation in Germany and Italy, where all segments are or will be soon fully opened to competition (national as well as international passengers), and France and Spain where there will be an opening in 2010, but limited to international passengers services only. In conclusion, even where the norms allow the non discriminatory entrance in the market, this is only a necessary condition to the rise of an effective competition. Other conditions should be fulfilled in order to have competition, apart the necessary legal framework. The motivations of such fact will be discussed in the following.

## 5 SLOT ALLOCATION AND PRICING

The section provides an overview on TAC and how slots are allocated in case of scarcity.

<sup>15</sup> They are NTV in the high speed services and Arenaways in an interregional line in Northern Italy.

## **5.1 Criteria for TAC definition**

Concerning toll level definition, the directive 2001/14 does not set the objective of a common level of track access charges all over the EU (EIM and CER, 2008). The directive allows infrastructure managers to spread charges on their network, to reflect different costs or scarcity levels (Sánchez-Borràs et al., 2010).

Toll definition criteria are very different across the analysed four countries, varying from the (formal) full cost recovery minus subsidies of German network, to the mixed methods used in French networks (highly differentiated charges, from roughly the marginal cost for freight trains and passenger small traffic services, to almost the full cost for profitable services such as TGVs, and for highly congested lines and periods). The infrastructure managers (and moreover the Ministries) include in the TACs a wide range of parameters and costs, which can hardly be compared. However, in none of the countries, effective discriminatory mechanisms for congestion and scarcity management can be found. Moreover, none of the charging systems can be assimilated to the one suggested by EU Directive 2001/14 (Art. 7 & 8).

The table below summarises the main parameters and costs influencing the TACs. It is also outlined which cost coverage criterion is used (marginal cost pricing or average cost pricing) and the responsibility of TAC definition.

Table 5. Summary of toll characteristics

	<i>Main parameters influencing TACs level</i>	<i>Peak or congestion charging?</i>	<i>Cost coverage</i>	<i>Responsible for toll definition</i>
Italy	Line/ node type Occupation time (in nodes only) Time of the day Capacity reduction (“ <i>omotachicit�</i> ”)	saturation signal only	Short run average cost (conventional) Operating costs plus investment debt amortising (high speed)	Ministry of Transport, proposal by RFI.
France	Fixed component Reservation (per trainkm) Stops Type of service Traffic level Time of the day	Yes	Short run marginal cost, plus scarcity signal (in general) Where the market allows it, extra charges rise significantly the TACs	The State, with advice from the regulator
Germany	Line type Service type Capacity reduction Load component (heavy trains) Length of trains (station) Type of station	Surcharge on some type of services	Between short and long run average cost	DB Netz, controlled by the regulator
Spain	Line type and traffic Capacity or commercial load of the train Time of the day Station platform and position Other unrelated fees	Yes	Weak correlation with costs	Ministry of Public Works

## 5.2 Criteria for slot allocation

The above described norms set the price for the usage of the network. A relevant problem is the way slots are allocated to the service providers in case of multiple and conflicting requests. The issue is relevant in Germany and Italy only, because they are the only two countries where a significant number of new entrants is present.

In general, there is no evidence of slot allocation rules in the analysed countries, nor the existence of a regulator with full powers to take decisions about that. This fact, even if the problem is not yet at stake due to the scarce actual competition, may introduce important discriminating potential like the *grandfathers’ rights* in the air transport. A newcomer, for example, could be interested in a slot at a certain time of the day in a congested station, but this slot is already occupied by the incumbent. This kind of problem never raised until now because the share of newcomers is small, occupying niches or concentrated in freight business, much less sensitive to slots<sup>16</sup>. However, the rising of competition for long distance

<sup>16</sup> Curiously, in Italy this kind of problem raised, up to now, in disfavour of the incumbent. In fact, licensed companies can block in advance shares of the available capacity, even before having the certification of the rolling stock. This right will be a substantial advantage towards other newcomers when capacity will become scarce. Of course the incumbent still keeps the majority of slots.

high speed services could move this issue to the surface and become a relevant barrier to entrance.

A bidding system or a discriminatory charging mechanism would help to efficiently solve the problem, but an independent authority is needed to manage such issue, now left to the infrastructure manager in the majority of countries (it is the role of the regulator in France).

### **5.3 Correlation among TACs and production costs**

The way TACs are defined shows that the correlation between costs and TACs is a topic faced differently in the four countries.

Everywhere, large shares of infrastructural investments are covered by state transfers are not priced and, then, not included in the TACs. For this reason, the concept of “average cost pricing” refers usually to the average costs excluding the (large) share of the fixed initial costs, never amortised.

This is the situation of Germany, where the pricing is assumed to cover the long run average costs, excluding state subsidies for investments and part of the maintenance (EIM and CER, 2008). France aims at covering the whole production costs of RFF, but in 2004 this target was by far not reached and further subsidies existed. The Italian situation is more similar to the German one for the high speed network (where also a share of investment costs, less than 20%, is supposed to be paid back via toll revenues), while conventional network investments are completely paid by the state. Transfers for maintenance exist, too, showing that cost coverage is not complete. Spanish network revenues do not cover costs and it is strongly dependant on state transfers, though the L. 200 requires “access charges to cover costs” (in very broad terms).

### **5.4 Comments**

The TAC level alone is not determining the openness or closeness of a system. The German ones are the highest, but there is also the highest level of competition. Other factors are much more relevant in allowing competition, such as the profitability of services, the potential dimension of the market, the fares and the subsidies accorded, as well as the political will to remove market and normative barriers. So, if substantial barriers to the competition exist, these do not generally lay in the access TACs calculation.

A problem of cross subsidisation between business units (i.e. between regional and long distance services) may exist. This allows the incumbent to skip the separation of balance sheets and distorts the market both in favour or disfavour of the incumbent, according to what subsidises what.

A second issue concerns the slot allocation in main stations or lines. Up to now, it has not been a relevant obstacle to competition, but it may rise in the next future, especially on urban nodes and on truly congested lines. In fact, in none of the countries except France an appropriate regulatory tool or an independent referee exist to manage the issue. Competition on high standard commercial services (that require specific slots and speed standards) is expected to rise soon on some routes, especially where new HS lines made available new

capacity. In these cases, one can expect that a form of *grandfathers' rights* may exist also in the rail sector, with the incumbent already using the “best” slots on lines and in stations.

## 6 REGULATION OF PUBLIC SERVICE OBLIGATIONS (PSO)

### 6.1 Definition of social and market services

Social services are those subject to public service obligations (“PSO” in the following) and are a crucial issue in the whole rail sector regulation. A theoretical discussion is not possible here, but it can be found, for example, in Ponti (forthcoming).

In the four countries the rail service is charged by an intrinsic value, i.e. is implicitly considered a *merit want* for distributive, land use and environmental reasons. For this reason, the provision of rail services is seldom ruled by market demand and fares are kept low. However, there are some differences. All countries consider all the regional services as PSO. For long distance transport, to the contrary, the definition of “social” is different. In all the cases, however, the infrastructures, hosting both social or market services, are subsidised.

The Table 6 summarises the classification of social services.

Table 6. Classification of social and market services

	<i>Regional services</i>	<i>Long Distance services</i>	<i>Freight services</i>
Italy	Social	Market: High speed, some IC, International Social: Some LD services (some IC, Express, Night)	Market, but non-profitable Some subsidised areas
France	Social Discounted tariffs for some categories	Market: TGV, some IC Social: some IC and LD. Unofficially, some TGV are covered by cross-subsidies from the profitable services A few social discounted tariffs for some categories	Market, but non-profitable
Germany	Social (“sufficient public passenger service for short distance mobility, below 50 km distance”)	Market Discounted tariffs for disabled users	Market
Spain	Social	Market	Market

All countries consider regional transport as social and worth subsidising. The rest of the services are supposed to be “market” services, except for some specific cases in Italy and France, where some long distance services (and even freight, in Italy) are also subsidised.

However, the way infrastructure is subsidised may hide implicit subsidies to all services, keeping access TACs very low, even below the marginal costs.

The criterion of “sociality” of services is generally confused with the profitability of it (with the partial exception of Germany (Link, 2004)). If a service is not profitable but existing, it is implicitly considered as socially desirable and must be subsidised in some way (direct subsidy or cross-subsidisation). Clearly, this criterion is not satisfying, because unprofitable services may not be socially desirable because they are too expensive, or lines are subsidised even though they would be profitable if they were more efficient. A criterion of sociality based on the explicit accounting of social and financial implications of a single service is thus needed. This must be kept strictly separate from the concept of profitability, in the sense that all services must be profitable from the viewpoint of the service operator, independent from their “sociality”. The present concept of sociality may also distort the liberalisation process, as it will be discussed in section 0.

## **6.2 Regulation of the social services**

Whatever the definition for social services is, the four countries apply different regulatory strategies.

Table 7. Regulatory strategy

	<i>Regional services</i>	<i>Long Distance services</i>	<i>Freight services</i>
Italy	Fares decided by regions Few tenders for services. Usually <i>in house</i> contracts between regions and incumbent Trenitalia	Price-cap on fares for subsidised services (theoretically). In reality, fares are decided by the Ministry in the contract of service No fares regulation in market services. No explicit subsidies Presence of non-subsidised “market” services, fed with cross subsidisation	No fares regulation Some subsidies in southern regions, as described in the “ <i>Contratto di Servizio</i> ”
France	Fares discussed by regions and SNCF and included in the contract with SNCF Only <i>in house</i> contracts	Fares regulation for monopolies, but also on all IC trains Subsidised discounts for some categories of users A light fare regulation (achieved by the State) in market services Presence of non-subsidised “market” services, fed with cross subsidisation	No fares regulation
Germany	Tenders or <i>in house</i> contracting with regions, defining the service characteristics Tenders for subsidised discounts for some categories of users	No fares regulation Subsidised discounts for disabled users	No fares regulation
Spain	Subsidy linked to PSO but cost-plus in practice	Cost-plus in practice Subsidised discounts for some categories of users	No fares regulation

In the regional market fares are always decided or controlled by the Regions (or by the Ministry, in Spain) that actually plan and pay for these services. French, Italian and German long distance fares are free of regulation (with some distinctions in France and Italy). Social contents are granted by subsidised discounts to the users-side instead of impositions on the supply-side, except in Italy. Spanish fares are capped by the Ministries, at least for the subsidised services. The so called “market” services are completely free in Italy since 2007, but fares adjustments on some marginal lines has been partially limited due to contingency reasons. In France exist some theoretically “market” services, whose fares are controlled and compensated by the state.

The contracts of services (or even direct commitment, in many cases) with the incumbent are presently the most used practice in some German *Laender*, in Italy, in France and in Spain where the regional services are monopolies of SNCF and RENFE. By contrast, the practice

of tendering subsidies, especially for regional services, is almost never applied, despite it is supposed to be the compulsory one and stimulating efficiency. Germany is the only country where significant shares of regional services are tendered (Link, 2004), while in Italy this happened only in a few isolated cases<sup>17</sup>.

### 6.3 Financing of the social services

Social services are subsidised by the public purse. Usually, for the largest share of the subsidised services, i.e. regional transport, the funds come from the regions, but in some countries are partly transferred from central state, while local authorities provide some extra financing. Investments and network maintenance are not discussed here, but are almost always centrally paid for the part not covered by market revenues.

In Italy, between 2002 and 2005, 1209M€/year has been transferred on average for regional transport from regions and 480-490M€/year for the universal long distance and freight services from the state, reduced in 2006 to 377M€. In 2007 there was an increase to 1488M€ and 445M€, respectively<sup>18</sup>. Transfers from State for 2009-2011 regional services will be increased of further 480M€/year that are *explicitly* dedicated to the incumbent operator (Dlgs. 185/2008 art. 25) with evident negative effects on potential competition.

In France, the social services of regions are financed by the contracts between the regions and SNCF. The regions transfer two funds to SNCF: one for the financing of the transport services, the other for the renewal of rolling stock and for infrastructure improvement. The amount of these funds is reported in

Table 8 and are constantly increasing since 2002.

Table 8. Public funds for regional services to SNCF

[M€]	2002	2003	2004	2005	2006	2007	CAGR '02-'07
operating account: public transfers (social tariffs compensation and service obligation for Transilien services included)	2.827	2.901	3.251	3.404	3.577	3.710	6%
Investment account: rolling stock renewal contribution and other grants	598	605	572	735	902	1.055	12%
Total	3.425	3.506	4.823	4.139	4.479	4.765	7%

The German Federal Government allocates funds (2008: 6.6 bill. Euro) to the *Laender*, which orders the service from transport companies in general. It is up to the *Laender* to define the volume, the quality and also the modality of the service. They can finance both regional rail services and urban public transport, which in some cities includes rail as well. The “rail” expenditure goes to DB, but also to many other local providers. The “public transport” class goes mainly to bus and tram services, but in some cities also conventional rail is used for urban transport. The total of 4.147 M€ transferred to the DB in 2007 (see Table 2) comes from both classes.

<sup>17</sup> Some large tenders are expected in Piedmont region in 2011. This will be the only case of a region tendering out all its services instead of contracting with the incumbent Trenitalia.

<sup>18</sup> Source: “*Piano Industriale FS 2007-2011*”

Table 9. Regional expenditure for local transport services in Germany.

[M€]	2002	2003	2004	2005	2006	2007	2008	CAGR '96-'08
rail	4.462	4.529	4.597	4.666	4.736	4.807	4.406	0,8%
public transport (rail included)	2.283	2.317	2.352	2.387	2.423	2.459	2.270	13,6%
Total	6.745	6.846	6.949	7.053	7.159	7.266	6.675	3,3%

In Spain regional services are subsidised by the state, and not by regions, with approx. 300M€/year.

#### 6.4 Relationship between social and market services

An unclear relationship between social and market services, as shown above, is a source of distortions. In particular, the way in which unprofitable not-subsidised services are maintained for political reasons as social services, determines the existence of cross-subsidisation. Cross-subsidisation, in the general definition, is a problem because monopolistic unregulated market generates profits that may be used to dump on other markets: profitable monopolistic services can be used to lower the price of other non-monopolistic services, causing unfair competition on this second market.

This is *not* the case of European railways, or at least not yet. Cross-subsidisation is mainly not between profitable services, but from profitable to unprofitable services, maintained for reasons other than those of the enterprise rationale. In fact, aside from market services, whose running costs are covered by market revenues, and social services, for which revenues include also subsidies, there is a third “hidden” segment. It is that of *losing market services*, i.e. those trains whose market revenues are not sufficient to pay their costs and whose existence is possible only via hidden “subsidies” from other market segments or other services. Typically, this phenomenon is seen in long distance segment.

The companies forced to internally subsidise with profits some social services, may suffer from “cherry-picking practices” by the potential competitors exploiting the best markets only. In this case, a newcomer can enter in a profitable market at a lower price, because it does not have to subsidise other services. The main problem is not on the effectiveness of competition (market will be more efficient, pushing the less efficient company out of the market), but on the balance of the incumbent. The possible outcomes of this practice are a) the increase of debts or subsidies to the incumbent, if the choice is to keep the cross-subsidies there, or b) the cut of the unprofitable services, if the incumbent has the political power to do that. The solution is, at least theoretically, to move “shadow” social services from the “hidden” segment and subsidising them explicitly (if the case, through a tender). At the same time, a fair competition on the main market will be able to reduce monopoly extra-profits and/or inefficiencies on profitable services.

The country analysis shows that the practice of cross-subsidisation among profitable and unprofitable trains is present, for sure, in Italy, Spain and France (TGVs included). The feeding of money-losing trains with the revenues of profitable ones is especially threatening Italian and Spanish railways, leading to an overall negative result for the whole long distance

sector. For SNCF this leads to a smaller problem due to the level of fares and subsidies received for all the productive segments. The information on the German system does not allow to derive the same conclusions, but it is possible that some losing trains are left, at least those with the function of feeders.

However, in case of competitive environments, a system deeply based on cross subsidisation among trains makes the system substantially not contestable and thus favourable for the incumbent. In fact, if cross subsidisation is justified in terms of social goals (i.e. granting the existence of social trains without directly subsidising it), it makes it impossible to separate the two kinds of services. If this is true, the incumbent will ask to exclude the profitable services from competition (or tendering) in order to let them pay the other trains. This behaviour has the consequence of keeping the market closed.

German railways seem to have succeeded in minimising this problem, separating effectively the two businesses at their advantage, by eliminating services unprofitable for them (even if maybe “useful” from a social point of view, like some interregional services) or shifting them under the regional cap. However, an important form of cross subsidisation, this time in favour of the rail company DB, is the practice of applying lower access fares to freight and long distance services, than for regional heavily subsidised ones.

Except some distortions, the German situation in this field seems acceptable for the firm but also for the collectiveness. In fact, it is capable to reduce the unclear implicit subsidisation of unprofitable services, eventually moving them among the “social” ones. These unprofitable services might be evaluated from a social point of view and explicitly subsidised via tenders in order to select the most suitable and efficient producer for them. This process could evidence the inappropriateness of railways to grant this kind of supply. An example is the long distance north-south Italian trains. It is likely that a mix of subsidised air and bus connections might offer a similar or better service at a lower social cost.

## **6.5 Comments**

PSOs in rail sector are very relevant and requiring considerable public subsidies to be maintained. At the same time, rail undertakings tend to concentrate in the most profitable segment of market services where yields are high especially because intermodal competition is still completely absent.

Regional services are considered everywhere as PSO and account for the largest share of subsidies (or the totality in Germany). Italy is the only country where some long distance services are explicitly subsidised. However, an implicit subsidy through cross subsidisation is present and important also in France and Spain. DB succeeded in cutting all non profitable services or moving them in the regional segment.

In general, however, a real criterion of sociality is needed. This lack is dangerous in a twofold way. For the rail undertakings, the existence of losing but not subsidised services is generating a financial loss. For the users, the existence of such services may distort liberalisation process if this is used by incumbents to keep profitable and unprofitable services bundled at their advantage. In general, since the State is paying for every losing

service (via subsidies or via losses in the balances of the railways), the suggestion is to maximise transparency and competition in order to obtain efficiency in all services<sup>19</sup>.

The alternative way to provide social services is to guarantee subsidised discounts for some categories of users. Only in Italy this is not done and the protection of low income demand is supposed to come from the supply side with regulated fares and subsidised trains. However, the tendency of FS is to cut these services especially where conflicting with market ones or ask for more subsidies. This behaviour is generating problems both with users and Regions. In the other countries of the sample the subsidy to the demand is used but could be further extended.

## **7 CONCLUSIONS**

The introduction of competition in the railway industry has improved its efficiency for the benefit of users, producers and taxpayers. This is a key result of the reformation of the sector, that is still ongoing. However, there is not a unique recipe for “how to conduct the process” applicable to all the countries, due to the different contexts, such as the situation of their railway networks, population density, degree of congestion, effectiveness of intermodal competition, courts of justice, regulatory and antitrust institutions.

The paper has analysed some of the most relevant aspects of rail liberalisation: the relationships between the state and the rail company, the conditions for the access to the network, the slots allocation and pricing systems and the regulation of “social services”. The picture drawn is complex and shows that the States applied the common European regulation at their own internal situation, deeply reflecting their different policy visions.

Evidence support that it is very helpful to introduce more competition into railways, since the old state-owned rail monopoly model has not performed very well.

The basic issue is that of vertical integration and ownership. Different strategies were possible, but the four analysed countries chose the vertical unbundling under a unique public holding (in Italy, Germany and France) or with two different public companies (in France). This way to separate infrastructure and train operations is, in fact, the most demanding in terms of government intervention and in general the most complex<sup>20</sup>. The European Union has however opted for this alternative, now mandatory for all member countries, to maximise competition in railway services.

In order to obtain the potential benefits from vertical unbundling the aim of solving the technical coordination problems is not enough. A sophisticated regulatory structure is also needed, and especially a government willing, firstly, to leave the market to work; and secondly, to promote and enforce competition. Our countries sample shows heterogeneity and some incoherencies in many aspects, despite they all followed the general principles of European liberalisation.

At the basis of a regulatory structure in an unbundled network, there is the introduction of a licensing system and the setting of an access charging systems to provide new entrants with

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<sup>19</sup> Often some services are in the red because ran in an inefficient way, despite the existence of some demand. Italian long distance PSOs are a relevant case in this sense.

<sup>20</sup> The natural monopoly is only in the infrastructure, but the relation between infrastructure and operations appears to be more complex than in road, ports and airports where vertical unbundling is the norm.

the rail tracks, stations, signalling, etc. Access charges are crucial in the reform. These prices for the use of the infrastructure can foster competition between new railway companies willing to enter the market and the former operator, but can also restrict the interest of new companies, unless they are carefully designed. The strict and not only formal separation between the infrastructure company and the incumbent public rail operator is essential. The privatisation of the public rail operator could help.

Looking at the actual level of liberalisation produced by existing regimes, we can conclude that it is still scarce and only in some cases the opening level is increasing. Market penetration of newcomers is significant only in niche markets. An issue emerging from the work is the opposing attitude of incumbent railways against liberalisation and the role of decision makers in backing this behaviour. The strategies followed to limit the outcomes of the liberalisation process are different across the country sample. However, all the incumbents argue with the self-referential declaration of efficiency, PSOs and the claim to be under an excessive and unfair foreign competition. These arguments are yet embedded in legislative, organisational and economic settings supporting these positions like the common ownership of network and services, the permanence of dominant positions and favourable financial conditions.

In conclusion, the future of railways depends on their capacity to respond to the evolving transport needs. Protectionism has shown its incapacity to maintain rail market share. Liberalisation can help the railway industry to recover traffic in those markets where it has a competitive advantage. Public intervention should be restricted to design the common rules for rail operators, dictate public service obligations and promote and enforce competition policy. Many aspects must be underlined and possibly corrected. However we want to stress only few of them as more relevant to promote a better competition for all.

Firstly, along with the development of competition, on the one hand it will be necessary to eliminate the hidden PSOs which would harm the incumbent operator (but also constitute a barrier to new and more efficient firms), and on the other hand it is crucial to provide a fair access to several types of essential facilities such as stations and maintenance yards, as well as to remove the possible favouring subsidies to the incumbent operator.

Secondly, we see a trend towards liberalisation, but its strength is sometimes weak and different in the countries. Furthermore it takes various directions. The consequences of that are important and may distort the overall effects of European liberalisation with the rise of few dominant railway undertakings from the group of incumbents. The possibility that smaller new entrants may seriously affect the larger ones, except for specific niches, is scarce.

Finally, regulation should be made as much independent as possible. However the conflict of interest due to the large public financial participation of the States in the railway industry burdens the process.

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## **REFERENCES**

- Cambini, C., Buzzo Margari, B. (2005). Le gare nelle ferrovie locali. Rapporto III – Ottobre 2005, HERMES.
- Campos, J. (2006). Spain: The end of an era. In Gómez-Ibañez, J.A. and de Rus, G. (editors): [Competition in the railway industry: An international comparative analysis](#). Edward Elgar.
- CESIT (2008). Emergenza trasporto regionale: il punto di vista dei pendolari. CESIT.
- DB (2007), Balance sheet 2007.
- European Commission (2006). Policy effectiveness of rail. EU policy and its impact on the rail system. DG TREN, European Commission.
- European Commission (2009a). Evaluation of the Common Transport Policy (CTP) of the EU from 2000 to 2008 and analysis of the evolution and structure of the European transport sector in the context of the long-term development of the CTP. DG TREN, European Commission.
- European Commission (2009b). Report from the Commission to the Council and the European Parliament. Second report on monitoring development of the rail market. SEC(2009)1687. European Commission.
- European Rail Infrastructure Managers (EIM) and Community of European Railway and Infrastructure Companies (CER) (2008). Rail Charging and Accounting Schemes in Europe. Case studies from six countries. May 2008.
- Ferrovie dello Stato (2007). Bilancio Consolidato e Bilancio di Esercizio 2007. Ferrovie dello Stato, Roma (Italy).
- Friebel, G., Ivaldi, M. and Vibes, C. (2003). Railway (de) regulation: A European efficiency comparison. IDEI report no 3 on passenger rail transport, University of Toulouse.
- Gomez-Ibanez, J.A. and Pittman, R. (2004). Chinese Railway Reform and Competition. *Journal of Transport Economics and Policy* 38 (2004b): 309-332.
- Gathon, H. J. and Pestieau, P. (1995). Decomposing efficiency into its managerial and its regulatory components: The case of European railways. *European Journal of Operational Research*, 80: 500-507.
- Glaister, S. (2006). Competition undermined by politics. In: Gómez-Ibañez, J.A. and de Rus, G. (editors): [Competition in the railway industry: An international comparative analysis](#). Edward Elgar.
- Kirchner, C. (2004). Rail liberalisation index 2004. Comparison of the market opening in the rail markets of the member states of the European Union, Switzerland and Norway. IBM Business Consulting Services.
- Link, H. (2004). Rail infrastructure charging and on-track competition in Germany. In: *International Journal of Transport Management*. 2.: 17-24.
- MEEDDAT/SESP (2008), Les comptes des transports en 2007 (tome 1). Les transferts de l'État et des collectivités locales: Ministère de l'écologie, de l'énergie, du développement durable et de l'aménagement du territoire, Paris (France).
- Monami, Eric (2000). European Passenger Rail Reforms: A Comparative Assessment of the Emerging Models. *Transport Reviews*, vol. 20: 91-112.

- Nash, C.A. (2006). Europe: alternative models of restructuring. In Gómez-Ibañez, J.A. and de Rus, G. (editors): [Competition in the railway industry: An international comparative analysis](#). Edward Elgar.
- Nash, C.A. (2008). Passenger railway reform in the last 20 years – European experience reconsidered. *Research in Transport Economics*, 22(2008): 61–70.
- Oum T. H., Waters, W.G. II, and Yu, C. (1999). A survey of productivity and efficiency measurement in rail transport. *Journal of Transport Economics and Policy*, 33 (January): 9-42.
- Oum T. H. and Yu, C. (1994). Economic efficiency of railways and implications for public policy: A comparative study of the OECD countries' railways. *Journal of Transport Economics and Policy*, 28, 2: 121-138.
- Pittman, R. (2007). Options for restructuring the state-owned monopoly railway. In Dennis, S.M. and Talley, W.K. (editors): *Railroad economics*. Research in transportation economics. Elsevier.
- Ponti M. (forthcoming). Competition, Regulation and Public Service Obligations. In Quinet (forthcoming). Elsevier.
- Quinet, E. (2006). France: Avoiding competition. In Gómez-Ibañez, J.A. and de Rus, G. (editors): [Competition in the railway industry: An international comparative analysis](#). Edward Elgar.
- Quinet, E. (forthcoming). Le système ferroviaire français: la révolution lente. In *Commentaire*, Paris.
- RENFE (2007), Resultados y principales magnitudes de las Áreas de Actividad, RENFE, Madrid (Spain).
- Sanchez-Borràs, M., Nash, C., Abrantes, P., Lopez-Pita, A. (2010). Rail access charges and the competitiveness of high speed trains. *Transport Policy*, 17: 102-109.
- SNCF (2009). Concurrence dans le ferroviaire : quelle régulation. Proceedings of the seminar 8th of July 2009. [http://medias.sncf.com/resources/fr\\_FR/medias/MD0005\\_20090910/template/Journee\\_SNCF\\_IDEI\\_080709\\_Les\\_actes.pdf](http://medias.sncf.com/resources/fr_FR/medias/MD0005_20090910/template/Journee_SNCF_IDEI_080709_Les_actes.pdf)
- Thompson, L. (2001). [Directions of Railway Reform](#). International Railway Congress Association. Vienna.
- Winston, C. (2006). United States: Private and deregulated. In Gómez-Ibañez, J.A. and de Rus, G. (editors): [Competition in the railway industry: An international comparative analysis](#). Edward Elgar.
- Waters II, W.G. (2007). Evolution of railroad economics. In Dennis, S.M. and Talley, W.K. (editors): *Railroad economics*. Research in transportation economics. Elsevier.