Governance of competition in the Swiss and European railway sector

Final research report to the SBB lab, University of St.Gallen

May 2012

"Rail companies' fiercest competition comes from other transport modes. Efficient competition between modes of transport depends on achieving appropriate pricing and investment policies." (Nash and Matthews, 2009)

Authors

Prof Matthias Finger, Ecole Polytechnique Fédérale de Lausanne and European University Institute
Dr Andrea Rosa, European University Institute

With the collaboration of

Dr Marc Laperrouza, Ecole Polytechnique Fédérale de Lausanne
Dr Martin Holterman, European University Institute
Ian Brand-Weiner, European University Institute
Nadia Bert, European University Institute

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For further information
Florence School of Regulation – Transport Area
Robert Schuman Centre for Advanced Studies
European University Institute
Via Boccaccio, 151
I-50133 Firenze
Tel.: +39 055 4685 751
Fax: +39 055 4685 755
Transport Area E-mail: fsr.transport@eui.eu
http://fsr.eui.eu

Summary

This report looks at the railway systems in selected European countries (France, Germany, Great Britain, the Netherlands, Sweden, and Switzerland) with a focus on passenger services with the aim to understand whether the institutional approaches to governing those systems may be typified and whether the approaches or the types may be related to some measure of systemic performance. Overall, this research aims at drawing lessons of general use from the situations examined.

This research is based on three sets of information. First, an in-depth account of the current state of railway systems in the countries examined is provided. This has been carried out with a particular focus on regulatory arrangements, Public Service Obligations (PSOs) and overall evolution of railway-related institutions over the years since 1988. The main purpose of such a portrait is to observe and characterise the types of institutional arrangements. Then publicly available performance indicators (PIs) have been collected and contrasted with the institutional evolutions, seeking a causal link. Finally, a set of interviews with stakeholders has been carried out in all countries except Switzerland to investigate the existence of a systemic approach, as well as the stakeholders' understanding of performance.

The analysis leads us to conclude that each country is a type: there is a variety of institutional approaches and, in terms of institutional arrangements, convergence among countries cannot be detected. While the policies and different Directives of the European Commission certainly do play a role, the institutional path of each country is essential in respectively defining the institutional approaches. Moreover, no country seems to be entirely settled into a lasting system, even when developments have been introduced in stages. The need for further evolution seems particularly important when it comes to interfaces among actors. We have observed, however, a certain movement towards regionalisation, which may be taken as an emerging trend with so far satisfactory results. We have also observed the importance of PSO services for new entrants and the link of such services to the regionalisation trend. Open access is of minor relevance in all the States surveyed.

The establishment of a relationship between the evolution of the institutional arrangements and of the publicly available systemic indicators has been unattainable. At times, improvements in performance that coincide with institutional reforms were perceived. However, such instances are much less common than they would have to be in order to count as clear evidence of the effect of the reforms in question. This can mean that either performance evolves irrespective of the institutional arrangements or the institutional arrangements produce effects only with a time lag beyond the scope of this research. Other possible explanations are that the PIs commonly used do not significantly respond to the change in institutional arrangements, given that the institutional arrangements are aimed at producing systemic effects whereas most of the measured PIs respond to firm behaviour.

The interviews led us to conclude that no one speaks for the railway system of a country. A system view is lacking while there is a demand for a body with a systemic function. Depending on the system, such a body may be the incumbent integrated operator, the Infrastructure Manager (IM) at arm's length of the Ministry, or the Regulator. The interviews looked also at system PIs, and disagreement as to what good system-wide indicators are emerged. The difficulty in relating systemic indicators to the system's evolution may be due to the lack of system's PIs. Also, some indicators mentioned have less to do with the output of the railway system, but rather with the outcomes of a given policy or with input variables.

Our interviews also show that each actor defines its own PIs, which are most likely the ones that suit the actor better than the system. These stakeholder PIs are also not harmonized, nor integrated nor consolidated, thus leading to a multiplication of measurements and ultimately to the impossibility of defining performance in a coherent manner.

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List of acronyms

In brackets, the Case Country to which the term refers: FR (France), DE (Germany), UK (United Kingdom), SE (Sweden), SWI (Switzerland).

AEG	Allgemeines Eisenbahngesetz (DE)
AFITF	Agence de financement des infrastructures de transport de France (FR)
AFRA	Association Française du rail (FR)
AOT	Autorités Organisatrices de Transport (FR)
ARAF	Autorité de régulation des activités ferroviaires (FR)
ASTOC	Association of Swedish Train Operating Companies (SE)
BAV-FOT	Bumdesamt für Verkehr, Federal Office of Transport (SWI)
BKA	Bundeskartellamt (DE)
BLS	Bern-Lötschberg-Simplon (SWI)
BMVBS	Bundesministerium für Verkehr, Bau und Stadtentwicklung (DE)
BMWi	Bundesministerium für Wirtschaft und Technologie (DE)
BNetzA	Bundesnetz Agentur (DE)
BR	British Railways (UK)
BSWAG	Bundesschienenwegeausbaugesetz (DE)
BU	Business Unit
CPTA	County Public Transport Authorities (SE)
CSSPF	Conseil supérieur du service public ferroviaire (FR)
DB	Deutsche Bahn (DE)
DCF	Direction de la Circulation Ferroviaire (FR)
DETEC	Federal Department of the Environment, Transport, Energy and Communications (SWI)
DfT	Department for Transport (UK)
EBA	Eisenbahnbundesamt (DE)
EdB	Eisenbahnen des Bundes (DE)
EIBV	Eisenbahninfrastruktur-Benutzungsverordnung (DE)
EIU	Eisenbahninfrastrukturunternehmen (DE)
EPSF	Etablissement public de sécurité ferroviaire (FR)
EU	European Union
EVU	Eisenbahnverkehrsunternehmen (DE)
FOC	Freight Train Operator (UK)

FOT	Federal Office of Transport (SWI)
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GWF	Greater Western Franchise (UK)
HHI	Herfindahl-Hirschman Index
HLOS	High Level Output Specification (UK)
HSE	Health and Safety Executive (UK)
HSL	High Speed Line
ICA	Italian Competition Authority
IM	Infrastructure Manager
IVW	Inspectie Verkeer en Waterstraat (NL)
JPIP	Joint Performance Improvement Plan (UK)
KKV	Konkurrensverket (SE)
KPI	Key Performance Indicators
KpVV	Knowledge Centre on Public Transport (NL)
LOTI	Loi Orientation de Transport Intérieur (FR)
LuFV	Leistungs- und Finanzierungsvereinbarung (DE)
MCAF	Mission du contrôle des activités ferroviaires (FR)
NEG	National Express Group plc (UK)
Nma	Nederlandse Mededingingsautoriteit (NL)
NS	Nederlandse Spoorwegen (NL)
OCCR	Operationeel Controle Centrum Rail (NL)
OECD	Organisation for Economic Co-operation and Development
OFT	Office of Fair Trading (UK)
OPRAF	Office of Passenger Rail Franchising (UK)
ORR	Office of Rail Regulation (UK)
ORTF	Organisation et Régulation des Transports Ferroviaires (FR)
PI	Performance Indicators
PPM	Public Performance Measure (UK)
PPP	Public Private Partnership
PSO	Public Service Obligation
PTA	Public Transport Authority
PTE	Passenger Transport Executive (UK)

R&D	Research&Development
RACO	Railways Arbitration Commission (SWI)
RegB	Regierungskomission Bahn (DE)
RegTP	Regulierungsbehörde für Telekommunikation und Post (DE)
RFF	Réseau Ferré de France (FR)
RMMS	Rail Market Monitoring Scheme
ROSCO	ROlling Stock leasing Company (UK)
RU	Railway Undertaking
RUS	Route Utilisation Strategy (UK)
SBB-CFF-FFS	Swiss Federal Railways (SWI)
SKE-CACF-CAF-RACO	Schiedskommission im Eisenbahnverkehr, Commission d'arbitrage dans le domaine des chemins de fer, Commissione d'arbitrato in materia ferroviaria, Swiss Rail Arbitration Commission (SWI)
SNCF	Société Nationale des Chemins de fer français (FR)
SOB	Südostbahn (SWI)
SoFA	Statement of Funds Available (UK)
SRA	Strategic Rail Authority (UK)
STIF	Syndicat des transports d'Île-de-France (FR)
TER	Transport Express Regional (FR)
TET	Trains d'Équilibre du Territoire (FR)
TGN	Thameslink and Great Northern (UK)
TOC	Train Operating Company (UK)
UIC	Union Internationale des Chemins de fer
VDV	Verband Deutscher Verkehrsunternehmen (DE)
VÖV UTP	Verbandes öffentlicher Verkehr Union des transports publics, société cooperative Unione dei trasporti pubblici, società cooperativa (SWI)
VwVG	Verwaltungsverfahrensgesetz (SWI)
WEKO	Wettbewerbskommission (SWI)

Introduction

This research project is about the liberalizing railway industry in Europe, particularly about the institutional dimensions of such liberalization. More precisely, we want to know whether liberalization – as an institutional change accompanied, among others, by the creation of competition and independent Regulatory Authorities – does lead to better performance of the railway systems. Our driving question is whether a causal relationship can be established between a given institutional arrangement and a certain performance of a railway system. In this introductory chapter we will briefly recall the context of this research project, formulate its main research questions, recall the theoretical framework and argumentation underlying this research, present its methodology, and outline the report's broad structure.

1.1 The context and subject matter

In the European Union (EU) as of January 1st 2010 European rail undertakings (RUs) are granted a right of access to the rail infrastructure of other Member States for the purpose of operating international passenger services, including cabotage (Directive 2007/58/EC). Such market opening comes on top of the already existing access in the cargo market as of 2004 (Directive 2004/51/EC). While offering new business opportunities to RUs and infrastructures managers, the mandated access takes place in a still developing institutional environment. Regulatory Authorities in the EU, as well as the Swiss Parliament, Government, and administration, are still struggling with the application of this and the previous Directives (Directives 91/440/EEC amended by Directive 2004/51/EC and by Directive 2007/58/EC). For instance, Member States are allowed to limit the right of access on routes covered by public service contracts if certain conditions are met or to charge a levy on international rail passenger services to compensate for the costs incurred by such public service contracts. In the case of Switzerland, EU railway packages 1-3 have not yet been transposed into national legislation, even though freight transport is liberalized since 1999.

As witnessed by the opening of the European railway freight sector in 2007, the introduction of competition brought major institutional changes and required significant institutional adjustments. For example, most of the EU Member States have unbundled their historical railway operator (as mandated by Directive 91/440/EEC) and created some sort of Regulatory Authority. However, and despite the passing of the EU Directives that are common to all Member States, the institutional arrangements governing the railway sectors differ markedly from country to country. And so does the performance of the national railway sector, as well as the overall benefits derived from liberalization.

An increasing body of literature covers the introduction of competition in the freight sector at the European level (Bozicnik, 2009; Brewer, 1996; Pittman, 2005) and the introduction of competition in the passenger sector at the domestic level (UK, Germany). However, there is still little research and literature about the institutional arrangements that accompany such market opening, especially when it comes to competition in the international passenger market as well as to the broader opening of the domestic passenger market.

This research project aims at identifying, describing and analysing the main types of institutional arrangements emerged in a selected number of countries as a result of freight liberalization and now also international passenger liberalization. It attempts to draw a typology from the institutional landscapes observed and relate the arrangements to their

performance. By institutional arrangement we mean – in the intellectual tradition of institutional economics – the different actors involved in governing the railway sector of a country (e.g., RUs, infrastructure companies, sector specific Regulators, competition Regulators, price Regulators, national offices, political actors, legal actors and others more), their responsibilities (decision rights), as well as the formal and informal rules governing the relationships among these actors (distribution of these decision rights among these actors).

1.2 The research questions

Within the above outlined context, this research seeks to establish a relationship between a particular institutional arrangement on the one hand and the performance of a national railway system under this very institutional arrangement on the other. More precisely, we try to answer the following three questions:

- What are the various institutional arrangements in the European Member States and Switzerland as answers to the opening of the freight, as well as the international and in some cases the domestic passenger railway markets? Particular attention will be paid to the roles and responsibilities of the newly created Regulatory Authorities (where they exist), as well as to the roles and responsibilities of the Competition Authorities.
- How do these different institutional arrangements relate to the performance of the respective national railway systems? In other words, which institutional arrangement proves to be the most successful?
- What lessons can be learned from these different institutional arrangements and their performance?

The following Table 1 provides an overview of the parts of the report that are directly relevant to each research question.

Table 1. Research questions and sections of the report addressing them

What are the various institutional arrangements in the European Member States and Switzerland as answers to the opening of the freight, as well as the international and in some cases the domestic passenger railway markets?	- Review in chapter 3 - Detailed representation of actors' evolution against time on the attached spreadsheets (referred to in chapter 3) - Milestones of actors' evolution against time on the attached spreadsheets (referred to in chapter 3)
How do these different institutional arrangements relate to the performance of the respective national railway systems?	- Review of performance measures in chapter 4 - Discussion of performance measures and institutional developments in chapter 4 - Interactive charts of institutional arrangements and performance indicators on the attached spreadsheets (referred to in chapter 3)
What lessons can be learned from these different institutional arrangements and their performance?	- Conclusions on the institutional arrangements in chapter 3 - Interviews and conclusions on the role of the actors and the governance of the system in chapter 5 - Report conclusions in chapter 6

1.3 The underlying theoretical framework and argumentation

Let us briefly outline here the theoretical framework underlying this research project. The so-called "coherence framework" (Finger, et al. 2005) has been developed for the network industries in general but is applied here to the particular case of railways. It constitutes a way of conceptualizing the co-evolution between technology and institutions in the network industries, relating this co-evolution to the network industries' performance. At its most general level, the framework states that there must be "some sort of" coherence between the state of technology in the network industries and the institutional arrangements governing this state of technology. If this coherence is "insufficient", there will be consequences for the performance of the network industries, i.e., of the respective infrastructure system (e.g., air transport system, railway system, electricity system). Furthermore, the framework identifies a certain number of so-called "critical, system-relevant functions", which are particularly sensitive to a "lack of coherence". More precisely, four such critical, system-relevant functions are identified, namely interconnection, interoperability, capacity management and system management.

Historically, the network industries are characterized above all by a change in the institutional framework, such as liberalization, deregulation and privatization. This, it is argued, creates a certain "incoherence" with the existing state of technology in a given network industry, thus affecting performance. Telecommunications industry, where the initial change was technological in nature, may be an exception, because the change in institutions (e.g., liberalization) constitutes actually a step towards recreating certain coherence.

This general framework is now applied to the specific case of national railway systems: liberalization, deregulation and privatization (in the case of the UK) are said to introduce certain incoherence in the way the critical, system-relevant functions were governed historically, thus affecting the railway system's overall performance. The assumption is that these critical, system-relevant functions must nevertheless be assumed. But the problematic issues of who takes these responsibilities and how to coordinate the different actors now partially responsible for these functions have emerged. Basically, the question is how the coordination (or lack thereof) among the actors in a (partially) liberalized railway environment relates to the performance of a given national railway system.

The (partial) liberalization of the railway sector, as for example promoted by the European Commission, leads to a new conceptualization of its governance, whose main characteristics are as follows:

- There is an infrastructure organization operating the tracks and the stations, unbundled at least in accounting terms from the train operating companies (or the rolling stock companies for that matter); as a sub-position, one may also separate infrastructure from stations.
- There is an independent Regulatory Authority that supervises the infrastructure operator (in the interest of the consumers); the Regulator also watches out on discrimination regarding the access to and pricing of the infrastructure.
- The question of financing is a matter of public policy and leads to different incentives depending on where and how financing occurs. The intellectually clean position is that there is (1) financing for the infrastructure operator and (2) financing for particular lines under public service mandates after a tendering procedure.

We do not know whether such an idealized governance mechanisms actually works, meaning that we do not really know what the performance of such a system actually would be. Thus the need for research. However, we do know about the current performance of the (sometimes partially unbundled) railway systems, none of which is identical to this idealized governance mechanism. It is legitimate to claim that any future system – including a perfectly unbundled system – should be at least as efficient as the current system.

In order to determine the performance of any railway system, we have developed the following "storyline". By storyline we mean the logic of how to approach and ultimately measure the performance of a railway system. The storyline goes as follows:

- Unbundling is an institutional change. However, railways are first of all a technological, and not an institutional system. Institutions are built to make the (technological) railway system function. At any given state of (railway) technology, institutions can help make the railway system function more or less well. The functioning of the technological (railway) system will depend, among others, upon a series of critical functions that must be performed. These are interoperability, interconnection, capacity management, and system management. These functions are always ensured by way of a combination of technology and institutional rules. In a fully integrated railway system, the rules for these critical functions are internalized, i.e., defined inside the integrated company. Once the system is totally unbundled, the rules for ensuring the critical functions of interoperability, capacity management and system management must be defined and assumed by some other institution (for example the infrastructure company or the Regulator). At the beginning of liberalization (unbundling), technology, however, has not yet changed. The question now is whether the overall railway system is still performing as well as at the time when the rules were internalized (or worse or better).
- Indeed, the performance of a (railway) system can be defined as the result of a complex interplay/interaction between a given state of technology and the rules that govern this technology, in particular the rules about the critical functions. More precisely, the state of the institutions and the state of technology combined constitute incentives for the involved actors, and it is the interplay between these actors (who are or can be inside and outside the integrated company) to ultimately produce the outcomes/performance of the overall (railway) system.
- One should be able to describe the performance of any given (railway) system at any given moment of time. We propose, in the case of infrastructure systems such as railways, operational, technical, economic, social, and environmental performance measures (see chapter 4). However, relating such performance (different types of performance) to the interplay between any given state of technology and any given state of institutions is difficult, and attributing particular performances to particular actors (given that we are dealing with a complex socio-technical system) is even more difficult. Theory, for example, predicts that the introduction of competition (by way of unbundling) leads to better (short term) economic performance. This may well be the case (even though this should be ultimately established on the basis of facts and not theory), but it is for example not clear whether such economic efficiency gains thanks to unbundling and competition are offset by losses in other performance measures (e.g., punctuality, accidents, incidents). Ultimately, it falls of course upon the political authorities – i.e., the ones who finance and subsidize the railway system – to determine which PIs they value more than others and to prioritize them.
- We thus proposed, at the outset of this project, to study which type of arrangement between technology and institutions ("model") produces which performances (along the

different categories of performance). At this point, we propose to establish a purely empirical link between the different models and their performances. Rather than to derive the performance from the model (i.e., the particular type of arrangement between a state of technology and a state of institutions), we propose to explain a given performance by the model, i.e., to find causes which are due to a particular model and which explain the particular performance of that model. Ideally, of course, we would also look at the dynamics, i.e., to understand how changes in the performance can be attributed to changes in the model (i.e., changes in the relationship between technology and institutions).

1.4 The underlying methodology

The research project rests largely on qualitative methodology.

The analysis of existing literature on the governance and competition in the railway sector, as well as a collection of information on the latest developments of institutional arrangements, has led to choosing five EU case studies, besides Switzerland. As part of the case studies, a pictorial representation of the evolution of the railway sector for the case countries has been developed. The main discontinuities in institutional arrangements have then been identified as milestones to be used in the quantitative section of the work.

Quantitative indicators available through international institutions (Eurostat, OECD, European Energy Agency), and therefore comparable across countries, have been used as the basis for investigating the relationship and the possible existence of an empirical link between performance and evolution of institutions.

Finally a questionnaire was proposed to stakeholders from the case countries to investigate their view of the systemic approach to railways within their current institutional arrangement and their expectations on performance for the system and for their own organisation.

1.5 Outline of the report's structure

Besides this introductory chapter, this report is structured into four main parts.

A first part, comprising chapter 2 and chapter 3, gives a brief summary of the literature on competition in railways and develops the case studies on which the research is based. The existing actors are described and the evolution of the stakeholders since 1988 is outlined for each case study, characterising the most interesting elements and developing the support for a quantitative analysis in the next main part as well as a typology of institutions. The following part is made up by Chapter 4. This is devoted to performance measures, a review of those available and the discussion of how they changed against the institutional evolution in the case studies. The views of the stakeholders on the systems in which they work and on the relevant performances have been collected in the next part, contained in chapter 5. While intermediate conclusions are given at the end of each of the previous main parts, the key conclusions are presented in the closing chapter 6.

2 Competition in railways: a literature review

2.1 Introduction

This chapter is divided into two sections. We start by reviewing the literature on competition in the railway sector. Subsequently, we analyse the current state of competition in the European railway sector. This will lead us, in the conclusion, to select the countries of our study.

2.2 State of the literature on competition in railways

This section proposes a brief literature review of competition and of some of the issues raised by the introduction of competition in the railway sector. In particular, it highlights the importance of defining precisely what is meant by competition and the question of the means and ends of competition.

In his discussion paper on the competition for long-distance passenger rail service, Preston (2009, page 4) notes that "*rail competition, where it occurs, is likely to be small group in nature. Market demand is often too thin to support a large number of operators, whilst there may be some economies of scale and density that limit the optimum number of firms in rail markets. The relevant industry structure is therefore that of oligopoly competition*".[1]

While most economists and policy makers agree that competition should be introduced in the railway industry, agreement on how this should be done is lacking. According to the OECD (2006) the three different modes of competition[2] in the rail sector are:

- Competition in-the-market between vertically-integrated rail companies. This form of competition requires the existence of at least two separate rail infrastructures capable of providing substitute rail services (e.g., two different rail routes between a given city-pair); this is the predominant form of competition in rail freight services in North America.
- Competition in-the-market between train operating companies with regulated access to track infrastructure (which may or may not be owned by one of the companies providing train services). This is the predominant form of competition in freight services in Europe and most of Australia. Pittman (2008) notes that competition in-the-market can be further broken down into a complete "vertical separation" model – the prohibition of the network operator from operating its own trains, a policy urged by DG Competition – and a "third party access model", with a vertically integrated infrastructure and train company forced to allow access to its infrastructure to competing, non-integrated train

[1] In fact classical models assume competition occurs either in the price dimension (Bertrand competition) or in the service dimension (Cournot competition). The conventional wisdom is that where capacity is difficult to increase (e.g., rail) competition will be of the Cournot type, but where capacity can easily be increased (e.g., bus) competition will be of the Bertrand type (Quinet & Vickerman, 2004).

[2] Holvad et al. (2003) distinguish two further types of competition: capital market competition and product market competition. Capital market competition concerns rail company ownership models and covers the spectrum ranging from Government departments under direct political control to arm's length Agencies and finally to private corporations. Product market competition concerns the scale at which rail services can be provided by different train operating companies and ranges from pure monopoly to perfect competition.

operating companies. These models tend to blur a bit, as intermediate solutions such as "accounting separation" are accepted as means of preserving ownership integration while making third party access terms more transparent, and thus (it is hoped) preventing discrimination. Although route competition has remained a feature in countries such as Japan, in-the-market competition between passenger rail operators has been limited. For-the-market competition, in the form of competitive tendering and franchising is more common in the passenger rail industry than in-the-market.

- Competition for-the-market between rail companies (either for integrated track-plus-train services or just for train services alone, operating under a regime of regulated access to the track infrastructure). This is the predominant form of competition for regional passenger services in many EU countries.

Overall, the European style of competition varies notably from competition among vertically integrated train and infrastructure enterprises, a model chosen by policymakers in the geographically large, freight-dominated countries of the Americas – originally by the United States and Canada, more recently by Mexico, Brazil, and Argentina[3].

In general, the degree to which complete separation of train and infrastructure operations in Europe has actually taken place – as well as the degree to which actual competition among train operating companies has appeared – varies significantly by country. "Third party access" tends to be observed in countries that have nominally chosen the vertical separation model but have moved only part way toward achieving it – i.e., countries that have taken steps to open up the train sector to competition but have not fully separated the incumbent freight operator from its infrastructure operations, Germany being the most salient example of this, as it has instituted "accounting separation" but not "ownership separation" of trains and tracks.

Biztan (2003) examined the cost implications of competition over existing US freight rail lines by testing for the condition of cost subadditivity. He finds that: (1) there are economies associated with vertically integrated roadway maintenance and transport, suggesting that separating the two would result in increased resource costs; and (2) railroads are natural monopolies in providing transport services over their own network, suggesting that multiple-firm competition over such a network would result in increased resource costs. These findings suggest that policies introducing rail competition through "open access" or on bottleneck segments would not be beneficial from a cost perspective. Moreover, the price decreases necessary for the introduction of such competition to be beneficial would be large.

In an early study of the opening of Sweden to internal competition Jensen (1998) finds that external competitive pressure is strong in most supply segments and that, focusing on loss of scale advantages, the transformation will result in significant costs. Comparing the potential for gains by competition against the costs, he concludes that increased efficiency by internal competition seems possible only for two train products: domestic combined transport and dedicated trains (both freight services).

Looking at the freight sector Pittman (2005) identifies three attributes that have proven problematic for recent experiments with vertical separation: a) a relatively high share of

[3] The "American model" can be divided into a "North American model" – the US and Canada, with an emphasis on origin-destination competition between "parallel" vertically integrated railways – and a "Latin American model" – Mexico, Brazil, Chile, and Argentina, with an emphasis on competition for the business of shippers and customers at particular points served by more than one railway.

network costs in total delivered service costs, b) an apparent persistence of economies of scale at the "competitive" train operations level, and, perhaps most importantly, c) strong economies of vertical integration that are focused on the interface point of wheel and rail – that is, exactly where vertical separation takes place[4].

Mulder et al. (2005) look at two questions: (1) whether the vertical separation between network and operation caused a loss of economies of scope and to which extent other institutional changes have improved the coordination between infra manager and railway operators, and (2) which efficiency improvements in railway operations have occurred and to which extent they are related to the institutional changes. In general, the literature on vertical economies (i.e., economies of scope between train and infrastructure operations) is not consistent, but mild economies are at least suggested (C. Growitsch & Wetzel, 2006; Ivaldi & Mccullough, 2008).

Nash (2008) looks at the objectives of European railway reforms, the different models adopted for restructuring, the key elements of separation of infrastructure from operations, as well as competition both through open access and franchising and regulation and infrastructure charging. He concludes that separation of infrastructure from operations involves costs, but it constitutes the most effective way of achieving within mode competition. Where operations do not greatly overlap and open access passenger and freight are unimportant, leasing infrastructure to passenger franchisees may be effective, but the model of vertical integration as separate subsidiaries within a holding company structure makes it difficult to ensure a level playing field for new entrants and is only effective where the vertically integrated operator remains dominant.

Overall, the literature is not conclusive as to the optimal institutional model: which is the model that is most conducive to competition? And which form of competition and related instuitutional model is actually leading to the best performance? The literature is mostly silent about this latter point. More recently, Mizutani and Uranishi (2011) conducted an econometric analysis of railways in OECD countries and concluded that vertical separation is linked to cost reductions in the case of low service density and to cost rises with higher density.

State of competition in European railways

As pointed out by Nash and Matthews (2009), progress on the 2001 White Paper has so far been largely restricted to intra-modal competition. Strong competition has emerged in the freight business particularly on the crucial North-South axis through the Alps, even if concerns on institutional arrangements that in many Member States do not ensure fair competition between former national railways and new entrants remain. In their study on the introduction of competition for local passenger railway markets in the German State of Baden-Württemberg, Lalive and Schmutzler (2008) find that the competitively-procured lines enjoyed a stronger growth of the frequency of service than those that were not procured competitively, even after controlling for various line characteristics that might have had an independent influence on the frequency of service. Their results further suggest that the effects of competition may depend strongly upon the operator.

[4] The third factor in particular is a clear illustration of the rationales discussed by Coase & Williamson for the broad vertical scope of a single firm and the disadvantages of relying on market transactions under certain conditions.

In its recent communication (European Commission, 2010), the Commission acknowledges that market access remains difficult for new entrants. In order to maintain its policy of railway revitalization, the Commission aims to (1) improve non-discriminatory access to service facilities, (2) enhance transparency of the railway market's institutional framework, (3) enhance cooperation and coordination to facilitate international rail transport, (4) provide effective incentives for sound and sustainable financing, and (5) enhance regulatory body independence and competencies. It also addresses the issue of competence regarding non-discrimination (e.g., Regulatory or Competition Authority)[5].

Giannino (2010) argues that "incumbent railway undertakings still have a relevant market power" and, when vertically integrated, "they have an incentive to exercise their power to frustrate the entry of new competitors into the market. Such practices may fall within the competition rules that prohibit abuse of dominant position". The investigations conducted by the Italian Competition Authority (ICA) have shown the potential of discriminatory practices carried out by the incumbent (e.g., the case *Rail Traction Company/Rete Ferroviaria italiana-Ferrovie dello Stato*, *Nuovo Trasporto Viaggiatori* or *FS/GVG*).

Table 2 illustrates the degree of competition in the European railway sector as measured by relative market share.

Table 2. Market opening in Europe (2008) - market shares

Country	Freight			Passenger		
	Incumbent	Non-incumbent	MO score	Incumbent	Non-incumbent	MO score
AT	86	14	.740	88	12	.774
BE	93.9	6.1	.882	100	0	
BG	85.68	14.32		100	0	
DE	78	22	.608	89.9	10.1	.792
DK	-	-		91	9	.828
EE	51	49	.0389	42.3	57.7	.179
EL	100	0		100	0	1
ES	95	5	.903	100	0	1
FI	100	0	1.00	100	0	1
FR	95	5	.810	100	0	1
HU	85.6	14.4	.733	98.2	1.8	.964
IE	100	0		100	0	1
IT	-	-		-	-	
LT	100	0	1	100	0	1
LV	90.43	9.57	.818	90.92	9.08	.824
NL	67	33		98	2	
PL	76.03	23.97	.470	88.89	11.11	.790
PT	-	-		-	-	
RO	59.01	40.99	.350	98.9	1	.978
SE	-	-		-	-	
SI	100	0	1	100	0	1
SK	97.97	2.03		99.97	0.03	1
UK	0	100	.311	0	100	0.001
NO	79	21	.620	88	12	.770

Note: Based on RMMS questionnaire; MO score computed using HHI – 2008
Comment: For freight, some major European countries (e.g., Italy, Sweden, Denmark) are missing
Source: Everis (2010)

[5] In the case of access to service facilities, the Commission recommends to extend the scope of Regulatory Bodies' competences to cover Decisions related to Annex II of Directive 2001/14/EC (rail-related services).

Table 3 below summarizes the current legal state of competition in the different market segments as defined by EU legislation.

Table 3. Legal state of competition in Europe

Type of traffic	Legislation	Effective opening to competition	Type of competition	Comment
Passenger – international	3rd packet, Directive 2007/58/EC	01/01/2010	In the market	Possible competition for cross-border regional traffic
Passenger – cabotage	3rd packet, Directive 2007/58/EC	01/01/2010	In the market	Restriction if endangers PSO equilibrium
Passenger – domestic long distance	Proposition from EC	None	For the market	Refused by Council
Passenger – domestic regional	PSO regulation 1370/2077/CE	Latest 2019	For the market	Protection of existing contracts – 10 year transition period

Source: Compiled by authors, adapted from Desmaris, 2010

2.3 Conclusion: selection of countries

The countries for our case studies have been chosen in such a way that they offer the most different views on the progressive change in institutions – particularly in terms of unbundling and regulation. As a start, we have used Nash's (2008) typology as presented in Table 4 below.

Table 4. Three institutional models of railways in Europe

Complete separation (the Swedish model)	Holding company (the German model)	Separation of key powers (the French model)
Britain	Austria	Czech Republic
Finland	Belgium	Estonia
Denmark	Germany	France
Lithuania	Italy	Hungary
Netherlands	Latvia	Slovenia
Norway	Poland	Luxembourg
Spain	Greece	
Portugal		
Slovakia		
Sweden		

Note: Ireland and Northern Ireland remain vertically integrated
Source: CEC, 2006, and Nash, 2008

While Germany and France have been chosen to represent their category of restructuring, Britain, Sweden and the Netherlands have been chosen because they represent different forms of separation. Britain saw the most radical reform and offers the possibility of looking at regulatory institutions that have seen a long development. Sweden was the first European country to unbundle its State railways and is the first to fully open access on its rail infrastructure. Moreover, two of the case countries fully opened their network for passenger services (Germany and Sweden), two chose to control access by way of concessions or franchises (the Netherlands and Britain, respectively) while use of infrastructure in France is

reserved for the state railway company *SNCF*. The Netherlands are also particularly interesting as they have a multipolar, dense and densely used network with important transit freight traffic (port to hinterland traffic), which makes them to some extent comparable to the Swiss rail case. Given the purpose of this report it was important to include Switzerland in the analysis, which allows drawing conclusions.

3 Institutional arrangements in five selected countries, plus Switzerland

3.1 Introduction

This chapter reviews the institutional arrangements currently governing the five selected European countries (i.e., France, Germany, The Netherlands, Sweden and Britain) plus Switzerland. The country cases are preceded by a presentation about the state of PSO in EU legislation.

Each country study follows a similar presentation format, which presents the main relevant actors, their roles and responsibilities, with particular focus on the Regulatory Authority and the Competition Authority. The country studies summarise the level of competition in each country and give an account of the main events in the evolution of competition and regulatory arrangements.

A separate section in each country's description is dedicated to the services provided under PSOs. There are three reasons for looking in particular at PSOs, namely (i) the importance in terms of train-km and of funding of such services[6], (ii) the fact that PSOs have been in many cases the market where new entrants start operating successfully (as in Sweden, Germany, and the Netherlands; in the latter case because it is the only market where they are allowed to operate), and (iii) because of the political importance of such services.

Each country's description is complemented by two charts: the first one depicts the evolution of the main actors in each railway system from 1988 to date, drawing attention to the changes that have taken place over time and offering the sequence of key facts (e.g., legislation, events) that had an effect on the evolution of the rail system. The chart is included here for completeness, but it is also reproduced in an annex to this report, as it is printed in large format. The second chart singles out the main steps in the institutional evolution in each country and summarises the reasons behind those evolutions.

A large number of elements and actors could have been described and followed in their evolution over the years in the charts. We had to make a selection focusing on some more prominent aspect.

As for the actors we selected the main ones in which a vertically integrated railway may be unbundled, based on the countries we were examining. Therefore we have looked at:

- The incumbent operators, passenger and freight, which have disappeared or most often changed shape;
- Rolling stock providers and rolling stock maintenance providers (although in the latter case we were able to collect little information);

[6] CER (2011) points out that PSO services are 46% of the turnover generated by *SNCF* in passenger services in 2009 (about 9 billion euros) and that in the EU in 2007 they amounted to about 90% of domestic passenger transport.

- The different main functions that may be associated with infrastructure management: capacity allocation, traffic control, station management, infrastructure management, infrastructure maintenance;
- New entrants, in the passenger and freight sector, to highlight when they appeared, also in relation to the remainder of the developments;
- The main bodies responsible for regulation: the Competition Authority, the Railway Economic Regulator and the Railway Safety Regulator;
- The bodies responsible for procuring local/regional services and those in charge of national services contracted to operators under PSO.

Finally, we looked at the evolution of the Governments during the same years surveyed for the evolution of the rail sector.

The charts report the status of the long-distance and regional passenger transport arrangements (e.g., monopoly, concession, open access) as well as the set-up of the freight market.

There are several aims for these charts:

- They summarise and condense much of the information collected on the case studies;
- They are intended to allow us to determine milestones of institutional evolution in each case country, as in rather stable overall arrangements;
- The information depicted should lead us to obtain a typology of institutions in the rail sector;
- The milestones or, more generally, the whole evolution in each case country is to be contrasted with systemic PIs in the next chapter, to explore the existence of an empirical link between the institutional evolution and the indicators.

A closing section sums up the key points of the case studies illustrating a typology of institutions in the rail sector.

The institutional and competitive landscapes in EU Member States are conditioned, and partly driven, by the three rail packages, requiring among others separation of accounts (at least) for infrastructure management and rail operations, the existence of a Rail Regulator, the opening of the freight market, the opening of the international passenger market. These had to be transposed into national law and States did so in different ways, using the leeway that the Directives left open.

One recent Regulation, 1370/2007 on PSO services, affects directly the competitive environment and it is of high relevance, given the importance of the PSO market.

While mandating contracts to discharge PSO services and stipulating maximum duration, it exempted rail services from mandatory public tendering. The key points of the regulation are recalled below, before moving on to the case countries, since it applies to all of them, except Switzerland.

3.2 Public service obligations

Recent decades have seen enormous changes in the way in which public transport services are organised and operated. Where once local, regional or national public authorities ran services themselves, many authorities now engage companies specialised in transport provision. In return for running services that would not be commercially viable, these operators are compensated by public authorities. Contracts for carrying out such PSOs must be awarded on the basis of clear, consistent and fair rules, and be open to providers from throughout the EU as most recently indicated by Regulation 1370/2007 "on public passenger transport services by rail and by road" (see also Appendix IV).

The previous regulation governing the financing of PSO contracts for public transport in the EU dated back to 1969 and had been updated in 1991. However, it no longer provided the legal certainty needed today, and has become inappropriate for the task of ensuring that PSOs are awarded fairly in all cases. The Commission has therefore put forward a proposal for a new regulation. Following a long process started in 2000 the European Commission has adopted in 2007 a new regulation for "public passenger transport services by rail and by road" (European Parliament and Council, 2007b). The legislation defines PSO as "a requirement defined or determined by a competent Authority in order to ensure public passenger transport services in the general interest that an operator, if it were considering its own commercial interests, would not assume or would not assume to the same extent or under the same conditions without reward." (cfr. Reg. 1370/2007, art. 2(e)). Under such rules, public authorities compensate transport operators for undertaking PSOs – either by granting exclusive access rights or direct payment. But each Authority is free to choose whether to entrust the operation of public transport services to its own internal operator or to award a contract to an external operator.

The PSO regulation asks Member States to provide the Commission with a progress report, highlighting the implementation of any gradual award of public service contracts. The key points of the PSO regulation are as follows:

- Mandatory contracts: where a competent Authority decides to grant the operator of its choice an exclusive right and/or compensation, of whatever nature, in return for the discharge of PSOs, it shall do so within the framework of a public service contract.
- Duration: the duration of public service contracts shall be limited and shall not exceed 10 years for coach and bus services and 15 years for passenger transport services by rail or other track-based modes. The duration of public service contracts relating to several modes of transport shall be limited to 15 years if transport by rail or other track-based modes represents more than 50% of the value of the services in question.
- Awarding: public service contracts shall be awarded in accordance with the rules laid down in this Regulation. Unless prohibited by national law, any competent Local Authority, whether or not it is an individual Authority or a group of Authorities providing integrated public passenger transport services, may decide to provide public passenger transport services itself or to award public service contracts directly to a legally distinct entity. The competent Local Authority, or in the case of a group of Authorities at least one competent Local Authority, exercises control over this entity similar to that exercised over its own departments. The special status given in the regulation to rail services is of particular interest here: unless prohibited by national law, competent Authorities may decide to make direct awards of public service contracts where they concern transport by rail.

As regulation this new provision takes direct effect in all Member States, but its application has generated some issues. For instance, according to the rules to be applied in the transition period, guidance on the details of the application to railways are expected by actors (see Möllmann, 2011).

3.3 France

Outline

France is currently preparing and discussing a stage of reforms about the governance of the rail system, the possible opening of the long distance passenger transport market and the tendering of regional rail services, which are all now a monopoly of the state operator, *Société Nationale des Chemins de fer français - SNCF*. The latter runs the most extensive European high speed network, a key element in long distance transport in the country. Several reform steps were enacted recently due to the need of transposing the European framework into French law. The separation of infrastructure and operations in 1997 has resulted in an IM that does not carry out directly some important functions, as maintenance (contracted back to the State RU *SNCF*) and traffic control capacity allocation (now carried out by the *Direction de la Circulation Ferroviaire - DCF*, an independent body within *SNCF* following the directions of *Réseau Ferré de France - RFF*). Freight open access was effective from 2006 and the only passenger open access currently allowed is on international services. An important recent change is the introduction from 2010 of an independent Railway Regulator as described in the following paragraphs and summarised in Table 7 and Table 8 below.

The following tables and figure introduce the dimension of railway transport in France, the main actors and their role (see also Appendix I).

Table 5. Selected statistics, France (2005-2009)

Criteria	2005	2006	2007	2008	2009	2010
Km of rail	29,286	29,463	29,918	29,901	29,903	-
Train km, in thousand	505,800	484,647	481,635	514,719	480,386	-
Pax km, in million	76.47	78.79	80.31	84.97	88.61	-
T km, in million	40.70	41.18	42.62	40.63	32.13	29.96

Source: Eurostat, Transport in Figures 2011 (EC, 2011)

Table 6. Summary of provisions for access to the French rail market

Passenger services	No access for external operators
Freight services	Open since 2003 but effective in 2006

Source: Compiled by authors, Quinet (2005), SETRA (2009), Quinet (2010)

Table 7. Regulatory institutions relevant to the French railway market

Economic Regulator	*Autorité de régulation des activités ferroviaires* (*ARAF*)
Safety Regulator	*Etablissement Public de Sécurité Ferroviaire* (*EPSF*)
Other Regulatory Agencies involved	*Autorité de la Concurrence* (*AC*)

Source: Compiled by authors

Table 8. Main information about the Economic Regulator of the French rail industry

Name of Economic Regulator	*Autorité de régulation des activités ferroviaires* (*ARAF*)
Name in English	N.A.
Creation of Agency	2009 (start in 2010)
Nature of Regulatory Agency	Independent administrative Authority with "moral personality"
Scope of intervention	Limited to railway sector; excludes safety (*EPSF*)
Role and mission	Allow non-discriminatory access to network
Composition	7 members appointed by different Agencies
Sanctioning powers	Can sanction discriminatory behaviour
Enquiry and information powers	Strong; actors must submit relevant data
Relation to Competition Authority	Cooperation with *Autorité de Concurrence* (AC)
Budget	8 million euros
Personnel	50
Relationship to Parliament	Annual report

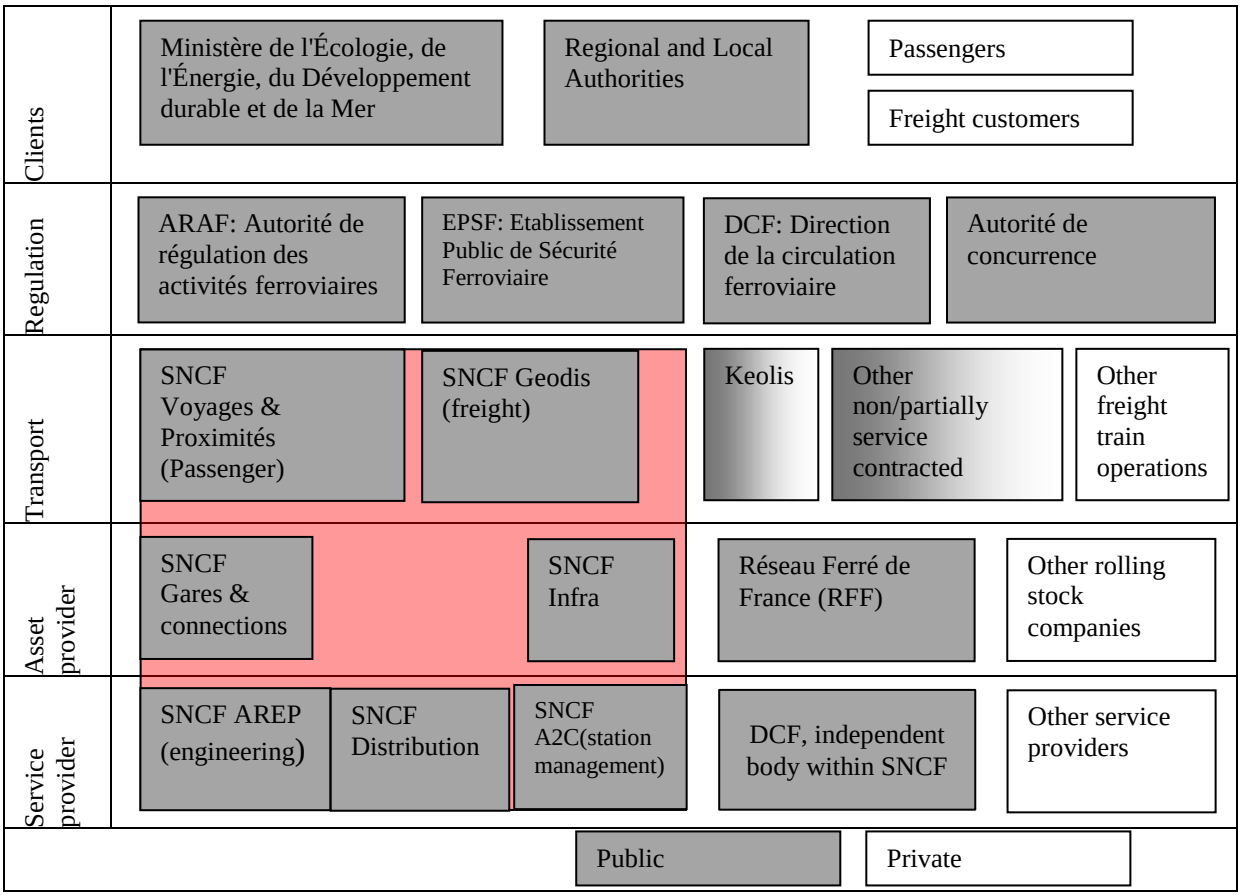
Source: Compiled by authors

Table 9. Infrastructure management and path allocation in the French railway market

Infrastructure management	*RFF* for majority of network but maintenance contracted to *SNCF* Some PPP (Vinci on Tours-Bordeaux HSL: 50 year concession)
Path allocation	*RFF/DCF*
Traffic control	*RFF/DCF*

Source: Compiled by authors

Figure 1. Main actors of French railway system



Source: Authors, compiled from various official documents, including Sétra (2009), using a framework by Merkert et al (2008)

As mentioned above, changes in the institutional landscape in French railways are very recent. Until the end of 2009, the *Mission du contrôle des activités ferroviaires* (*MCAF*) acted as the control organism for the regulation of railway activities in France. In its advisory role to the Minister for Transport, the *MCAF* monitored network access conditions and conducted investigations concerning network access complaints. The Ministry for Transport was in charge of essential functions: access charges, licenses, PSOs and safety certificates. In addition, the *Conseil supérieur du service public ferroviaire* (*CSSPF*) was in charge of ensuring the coordination of the French railway system[7]. The *Etablissement public de sécurité ferroviaire* (*EPSF*) is in charge of the application of railway safety regulation. In addition, the Regions are in charge of defining and financing (partially) the public service of regional passenger transport (*TER*). Finally the *Agence de financement des infrastructures de transport de France* (*AFITF*), created in 2004, contributes partially to the financing of railway infrastructure.

RFF, which is responsible for the management of rail infrastructure since 1997, is nominally in charge of slot allocation and the operational aspect of infrastructure management. However it has largely delegated tasks to *SNCF*, as mandated by the law. *SNCF* manages transports, technical facilities, safety installations and maintenance in accordance with the instructions of *RFF*. Moreover a law enacted in December 2009 provided for the formation of a separate department at *SNCF*, the *DCF*, which is in charge of traffic management and capacity studies independently of the transport operations of *SNCF*. The *DCF* is operational since 1st January, 2010 and is paid for by *RFF*.

In order to commit *RFF* to various quality improvements (e.g., infrastructure and the financing model), the French Government signed a performance agreement with *RFF* on 3rd November 2009. Progress is monitored on the basis of specifically defined indicators. The agreement is aimed particularly at preparing the French rail market for the opening process.

Further changes are being explored via the work of special committees. In May 2011 the committee chaired by Member of Parliament Francis Grignon delivered a report on moving away from *SNCF* monopoly on regional services to the Government.

Later in 2011, the *Assises du Ferroviaire* started their work with the aim to discuss a wide range of items such as the future governance of the French railways, their financing, and the possible opening to competition. The *Assises* delivered their report on December 2011, but no action has been taken by the Government as of now.

Regulation

Regarding access regulation, the creation of a reference document by the IM involves a consultative process and ultimate ministerial approval[8]. Before the *Autorité de régulation des activités ferroviaires* (*ARAF*) was set up, the absence of an efficiently functioning Regulatory Authority constituted a barrier to market entry.

[7] The CSSPF has been dismantled in June 2009 but it should be replaced by a council on terrestrial transport and intermodality (Information of July 2010).

[8] There have been few access disputes after its publication. Complaints and objections are made to the Minister who requests the Regulator to investigate and report back.

The European Commission (2009) has voiced the following complaints regarding the regulatory arrangement in France:

- Part of the essential functions is still performed by the (incumbent) RU, thereby infringing the provisions on independence of essential functions;
- Charges for the use of the infrastructure are not determined by IM itself;
- Insufficient incentives for IM to reduce costs and level of access charges;
- Absence of performance scheme to encourage RUs and the IM to minimise disruption and improve the performance of the railway network;
- Insufficient powers and resources of Regulatory Body to monitor competition in the rail service market, pending the effective establishment of a new Regulatory Body;
- Insufficient independence of Regulatory Body from the (incumbent) RU and/or the IM, pending the effective establishment of a new Regulatory Body;
- Regulatory Body does not have sufficient powers to enforce its requests for information and its decisions.

Pursuant to a law adopted in December 2009, France has now set up an independent Regulatory Authority with strong powers. *ARAF* is intended to enable fair competition on the French rail network in the future by a better monitoring non-discriminatory access to infrastructure and, in particular, the charges levied by the IM. Like the Federal Network Agency (*Bundesnetz Agentur - BNetzA*) in Germany, it is vested with sufficient human resources (up to 60 employees) and financial resources (a budget of approximately 8 million euros). A team of seven commissioners is authorized to make *ex ante*, and even *ex officio* decisions. Furthermore, *ARAF* is entitled to issue immediately enforceable notices and impose penalties of up to 3% of revenues. In contrast to the German regulatory framework, French law does not oblige the IM to give the Regulatory Authority advance notification if it plans to refuse applications for the use of infrastructure.

Competition and related regulatory actions

Given that *SNCF* operates under a monopoly in domestic (both long-distance and regional) passenger traffic, competition is non-existent. While international traffic is open to competition since December 2009, *SNCF* remains the sole operator. There were expressions of interest by *Trenitalia*, *Deutsche Bahn*, an alliance of *Veolia* and *Air France-KLM*, *Virgin*. But so far all have been abandoned. The only exception is the most recent entrance of *Thello*, a *Trenitalia-Veolia* joint venture, in the niche market of overnight long distance services between France and Italy. The French Association of Railways (*Association Française du rail - AFRA*), which brings together competitors of *SNCF*, believes that conditions are too restrictive with the main effect of threatening the profitability of new services and discouraging new railway companies to develop on the French market.

A new law relates to the rail transport's organisation and regulation (*Organisation et Régulation des Transports Ferroviaires - ORTF*). The principal goal of the Law of 8 December 2009 is to organize the regulation of the rail transport sector, which is currently opening up to competition and abandoning its formerly monopolistic structure. The law

transposes the provisions of the Third Railway Package, and was approved by the *Conseil Constitutionnel* (French Constitutional Council) in a decision dated 3rd December 2009[9].

The law aims at organizing an efficient system of regulation for the railway sector to allow non-discriminatory access to all operators. It creates an independent administrative authority (*ARAF*), which is composed of seven members, each nominated for six years and has broad investigatory powers, an auxiliary regulatory power, and a disciplinary power. *ARAF* will have to be consulted on all legal propositions concerning railway transport, especially those concerning the schedule of tolls to be paid to *RFF* by rail operators for use of infrastructures, as well as the fare schedule for passenger lines operated under a monopoly. *ORTF* also changes the modality of track access charging. *RFF* will still initiate the process but its proposal will be submitted to *ARAF*, whose decision will have to be respected by the Government.

With the beginning of its activities, *ARAF* started issuing decisions. As it is mentioned in their internet presence, in the first semester of 2011 *ARAF* made decisions on a case opposing *EurocargoRail* to *SNCF* and *RFF* about freight operations in the station of Cerbère, on a case of capacity allocation opposing *Novatrans* to *RFF* and *Combiwest*, and on separation of accounts of *SNCF* stations.

Some experts, however, think that the powers delegated to *ARAF* are not sufficient. For instance, *ARAF* should be able to weigh in regarding questions of investment or the network statement *ex ante* (and not *ex post*) (Lumbroso, 2009). In addition, the French Competition Authority (*Autorité de la concurrence*) issued an opinion in May 2009 determining "*if, on the one hand, possible competition restrictions relative to train stations would be likely to have repercussions on the passenger land-based public transport sector and/or on the intermodal market, if one exists, and on the other hand, if the incumbent operator's diversification would require the latter to take special precautions in order to maintain competition*". As a result, the Competition Authority (Autorité de la concurrence, 2009) made the following recommendations:

- The governance system for the mission to manage train stations should be reviewed along the lines of the models that were set up at the time of the opening to competition of public monopolies in other network-based industries;
- *ARAF* must be provided with *ex ante* examination powers relative to the rates of station-based services and their underlying costs, in order to assess whether or not they comply with regulatory requirements.

Still in 2009, the *Autorité de la concurrence* found that the *SNCF* discriminated in favour of its subsidiaries by exploiting the website *voyages-sncf.com*[10]. In its comment on public transport (Autorité de la concurrence, 2009) the French competition authority mentioned that the incumbent operator must be under scrutiny on both its core and related markets so that new entrants can gain access to the French market under the conditions fixed by EU regulation. This means, both the stations and the diversification of the incumbent.

[9] Amongst its other provisions, the law deals with foreign truck operators and the progressive liberalization of urban transportation in the Paris Region (Ile de France).

[10] The *SNCF* was fined 5 million euros and required to make substantial commitments regarding its future behaviour.

Services provided under PSOs

There are two types of services run under PSOs in France:

- Regional traffic, contracted by Regional Authorities to *SNCF* (there is no choice of operator: *SNCF* is the operator mandated by the law);
- Inter-regional traffic, traditionally operated by the incumbent operator cross-subsidising profitable and unprofitable lines and more recently contracted by the State to *SNCF*.

Regions became the Authorities organising transport (*Autorités Organisatrices de Transport - AOT*) for the *Transport Express Regional* (*TER*) following the law on inland transport development (*Loi Orientation de Transport Intérieur - LOTI*) that delegates to Regions the decision (within their jurisdiction) regarding the content of regional public transport including the servicing, the tariffing, the quality of service and information to the user. The change in 2002 was preceded by tests of regionalisation carried out voluntarily by seven Regions starting in 1997. The decentralisation brought about by the *LOTI* does not apply to Corsica and Ile de France. The latter has a special treatment since long before the *LOTI* and the transport organising Authority there is *Syndicat des transports d'Île-de-France* (*STIF*), which originates from changes of the Authority initially in charge of transport in Paris only since 1949.

The decentralisation to the Regions has led to an important increase in the number of passenger-km as well to renewal of rolling stock.

While the only operator allowed is *SNCF*, others may work if they are subcontractors of *SNCF* or work out of the main national network (CER, 2011). Those are the cases for the limited operations of *VeoliaTransdev*.

Indeed, Desmaris (2010) points out that one of the problems is that Regions do not have the choice of operator. As a result, in light of the asymmetry, Regions have a hard time concluding favourable institutional arrangements.

Inter-regional traffic, after having been part of services cross-subsided by *SNCF*, is now (since 1st January 2010) contracted by the State to *SNCF*.

Whether the application of the PSO regulation will lead to the obligation for the *AOT* to open to competition the attribution of public service contracts for regional and long-distance is still an open question.

As mentioned above, possible changes are being explored via the work of special committees. In May 2011 the *Grignon Committee* delivered to the Government a report on moving away from *SNCF* monopoly on regional services. The report suggests starting with tests on lines, with operators contracted by the Regions and using rolling stock owned by the Regions. The report addresses also the issue of rolling stock maintenance, for which *SNCF* would be in charge, and that of transfer of staff from one operating company (notably *SNCF*) to another and possibly back at the end of a contract. Also common working rules for the railway sector are an issue to avoid having *SNCF* and other operators subject to different conditions of employment for their staff.

Evolution of institutions in France

This section outlined in table 8 the main events that have shaped the institutional landscape in France and have led to the current institutional set-up. To better appreciate the progression of changes over time, the evolution of actors that started in 1997 is charted against time (from 1988 to 2011) in Figure 2. This information led us to summarise a set of milestones in institutional evolution that are depicted along with a brief description of what brought them about in Figure 3.

Overall it can be seen that 15 years of changes (marked by four milestones) have taken somewhat little away from the initial set-up, mostly due to *SNCF* holding a monopoly on all services (except freight from 2006) and the IM delegating many of its roles back to *SNCF*, as required by national law.

One important change has been the regionalisation of the local (*TER*) services to be run under PSOs and the State explicitly contracting long-distance PSO services to *SNCF* starting 2010 (after many such services had been withdraw while *SNCF* was concentrating on the increasing high speed network).

Another major change is the institution of *ARAF*, fully fledged rail Regulator in 2010, four years after the opening of the freight market.

Table 10. Brief account of the main points on the evolution of the regulatory and competition arrangements

Year	Evolution
1997	*RFF* is created as IM by State's law (the Reform Act), which requires also that operations and traffic control of the network and operation and maintenance of the safety equipment are still to be provided by *SNCF* according to guidance by *RFF*, which pays *SNCF* a fixed fee for its service Ownership of the infrastructure is transferred to *RFF* but stations remain in the ownership of *SNCF* *SNCF* debt from infrastructure investments is transferred to *RFF* Opening of the network to be limited to international groupings of RUs and to international combined transport trains
1998	Agreement between *RFF* and *SNCF* on the task of the latter and the remuneration
2002	French Regions become the competent Authorities for the organization of regional passenger train services, namely those services that operate on the national railways within the territory of a Region (excluding specific national interest services and international services) *SNCF* remains the only provider of the regional passenger services and works for the Regions on the basis of a convention A lump sum is transferred every year from State to Regions to pay for the services and to fully subsidized new rolling stock acquisitions
2003	Decree transposing the First Railway Package Freight trains along the Trans European Rail Freight Network have access to the French Network New RUs have to receive a license by the State and a safety certificate by the Transport Minister, following a recommendation by *RFF* which bases its opinion on a report by *SNCF* The *MCAF* is set up, it is formed by three senior civil servants: it monitors conditions of access and deals with complaints *RFF* is assigned to distributing the capacities on the French railway network
2006	Effective opening of freight traffic to competition Creation of the French Railway Safety Authority (*EPSF*) Option for *RFF* to enter into public private partnerships to help expand the network
2008	*RFF* signs the *Contrat de Performance* with the State
2009-2010	Creation of the independent Regulatory Agency (*ARAF*)
2010	Traffic management and studies in preparation of capacity allocation are carried out by the *DCF* on *RFF*'s behalf. The *DCF* is an independent division of *SNCF* The State becomes the procuring Authority for long distance *TET* (*Trains d'Équilibre du Territoire*)
2011	The *Grignon report* on reforming regional railway services is published The *Assises du Ferroviaire* start work to advise the Government on the future of the railway sector

Source: Compiled by authors, Gressier (2005), SETRA (2009), Quinet (2010), CER (2010)

Legend for the overview of the institutional evolution

The overview of the institutional evolution is a matrix composed by as many columns as the years between 1988 and 2011 plus an initial column for the situation before 1988 and a final column for planned changes after 2011 that are already known.

There are four horizontal bands or clusters of rows.

The top cluster of rows includes the railway market set-up over the years. The chart reports separately the set-up for the passenger rail market, divided by long-distance and regional/local, and for the freight market. Different market set-ups are depicted by coloured bands spanning the columns representing the relevant years. Colours have mostly the role of making changes visible. Wherever a market set-up is the same or similar, the colour is the same. Alternatively, different colours are used. However, for this cluster of rows only, a homogenous colour coding has been used across charts for different countries: light yellow is associated to legal monopoly, orange to concessions or franchises (a separate band indicates the possibility of open access) and light blue refers to open access. Cases where PSO services and open access (may) co-exist are indicated by horizontal orange and light blue stripes.

The second and largest set of rows refers to each kind of actor/railway body whose evolution is depicted along the rows. The focus is on the passenger sector, since this is the focus of this project. Therefore, while there are rows regarding the incumbent and new entrants in the freight markets, the rows about station and about rolling stock provisions refer to the passenger sector only. Several actors may correspond to a kind of actor and this is written or depicted along the row. Actors or types of actors are depicted by coloured rectangles. A continuous contour of the rectangle indicates a public body; a dashed contour indicates a private body. Colours of rectangles have no particular meaning but have the role of making changes visible. Wherever a body is the same, the colour is the same. Alternatively, different colours are used. Names of bodies are written only on the rectangles depicting their first appearance.

Large rectangles with dashed blue contour spanning across the first and second set of rows identify the milestones in institutional evolution that are singled out for use in the next chart.

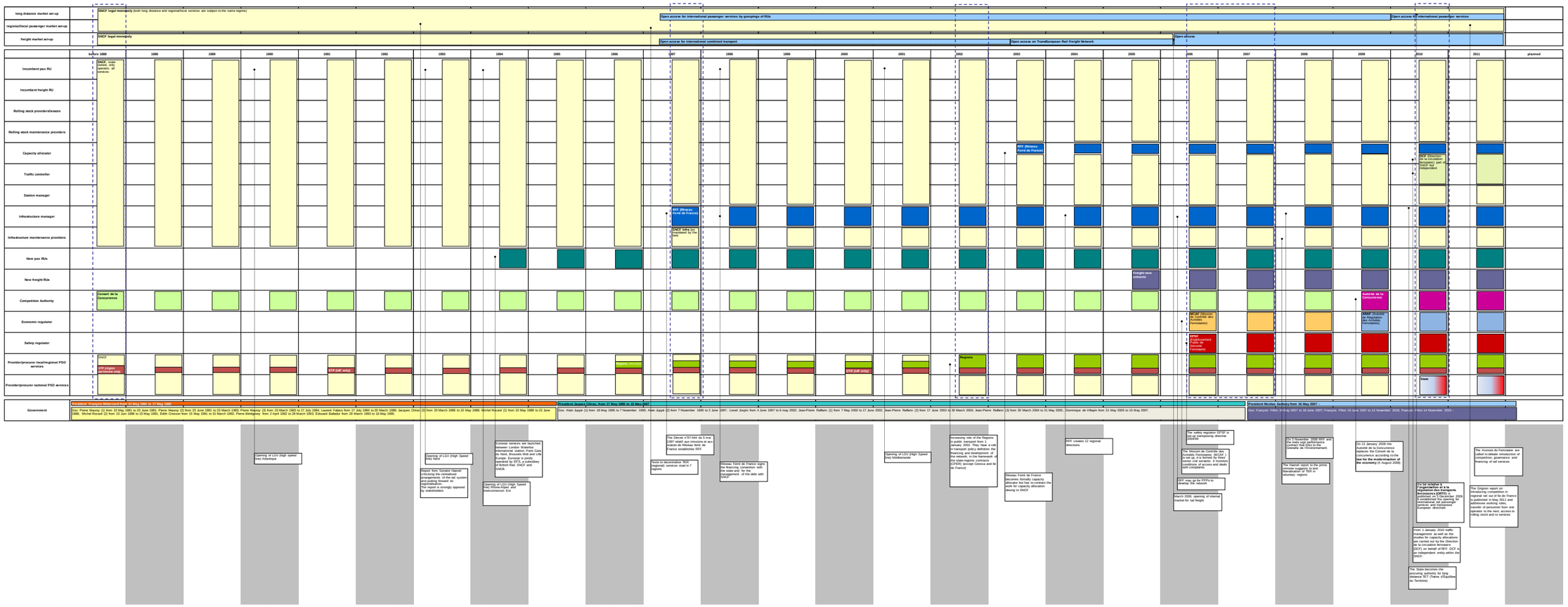
A third band includes only one row and refers to the sequence of Governments, the relevant dates and the main figures.

The bottom band, with columns indicated with alternate white and grey background, includes text rectangles reporting main facts within the rail industry or with an influence on the rail industry. Facts are linked to market set-ups or actors where immediately relevant.

Legend for the summary of the milestones in institutional evolution

In Figure 3 the milestones of the institutional evolution have been singled out of the previous figure and brief texts explaining the changes occurred have been added between each pair of milestones. Therefore the picture depicts the milestones by using the same structure in columns and rows used previously. However, while each column refers to a particular year or cluster of years, the distance between columns is not to scale and is simply to leave room for the details of the changes. These are contained in arrows pointing to the actors resulting from the changes or affected by them.

Figure 2. Evolution of institutions in the French railway sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based on the following: Gressier (2005), SETRA (2009), Quinet (2010), CER (2011), websites of actors

Figure 3. Milestones in the evolution of institutions in the French rail sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature

Source: Compiled by authors, based on the following: Gressier (2005), SETRA (2009), Quinet (2010), CER (2011), websites of actors

3.4 Germany

Outline

In Germany, the restructuring of the historical operators in 1994 saw the creation of an integrated railway company (*Deutsche Bahn - DB*) with subsidiaries offering different services (e.g., *DB Netz* provides energy, *DB Schenker* provides logistics services). This major reorganization was then followed in 1996 by the devolution of regional passenger transport to the *Länder* (i.e., the Regions) and by the creation of a multi-sector Regulator (*Bundesnetzagentur*) in 2006, taking over from the function of regulation from the Federal Railway Authority (*Eisenbahnbundesamt* or *EBA*).

Germany presents an interesting case when it comes to the introduction of competition in the passenger segment. There is open access on the whole network and, in particular, for long-distance traffic. Nonetheless the present competitive landscape remains dominated by the incumbent operator *DB*. On long distance traffic there is currently a prospective new entrant on the Hamburg-Cologne line but Séguret (2009) remarked that "*in the last ten years, only ten attempts in the long distance traffic occurred, often surviving a few months, whereas more than a hundred concessions were already awarded in the regional traffic*". In fact regional traffic is contracted by Regions, by direct award or by tendering. On the latter traffic, the presence of new entrants in 2011 accounts for 21.6% of the train-km in contracted rail services after a steady increase from 9.9% in 2003 (*DB* data). *DB* sees competitors growing in terms of train-km in the coming years. In addition, public subventions have been reduced (in part because new entrants are on average 15%-20% cheaper than *DB* on a train-km basis).

The following tables and figure introduce the dimension of railway transport in Germany, the main actors and their role (see also Appendix I).

Table 11. Selected statistics, Germany (2005-2009)

Criteria	2005	2006	2007	2008	2009	2010
Km of rail	34,221	34,122	33,890	33,855	33,714	-
Train km, in thousand	986,686	990,019	1,014,033	1,005,820	986,342	-
Pax km, in million	74.95	77.80	79.10	80.93	82.43	-
T km, in million	95.42	107.01	114.62	115.65	95.83	107.32

Source: Eurostat, Transport in Figures 2011 (EC, 2011)

Table 12. Summary of provisions for access to the German rail market

Passenger services	Open access for domestic operators (some restrictions for foreign)
Freight services	Open access

Source: Compiled by authors, Alexandersson (2009)

Table 13. Regulatory institutions relevant to the German railway market

Economic Regulator	Federal Network Agency (*Bundesnetz Agentur - BNetzA*)
Safety Regulator	Federal Railway Authority (*Eisenbahnbundesamt - EBA*)
Other Regulatory Agencies involved	Federal Cartel Office (*Bundeskartellamt - BKA*), Monopolies Commission (*Monopolkommission*)

Source: Compiled by authors

Table 14. Main information about the Economic (and Safety) Regulator of the German rail industry

Name of Economic Regulator	*Bundesnetz Agentur* (BNetzA)
Name in English	Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railways
Creation of Agency	2004
Nature of Regulatory Agency	Separate higher Federal Authority within the scope of the German Federal Ministry of Economics and Technology
Scope of intervention	Includes other network industries; excludes safety (*EBA*)
Role and mission	Market and network regulation to develop and promote sustainable competition based on sector-specific regulatory laws
Composition	N.A.
Sanctioning powers	Can sanction discriminatory behaviour
Enquiry and information powers	Strong; actors must submit relevant data
Relation to Competition Authority	Cooperation with *BKA*
Budget	160 million euros for all sectors; exclusively Government-financed
Personnel	50
Relationship to Parliament	Annual report; bi-monthly meeting of *Eisenbahninfrastrukturbeirat*

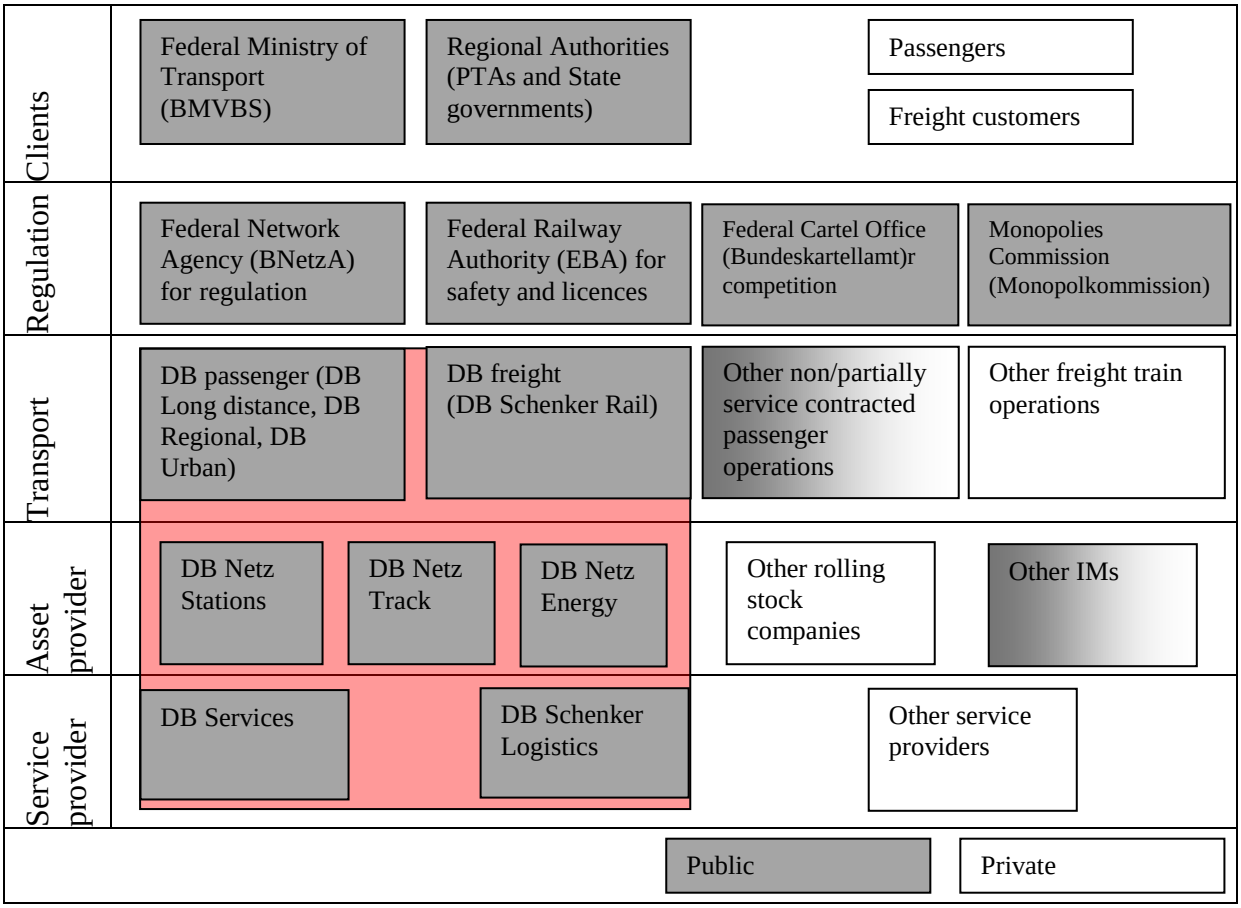
Source: Compiled by authors

Table 15. Infrastructure management and path allocation in the German railway market

Infrastructure management	*DB Netz* for most of the network Some local IMs
Path allocation	*DB Netz* (IM)
Traffic control	*DB Netz* (IM)

Source: Compiled by authors

Figure 4. Main actors of German railway system



Source: Compiled by authors, adapted from Merkert et al. (2008)

A large number of RUs operates on the *DB Netz* infrastructure: in addition to *DB* Group companies, there are 323 competitors. 75 of these non-*DB* companies offer passenger services, 153 are rail freight operators and the remainder are construction companies or from the rail industry.

Regulation

The German railway regulatory law has four central elements:

- Responsibilities and powers of the Authorities: within the framework of their individual areas of responsibility for regulating access to the railway infrastructure, the *BNetzA* and the *EBA* are responsible for monitoring compliance with requirements regarding the separation of infrastructure and transport services.
- Regulating access to the infrastructure: the central norm defining non-discriminatory access to the infrastructure is art. 14 of the General Railways Act (*Allgemeines Eisenbahngesetz - AEG*), in conjunction with the Ordinance Governing the Use of Railway Infrastructure (*Eisenbahninfrastruktur-Benutzungsverordnung - EIBV*). Based on this, railway infrastructure operators (*Eisenbahninfrastrukturunternehmen - EIU*) have to provide railway transport companies (*Eisenbahnverkehrsunternehmen - EVU*) non-discriminatory usage of the railway infrastructure they operate, and ensure non-discriminatory provision of the services they offer in accordance with the *EIBV*. The *BNetzA* is responsible for regulating access to the network in Germany. These responsibilities include checking usage and access conditions.
- Regulating infrastructure fees: the *BNetzA* is also responsible for regulating infrastructure fees. Public-sector EIUs are obligated to submit in advance every planned new version or revision of fee principles and fee increases for the use of train path or service facilities to the *BNetzA* for review.
- Regulations regarding corporate structure/organisation: public railways in Germany are subject to special legal requirements regarding their organizational structure. Art. 9 and 9a of the *AEG*, contain far-reaching guidelines regarding railway structures (unbundling). Among other things, the *EBA* is responsible for ensuring the independence of the train path operator in decisions regarding network schedules, allocation of train path and infrastructure fees, as well as organizational issues, such as supervisory board membership, and rules of procedure for the management board. Therefore the *EBA* is responsible for supervising compliance with unbundling requirements.

The primary institutions responsible for regulating the railway sector in Germany are the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway (*BNetzA*) and the Federal Railway Authority (*EBA*). Both Regulatory Bodies are responsible for the railway system on the Federal level.

BNetzA is responsible for the monitoring of non-discriminatory access to railway infrastructure (including examination of use and access conditions and pay systems of the railway infrastructure company). *BNetzA*'s task consists in market and network regulation in order to develop and promote sustainable competition based on sector-specific regulatory laws. *BNetzA* has five departments in charge of railway regulation: legal and economic policy issues; business management, aspects of charging, monitoring, statistics; access to rail infrastructure and services; access to service facilities and services; charges for networks, service facilities.

BNetzA's tasks in the field of railway regulation derive primarily from art. 14 to 14f of the *AEG*, supplemented by the *EIBV*. It monitors compliance with the rules governing access to railway infrastructure, especially as regards the compilation of the train schedule, decisions on the allocation of railway paths, access to service facilities, usage conditions, rates principles and rate levels.

Unlike the telecommunications and postal markets, railway infrastructure is characterized by symmetric regulation, i.e. all public railway infrastructure operators are subject to *BNetzA* regulation, irrespective of market position. Public railway infrastructure operators must provide railway companies and other parties with access rights – e.g., haulage contractors and carriers – not just with access to the route proper but also to the service facilities such as railway stations, maintenance quarters, ports and rail sidings.

In some instances the railway infrastructure operator is obliged to notify *BNetzA* in advance of planned decisions, e.g., when it intends to reject an application for allocation of railway paths or for access to service facilities. Within very short periods (scaled from one day to four weeks), *BNetzA* will have the chance to withhold consent to the planned decision. This objection will include *BNetzA* specifications, which will need to be taken into account in the new decision and may result in certain rules and conditions not being allowed to come into force, e.g., rate levels. Apart from these preventive regulatory rights, there will also be the possibility of subsequent verification of usage conditions for rail tracks and service facilities and of rules about the level or structure of route rates and other rates. For each period covered by a train schedule, currently spanning a whole year, *BNetzA* drafts an activity report for the Federal Government.

The *EBA* is responsible for setting up and monitoring all technical and safety regulations for the national vehicle register. It is also responsible for market surveillance on the requirements of interoperability components, for monitoring training facilities also in terms of opening to all parties, and it manages the safety advisory council, which covers safety for non-Federal railways. In more detail, *EBA* is in charge of: plan approval for the facilities of the Federal railways, railway oversight, supervision of construction of installations of the Federal railway, granting and revoking operating licenses, exercise of public powers as well as participation rights, preparation and implementation of agreements on the construction or upgrading of railway (in accordance with art. 9 *BSWAG*, the Federal law on the development of track systems), technical investigation of hazardous events in railway operation, granting of Federal funds to promote rail transport and combined with other modes, monitoring compliance of the service and financing agreement (*Leistungs- und Finanzierungsvereinbarung LuFV*), monitoring compliance with organizational requirements (art. 9, 9a *AEG*).

The *EBA* is headquartered in Bonn and has 12 branch offices in 15 locations throughout Germany. The headquarters consists of four departments, each with sub-units that also deal with the five key areas in the branch offices. The branch offices fulfil primarily operative functions, whilst the headquarters, alongside its operative role, also handles important fundamental issues.

In addition there are Regulatory Bodies on the level of the Federal States that are responsible for technical and safety regulation of regional RUs and RUs that do not need a safety assurance. Several States have delegated this responsibility to the *EBA*.

Competition and related regulatory action

Next to assuring "safety" and "attractiveness of railway services", "effective and undistorted competition" is one of the main goals of the regulatory framework of the railways in Germany. The law also explicitly highlights the aim of fair competition between different modes of transport (art. 1 Abs. 3 *AEG*). However, in contrast to the Telecommunications Act, the German General Railways Act does not provide an interpretation of the concept of "effective competition".

The Regulator has not yet provided any explicit guidance as to how he interprets the notion of effective competition in the railways sector. The same holds true for the monopolies commission, which is obliged to report on the state and development of competition in the railways every two years (art. 36 *AEG*). It seems that the Regulator mainly refers to market shares as the relevant criterion.

As noted above, there is a large number of companies operating besides *DB* on the German network. Broken down according to types of transport, approximately 23% of the train path applications for the 2010 working timetable were for freight traffic, roughly 72% for regional passenger traffic and around 5% for long-distance passenger traffic. In the long-distance passenger sector, non-*DB* RUs applied for a total of 113 train paths, which were 16 more than in 2009.

Applications from competitors in the long-distance sector therefore remained low.

Séguret (2009), concluding a paper on "Is competition on track a real alternative to competitive tendering in the railway industry? Evidence from Germany" pointed out that "*if the goal of the railway regulation is to introduce more competition in the long distance traffic, then the German regulation failed to make it possible*". Since market opening, competitors have raised accusations of price and non-price discriminating practices by the overpowering incumbent (*DB*). It took more than ten years after the reform for the German Economic Regulatory Agency *BNetzA* to be put in charge of the railway system (2006). From the point of view of competitors, it seems that problems of discriminatory behaviour have reduced since, but there are claims that the Regulator's rights to intervene, or even to get the information it needs, are still quite limited. Additionally, the possibilities to control access charges are currently quite restricted. However, this may change in near future since the Government elected in 2009 appears to be committed to strengthening the Regulator's position and defining the judicial basis for regulation (Everis, 2010).

On regulatory action at European Commission level, the Commission itself voiced in 2009 the following complaints regarding the regulatory arrangement in Germany:

- Insufficient safeguards to guarantee the independence of the IM from the railway holding and its transport affiliates in the exercise of the essential functions;
- Insufficient incentives for IM to reduce costs and level of access charges;
- Infrastructure charges not based on direct costs of train services respectively insufficient verification whether market can bear the charges;
- Regulatory Body does not have sufficient powers to enforce requests for information.

In the past few years, the *BNetzA* took a large number of decisions regarding access to the infrastructure. In the area of pricing, the comprehensive review of the station price system

operated by *DB Station & Service AG* (*Aktiengesellschaft* – corporation limited by shares) was completed in 2009. The *BNetzA* declared the station prices void and demanded that the company develop non-discriminatory prices. The court decisions taken in 2008 and 2009 address numerous basic railway regulation issues.

Table 16. Competition issues dealt with by BDA in 2008 and 2009

Company under scope	Issue
DB AG	Terms of use for railway facilities 2008/2009
DB Regio AG	Maintenance facilities
Railion Deutschland AG	Request for information
DB Netz AG	Network statement 2008
DB Netz AG	Reduction in train path prices
DB Netz AG	Disclosure of framework agreements
DB Netz AG	Framework agreements involving deferred launch of operations
DB Netz AG	Service facilities statement 2008

Source: Compiled from BDA annual reports

Services provided under PSOs

In 1996 the act on regionalisation transferred to the German States the responsibilities for contracting passenger services subject to PSOs[11]. Public procurement is not mandated: States may award services by using open tenders, non-open tenders and negotiations. As a result, opening to competition differ across the *Länder* and there are different market share of non-*DB* operators from 2% in Berlin to 30% in Schleswig-Holstein, for instance. In any case regional rail services are awarded as public service contracts on a non-exclusive basis. In fact access to infrastructure remains open as it is for any part of the railways from the reform of 1993. The first tendering took place in 1996 but private competition only started in 2000.

Overall competition in the markets for passenger is slow to take up. Significant barriers to competition restrict the activities of many providers. A major reason lies in the structure of the industry leader (*DB*). By combining infrastructure and transport, the company has significant advantages in access to railway infrastructure over other providers.

Local and regional PSO services, the only ones eligible for subsidies, are procured by 33 Regional Authorities (Public Transport Authorities - PTAs), which are characterized by considerable differences regarding the area to be served and, as mentioned, the way chosen to procure the services. There are also differences in the number of PTAs within the Federal States.

Contract duration varies considerably and ranges from 2 to 15 years. Contracts awarded by open tenders typically have a longer duration (10 years) than those awarded within negotiations (on average 8 years). Franchising Authorities use rather tight service specifications (although the degree differs across PTAs) incorporating regional rail services into synchronized and coordinated timetables, service frequency, operating hours (first and last train), through ticketing, acceptance of the *DB* tariff and requirements with regard to type and quality of rolling stock.

[11] On average, fare revenues make up 40% of the total costs in providing regional passenger services.

The German franchising model can thus be characterized as rather planning based whereby planning is seen as the task of Regional Authorities. A number of operators, including *DB*, argue that there is a trend of too tight specification of contracts lacking sufficient freedom for service improvements and innovations.

A general standard for the contract of required PSOs does not exist. PTAs use solutions adapted to their regional requirements, taking advantage of different contractual forms and the competitive environment, as they interpret it. In fact, Link and Merkert (2010) find that the character of franchise contracts in Germany varies considerably regarding the question whether they are granted within competitive tendering procedures or not and regarding features such as duration and contract types (net versus gross contracts). They conclude that the so-called regionalisation with the agreed sound financing of rail-PSOs in Germany and in particular competitive tendering had positive impacts on service provision (more train-km and quality for the same funding), patronage, customer satisfaction (better quality and more customer services), and costs. However, the huge diversity across the different States and PTAs hampers a systematic impact analysis as the lack of centrally held and publicly accessible data does.

Still Link and Merkert (2010) identify several problems of the German approach to rail franchising, which are mostly due to failures in the institutional set-up (vertical integration of the *DB* group and a lack of a sufficient regulation for a long time, as well as the lack of a clear legal rules whether regional rail services have to be tendered or not) and to some extent also due to lack of more experience of PTAs, in particular during the first years after regionalisation. Overall, with improvements in these fields competitive tendering appears to bear still potential for further cost savings and quality improvements (although for already competitively awarded contracts not as much as in the first round of tendering).

Evolution of institutions in Germany

The main events that have marked the evolution of the railway sector in Germany are outlined in Table 17. Figure 5 looks instead at the evolution of the main actors characterising the sector since 1988: their situation over time is depicted against the key events determining their variations. Based on this we characterised three milestones in the evolution occurred. Milestones are reference points in time when particularly salient points happened. These are depicted in Figure 6. Before moving on those, we recall the changes in rail regulation and about recent suggestions appeared for railways in Germany.

Since Germany's railway system reform in 1994, the *EBA* has been the supervisory and authorizing Authority for the Federal railways (*Eisenbahnen des Bundes - EdB*) and the rail transport companies (EVU). As part of the merger between the two former state railways, *Deutsche Bundesbahn* and *Deutsche Reichsbahn* to create *Deutsche Bahn AG*, *EBA* was assigned the sovereign roles that the state railways themselves had until then fulfilled.

When the rail safety Directive (2004/49/EC) was introduced in Germany in 2007, the *EBA* became the National Safety Authority and as such fulfils all the functions of a Safety Authority as defined by art. 16 of the safety Directive. The Directive brought with it new functions for the *EBA* and changed the content or applicable parties of existing ones. It also expanded the *EBA*'s railway supervisory authorities. As a Safety Authority, the *EBA* is also responsible to the Federal railways for monitoring non-Federal railways.

With the Third Act amending the Railway Regulations of 27 April 2005 the AEG was comprehensively revised. As a result, *BNetzA* was given a new scope of responsibility in the field of railway regulation as of January 2006. As mentioned, *BNetzA* is tasked with monitoring rail competition and the responsibility for ensuring non-discriminatory access to railway infrastructure. Substantive supervision in railway regulation is the task of the Federal Ministry of Transport, Construction and Town Development (*Bundesministerium für Verkehr, Bau und Stadtentwicklung - BMVBS*), organizational responsibility remains with the Federal Ministry of Economics and Technology (*Bundesministerium für Wirtschaft und Technologie - BMWi*).

In 2009, political parties favoured an increase in regulation of access to service facilities, access to traction current and distribution services in railway passenger transport. *BNetzA* also plans to develop concepts for incentive regulation, for noise-based path pricing system, for reduction of disruptions (DB, 2009). In its annual report (DB, 2010a) the incumbent operator notes that the regulatory framework in Germany is substantially expanded and that it is already far more comprehensive than in almost all Member States. It also calls for the Federal Government to consider the changes taking place at the European Commission e.g., RECAST before focusing its attention on some of the issues (competitively-neutral implementation of EU law in general, full opening of the railway markets in all Member States and fair competitive conditions in that sector).

Brandt (2008, p. 21), discussing "Reaping the benefits of stronger competition in network industries in Germany", made recommendations to enhance railway competition in Germany including the idea to retain full state ownership of the tracks, while fully privatizing *DB AG*'s transport service subsidiaries, make tendering of regional rail service contracts compulsory, review overlapping regulation responsibilities of *BNetzA* and *EBA* and make sure that they have enough powers and resources, especially as long as *DB AG* is not fully unbundled (extending competence to energy for rail).

Table 17. Brief account of the main points on the evolution of the regulatory and competition arrangements

Year	Evolution
1989	German Federal Government initiated a commission to develop a reform agenda (*Regierungskomission Bahn* or *RegB*)
1990	The *Deregulierungskommission* issues a report with conclusions similar to that issues by the *Monopolkommission* the previous year
1991	The Government Commission of Federal Railways (*Regierungskommission Bundesbahn*) publishes a report suggesting the creation of *Deutsche Eisenbahn AG*, a new holding company, initially owned by the Government and whose passenger and freight division are later to be privatized. The reform proposed included transfer of choice on lines to be subsidized transferred to the States and open access to the railway network
1993	The Act about the merger and restructuring of the Federal railways and the general railway act put Directive 91/440 into German law The assets of *Deutsche Bundesbahn* and of *Deutsche Reichsbahn* are merged into BEV, the Federal Railway Asset, from which *DB AG* will originate Open access to the rail network is provided according to Directive 91/440/EEC The *Eisenbahnbusesamnt* (*EBA*) is formed as a new sector specific Regulator The constitutional change which allows the formation of *DB AG* (see below) opens the possibility of selling railway shares to private operators but limits it by reserving a controlling share for the State for those railways acting as IMs
1994	Passing of the *Eisenbahnneuordnungsgesetz* (law on the restructuring of the railways). Set-up of *Deutsche Bahn AG* (a private law commercial enterprise), on 1st January, divided into subsidiaries: *Personenfernverkehr* (long distance passenger traffic) *Personennahverkehr* (regional passenger traffic) *Güterverkehr* (freight traffic) *Personenbahnhöfe* (Railway stations) *Fahrweg* (Network)
1996	Act on regionalization, whereby as of 1st January 1996 German States become directly responsible for contracting out regional passenger services which are public services. The States receive funding from the Federal Government and are free to contract the services to any RU, with or without public procurement
1999-2001	Separation of transport activities and ownership of rail to meet the Commission requirements *DB AG* transformed into individual public limited company within a joint group holding company
2002	By the provisions of the Second law on amendments of railway regulations, *EBA* becomes responsible for monitoring non-discriminatory access to the network of *DB Netz* Since competition law applies, to carry out its remit *EBA* cooperates with the *Bundeskartellamt* (the German Federal Cartel Authority)
2005	By the *Allgemeine Eisenbahngesetz*, *EBA* is no longer responsible for access regulation, which becomes responsibility of the Federal Regulatory Agency for Telecommunication and Postal services (*Regulierungsbehörde für Telekommunikation und Post – RegTP*), by effect of the transfer of the relevant *EBA* department to *RegTP*.
2006	*BNetzA* is given new scope of responsibility in railway regulation (monitoring rail competition and the responsibility for ensuring non-discriminatory access to railway infrastructure). Substantive supervision in railway regulation is the task of the Federal Ministry of Transport, Construction and Town Development (*BMVBS*), organizational responsibility remains with the Federal Ministry of Economics and Technology (*BMWi*).

Source: Adapted from Kirchner (2005)

Legend for the overview of the institutional evolution

The overview of the institutional evolution is a matrix composed by as many columns as the years between 1988 and 2011 plus an initial column for the situation before 1988 and a final column for planned changes after 2011 that are already known.

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The second and largest set of rows refers to each kind of actor/railway body whose evolution is depicted along the rows. The focus is on the passenger sector, since this is the focus of this project. Therefore, while there are rows regarding the incumbent and new entrants in the freight markets, the rows about station and about rolling stock provisions refer to the passenger sector only. Several actors may correspond to a kind of actor and this is written or depicted along the row. Actors or types of actors are depicted by coloured rectangles. A continuous contour of the rectangle indicates a public body; a dashed contour indicates a private body. Colours of rectangles have no particular meaning but have the role of making changes visible. Wherever a body is the same, the colour is the same. Alternatively, different colours are used. Names of bodies are written only on the rectangles depicting their first appearance.

Large rectangles with dashed blue contour spanning across the first and second set of rows identify the milestones in institutional evolution that are singled out for use in the next chart.

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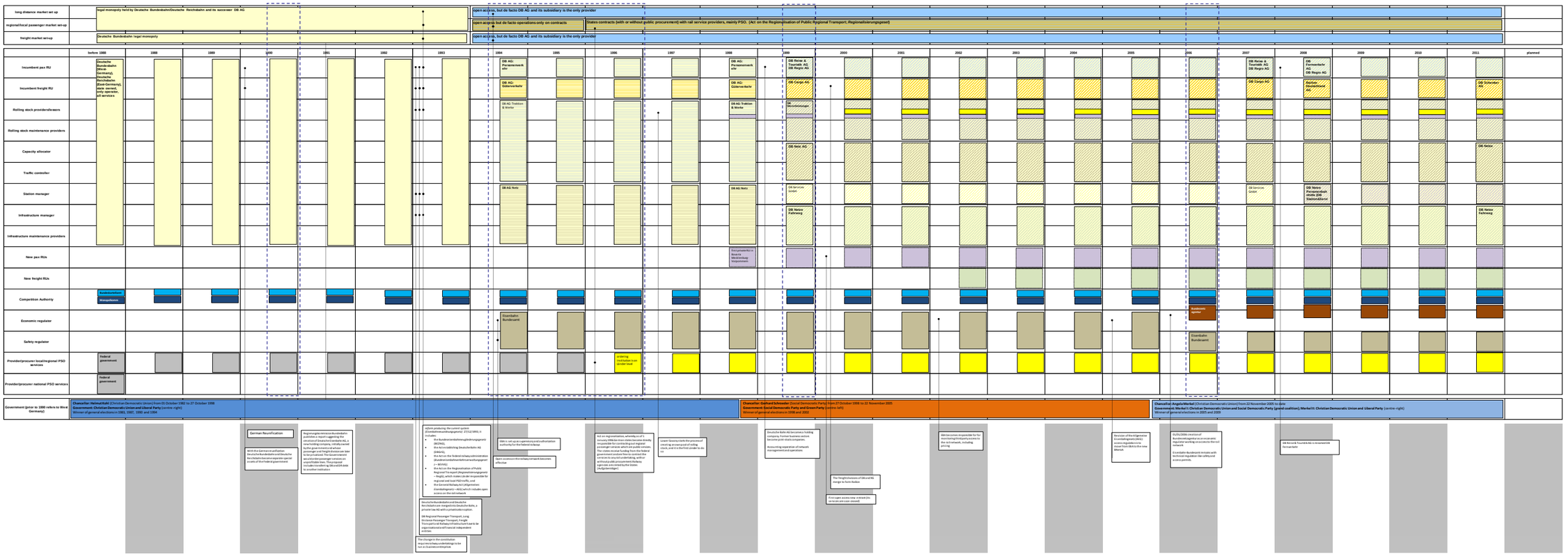
The bottom band, with columns indicated with alternate white and grey background, includes text rectangles reporting main facts within the rail industry or with an influence on the rail industry. Facts are linked to market set-ups or actors where immediately relevant.

Legend for the summary of the milestones in institutional evolution

In Figure 6 the milestones of the institutional evolution have been singled out of the previous figure and brief texts explaining the changes occurred have been added between each pair of milestones. Therefore the picture depicts the milestones by using the same structure in columns and rows used previously. However, while each column refers to a particular year or cluster of years, the distance between columns is not to scale and is simply to leave room for the details of the changes. These are contained in arrows pointing to the actors resulting from the changes or affected by them.

Figure 5. Evolution of institutions in the German railway sector, 1988-2011. The full size picture is too large to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based on the following: Lehmann (1999), Gorka and Hoopmann (2003), Link (2003), Kirchner (2005), CER (2005), Kirchner (2010), CER (2011), websites of actors

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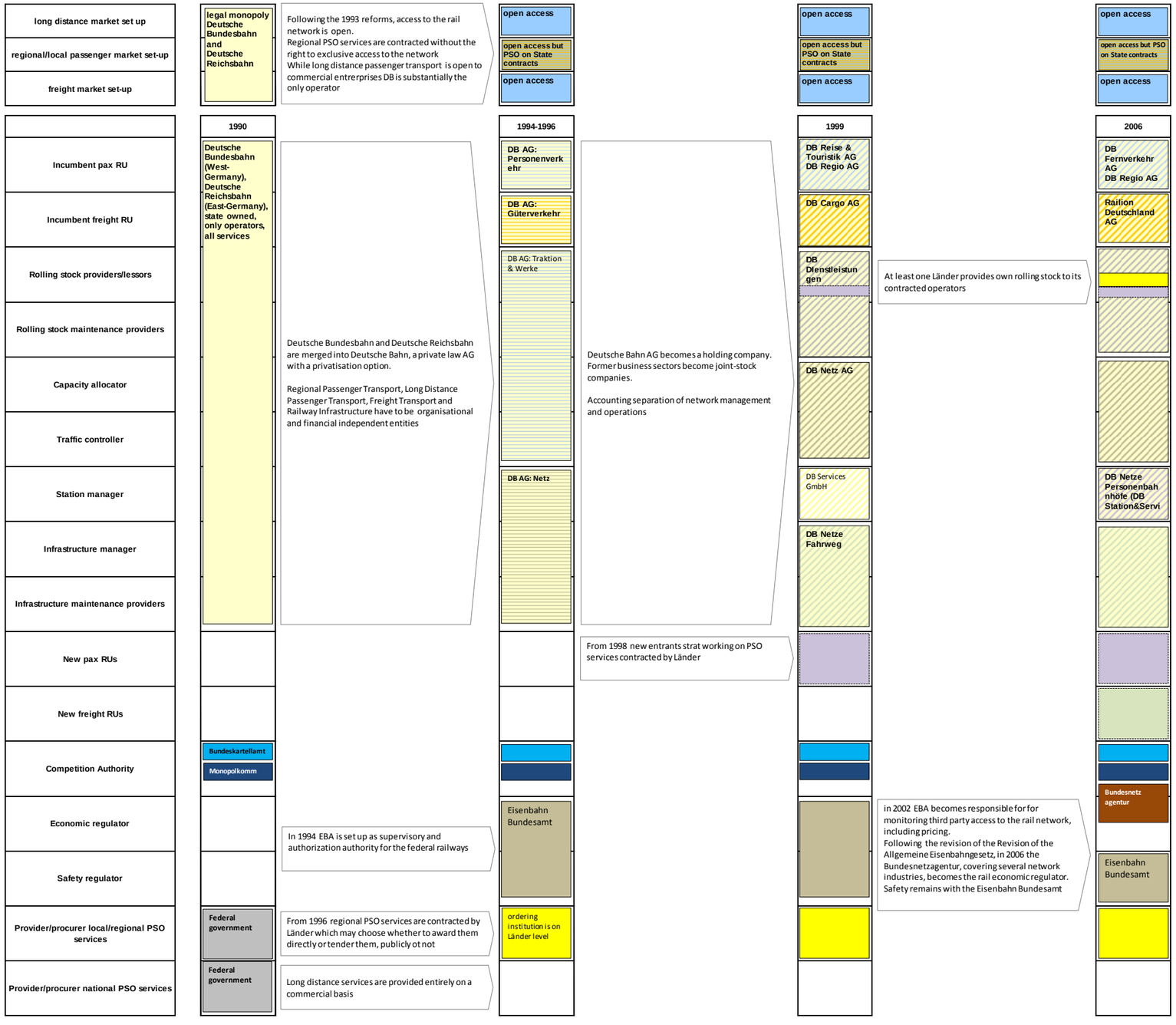


Source: Compiled by authors, based on the following: Lehmann (1999), Gorka and Hoopmann (2003), Link (2003), Kirchner (2005), CER (2005), Kirchner (2010), CER (2011), websites of actors

3.5 Great Britain

Outline

Great Britain[12] is without a doubt among the leading countries when it comes to experimenting with railway liberalisation and privatization, in particular with the introduction of competition in the passenger segment. In-depth reforms started in 1993 with the *Railways Act* and continued over the years.

Today, passengers services are delivered via system of franchises awarded to private companies (the incumbent *British Railways - BR* has been divided and sold following the first round of reforms). Passenger railway companies are currently 24. There are very few services run on open access grounds: the British system allows very limited operations of such services and only if not primarily abstractive of revenues of franchisees.

Franchises are issued by the *Department for Transport* (*DfT*) after competitive tenders and have different durations. The *DfT* also supervises the delivery of the franchise contracts. There is some regionalisation of responsibilities (mostly for London, Wales and Scotland) and *Passenger Transport Executives* in England who are often co-signatories of franchise agreement.

The *DfT* is also responsible for developing the Government's long-term strategy for railways. This involves specifying funding for the rail industry, including the level of passenger services and the overall size and shape of the network in England and Wales. *DfT* is also responsible for some consumer protection matters, including through ticketing and passenger benefits, providing services for disabled people and procedures for handling complaints.

Freight rail is on open access grounds by five private companies which result mostly from the split-up of the freight divisions of *BR*, operated at the time of the first steps of privatisation.

RUs (*Train Operating Companies - TOCs*, in the British parlance) use rolling stock leased by *ROSCOs* (*ROlling Stock leasing COmpanies*), again originally formed by privatizing the pool of rolling stock belonging to the former incumbent.

The network is owned by *Network Rail*, a not-for-dividend private company, which operates under the strict surveillance of the *Office of Rail Regulation*. In more detail, *Network Rail* is the owner and operator of the national rail network, including track, signalling, bridges, tunnels and stations. It also manages the main stations while other ones are managed by the train operating company in whose franchise each station is. *Network Rail* operates under a network licence setting out the conditions under which it must operate, among which *Route Utilisation Strategies* (*RUSs*).

The following tables and figure introduce the dimension of railway transport in Britain, the main actors and their role (see also Appendix I).

[12] Railways in Northern Ireland are a separate matter: they remain vertically integrated are not treated here.

Table 18. Selected statistics, Great Britain (2005-2009)

Criteria	2005	2006	2007	2008	2009	2010
Km of rail	16,208	16,193	16,218	16,212	16,272	-
Train km, in thousand	511,984	517,944	507,231	524,936	542,532	550,556
Pax km, in million	44.42	47.04	50.17	53.00	52.77	55.83
T km, in million	22.32	27.37	26.38	24.83	21.17	-

Source: Eurostat, Transport in Figures 2011 (EC, 2011)

Table 19. Summary of provisions for access to the British rail market

Passenger services	Franchises + some limited open access (permitted if not primarily abstractive of franchise revenues)
Freight services	Open access

Source: Compiled by authors

Table 20. Regulatory institutions relevant to the British railway market

Economic Regulator	*Office of Rail Regulation* (*ORR*)
Safety Regulator	*Office of Rail Regulation* (*ORR*)
Other Regulatory Agencies involved	*Office of Fair Trading* (*OFT*), *Competition Commission*

Source: Compiled by authors

Table 21. Main information about the Economic Regulator of the British rail industry

Name of Economic Regulator	*Office of Rail Regulation* (*ORR*)
Creation of Agency	2004
Nature of Regulatory Agency	Non-ministerial Government department
Scope of intervention	Limited to railway sector; includes safety
Role and mission	Independent, fair and effective regulation for safe, well maintained and efficient railways
Composition	7 non-executive directors and 5 executive directors Appointed by the Secretary of State for Transport
Sanctioning powers	Can sanction discriminatory behaviour
Enquiry and information powers	Strong; Actors must submit relevant data
Relation to Competition Authority	Cooperation with *Competition Commission* (*CC*)
Budget	31 million GBP (13 in licence fees and 18 in safety levy)
Personnel	300 (120 for economics and 180 for safety)
Relationship to Parliament	Annual report; Board accountable to Parliament

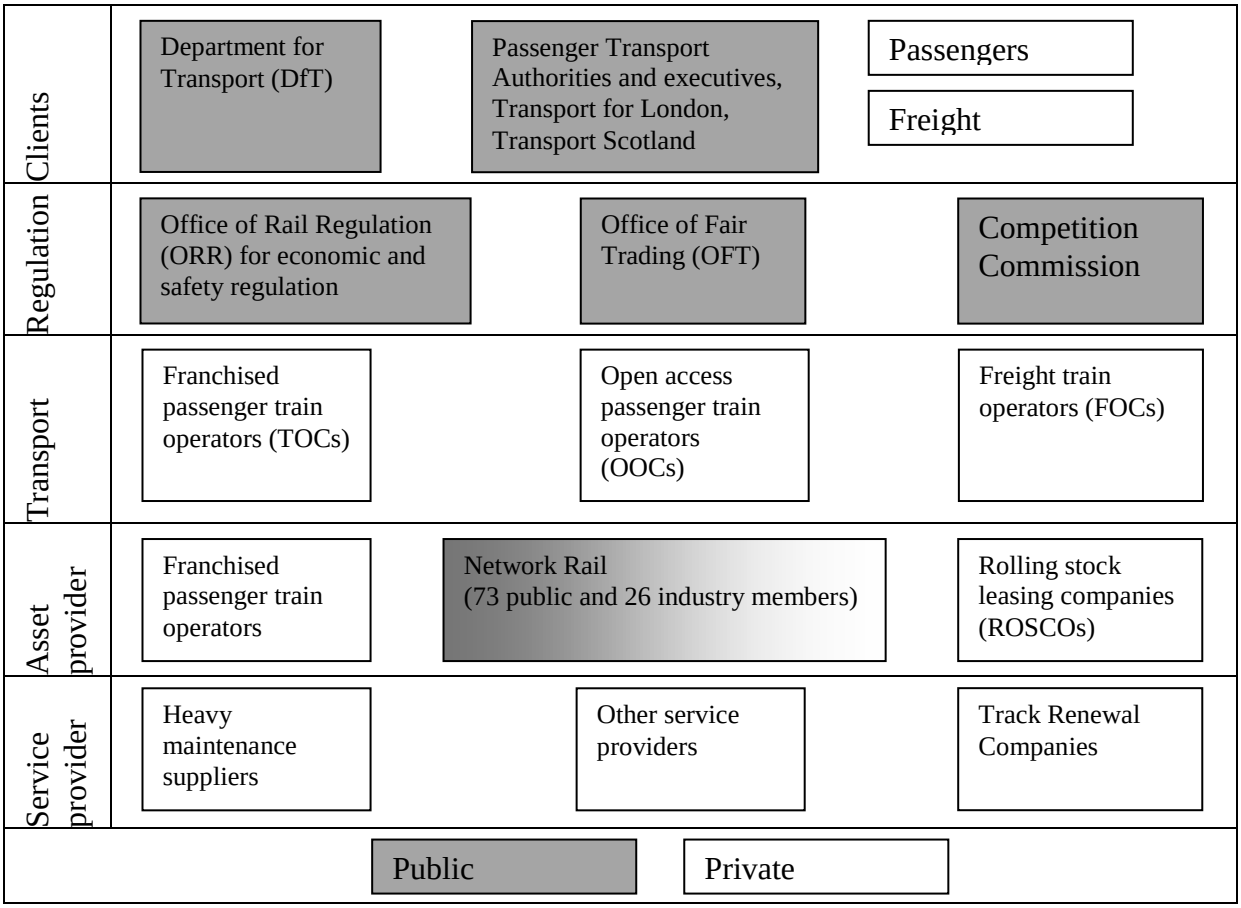
Source: Compiled by authors

Table 22. Infrastructure management and path allocation in the British railway market

Infrastructure management	*Network Rail*
Path allocation	*Network Rail*
Traffic control	*Network Rail*

Source: Compiled by authors

Figure 7. Main actors of the British railway system



Source: Compiled by authors, adapted from Merkert et al. (2008)

Regulation

The actors in British rail regulation are the *ORR* (*Office of Rail Regulation*), the *Office of Fair Trading* (*OFT*), the *Competition Commission*, and the *Department for Transport*.

Established in 2004, the *ORR* is the Safety and Economic Regulator for the rail industry. It also acts as the railway Competition Authority with powers concurrent with the *OFT*. It is a statutory body, with defined functions and duties set out in statute (the *Railways Act*1993, amended by the *Railways Act*2005). It is led by a Board balanced of non-executive and executive members and is funded by a safety levy and licence fees from the industry. The Board has the statutory freedom to balance the achievement of the objectives in the way that they think is best calculated to promote the public interest. Policy development is evidence-based and is subject to internal challenge as well as external consultation in line with the Cabinet Office's guidelines.

ORR's responsibilities include:

- Setting *Network Rail*'s income every five years at an access charges review;
- Regulating the safety procedures for railways, metro systems, tramways and heritage railways (since 2006);
- Making sure *Network Rail* keeps to its network licence and changing it if necessary;

- Issuing licences to operators of passenger and freight services, stations, light maintenance depots and mainline network;
- Controlling the fair and efficient allocation of capacity of railway assets through the approval or direction of contracts for the use of track, stations, and light maintenance depots;
- Making sure the requirements of interoperability are met;
- Making sure that the different railway markets are working for the benefit of those using railway services and taking action where competition rules have been broken.

It also monitors and publishes performance information and takes enforcement action if required.

ORR has substantial powers at its disposal to enforce railway and safety legislation:

- The power to enforce license conditions is under the *Railways Act*1993;
- The periodic review process sets out the charges to operate the network and the outputs that *Network Rail* should provide for that money;
- The outputs that *Network Rail* is required to deliver are monitored and enforced by *ORR* under the network license;
- Powers to enforce UK and European competition law in relation to the railways.

The long-term planning of *Network Rail*'s outputs and the access charges are reviewed in a process involving the Transport Ministries of England, Wales and Scotland submitting to the *ORR* a *High Level Output Specification* (*HLOS*) and a *Statement of Funds Available* (*SoFA*) to reach the objectives in the *HLOS* over a period of 5 years. The *ORR* then determines the costs of delivering the outputs in the most efficient way, makes an assessment of the feasibility of the targets with the available funds, and indicates the access charges to the RUs. This process has been put in place for the first time for the period 2009-2014, with the *HLOS* published in the 2007 White Paper "Delivering a Sustainable Railway". It should however be noted that such amendments of charges are not actually passed on to the RU since they are subject to the charges determined at the time the franchise was awarded. This is a kind of misalignment that is currently being discussed.

The *Competition Commission* has replaced the *Monopolies and Mergers Commission* in 1999 and works on mergers and acquisitions following a reference by another Authority (such as the *ORR* or the *OFT*) or by the Secretary of State.

The *OFT* oversees compliance with the Competition and the Consumer legislation. It works in partnership will all other Regulators. The *OFT* may carry out market investigations and proceed to refer them to the *Competition Commission* in case it has concerns with respect to competition. It may also investigate mergers and, in case of concerns, refer them to the *Completion Commission*.

ORR has concurrent power with the *OFT* to make a reference to the *Competition Commission* "whenever it has reasonable grounds to suspect that any feature, or combination of features, of a market of the United Kingdom for goods and services prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom."

Competition and related regulatory action

The statutory framework for keeping British railway market under review is governed by the *Railways Act* 1993, the *Enterprise Act* 2002 and the *Railways Infrastructure (Access and Management) Regulations* 2005, which transposed and implemented the requirements of the First Package of EU Rail Directives and parts of the Second Package. This framework implicitly recognises that knowledge of markets assists *ORR* in exercising its functions and enables it to develop proportionate and evidence-based regulatory policy. As such, *ORR* conducts market studies[13].

Table 23. Competition issues dealt with in 2008 and 2009

Company under scope	Issue
First-Scotrail Review of Undertakings	Proposed acquisition by *FirstGroup plc* (*FirstGroup*) of the *Scottish Passenger Rail* (*ScotRail*) franchise
Rolling Stock Leasing Market Investigation	Leasing of rolling stock for franchised passenger services and the supply of related maintenance services (the reference goods and services) in the UK
Stagecoach / Scottish Citylink	Completed joint venture
EWS Railway Holdings / Marcroft Engineering	Completed acquisition
Greater Western Passenger Rail Franchise	Proposed acquisition of the new *Greater Western Franchise* (the *GWF*) by *FirstGroup plc* (*FirstGroup*).
National Express Group / Thameslink / Great Northern Rail Franchise	Proposed acquisition of the *Thameslink and Great Northern* (*TGN*) rail franchise by the *National Express Group plc* (*NEG*).
National Express Group PLC / Greater Anglia Franchise	Acquisition by *National Express Group plc* (*NEG*) of the *Greater Anglia* franchise
Firstgroup plc / Scotrail	Proposed acquisition by *FirstGroup plc* (*FirstGroup*) of the *Scottish Passenger Rail* franchise (the Scottish rail franchise) currently operated by *ScotRail Railways Limited* (*ScotRail*)
DaimlerChrysler AG / Railcare Limited	Acquisition on the supply of heavy maintenance services for railway rolling stock in the United Kingdom

Source: Compiled by authors, based on European Commission - DG Competition website

Services provided under PSOs

National services have been divided into lines through franchising and managed by the *DfT*. The tendering is based on the lowest subsidy required. Rail franchise agreements are the contracts which the *DfT* holds with train operating companies for the provision of passenger train services. These contracts are awarded by the *DfT* following open competition. Whilst key elements of the service provided to passengers are mandated as part of the contract, other features are left to the commercial judgment of bidders and operators. Operators are responsible for the day-to-day management of train services. There are currently 15 rail franchises managed by the *DfT*. Overall, the *DfT* paid GBP 3.8bn in subsidy to the railway in year 2011 including grants paid to *Network Rail* to operate, renew and maintain the national rail infrastructure. Current franchises have been let for an average of around eight years, although some have been shorter to reflect circumstances in specific areas.

[13] Market studies should not be confused with market investigations carried out by the Competition Commission or sector inquiries carried out by the European Commission.

The current process of franchising involves the *DfT* (in consultation with *Network Rail*) setting out a minimum level of train service that should be delivered by the operator[14]. This is not usually a timetable, but a set of minimum frequencies, maximum journey times and stopping patterns. Some of these services will not cover their costs and, without being specified, they would not be provided by the franchisee.

In a recent study KPMG finds a lack of conclusive evidence about the relationship between franchise term and franchisee performance are:

- Franchisee bid assumptions for patronage growth or cost reduction proving not to be sustainable, meaning that some sample *TOCs* did not see out the full term of their contracts. Performance can also deteriorate as management seeks to cut costs to reduce financial losses. This effect may override any impact that franchise length might have on franchisee performance;
- Many of the investments or actions that will improve performance or customer satisfaction in the UK rail industry do not necessarily have a financial payback over the life of the franchise, even if it is a relatively long contract such as 15 years (and some investments may not generate a *TOC* financial return over any time period). Alternative mechanisms to bring about improved outcomes might include the Franchising Authority specifying investments in tender requirements. UK rail franchises tend to have a number of committed obligations to deliver specific improvements incorporated into the contract on signature. Often the nature of these committed obligations differs materially between contracts and are not related to franchise length;
- The different UK *TOCs* are highly individual businesses operating in different geographic locations with different fleets and inheriting assets of differing age and condition. They also experience different external events (performance shocks, changes to the local economy, *Network Rail* performance, etc.) over the period of their contracts;
- The ability of a management team to impact the results delivered may be related as much to its quality as to the term of a contract.

Evolution of institutions in Britain

The current institutional arrangements in Britain are the results of the major change initiated in 1993 "carefully designed to introduce competition wherever possible all along the supply chain and to provide appropriate incentives throughout the industry" (Nash and Smith, 2010).

The passage of the *Railways Act*in 1993 initiated a rapid set of changes that were quickly carried out: contracting passenger services organised in 25 franchises in 1996-1997 was one of the final steps of the replacement of the vertically integrated *BR* by a set of private companies working on separate elements of the railway system. Infrastructure was sold to the private company *Railtrack* (replaced in 2002 by *Network Rail*, with a different structure and not-for-dividend) as well as rolling stock and infrastructure maintenance and track renewal companies. Freight transport is carried out on open access grounds by private companies which have bought specialised sectors of *BR* (e.g., container transport).

[14] Specifications for recent franchises have included elements relating to: access to the network (car parks, cycle parking, multi-modal interchange); stations, stations facilities and station improvements; quality of service; national passenger survey targets; fares and ticketing; security and revenue protection; passenger information; and environmental impacts.

Regulation, at the outset of the privatisation, was with the *Office of the Rail Regulator*, to become the *Office of Rail Regulation* in 2004 when the Regulator was replaced by a Board, and with *Office of Passenger Rail Franchising* (*OPRAF*) mostly in charge of franchises. In its time in force the Regulator had frictions with the Government on amounts of money to be transferred from the Government to *Railtrack*, due to the infrastructure being in a poorer state than thought at time of privatisation and to the franchisees being insulated from increases in access charges, which falls directly on the Government (Winsor, 2010).

Need for more strategic outlook on services led to the formation of the *Strategic Rail Authority* (*SRA*) in place of *OPRAF*, allowing also more Government involvement in the matter. *SRA* expressed the will of the Government to have direct control of railways and caused frictions by attempting to extend its jurisdiction on that of the Rail Regulator (as told by the then Rail Regulator, Winsor, 2010). *SRA* lasted only from 2001 to 2006 and now franchising and strategic planning are with the *DfT*, although the recent *McNulty Report* (2011) calls for more strategic view and involvement of the whole industry.

The *Railways Act* 2005 transferred responsibility for the health and safety regulation of the rail and light rail industries from the *Health and Safety Executive* (*HSE*) to the *ORR*. The handover took effect in April 2006 when *ORR* merged with, and assumed the responsibilities of, the rail section of the *HSE* (including *Her Majesty's Railway Inspectorate*).

The latest changes in railways in Britain are being driven by the *McNulty Report* ("Realising the potential of GB rail – Report of the Value for Money Study") issued in May 2011 to advise the Government on rail issues and followed by the *Command Paper*, that the Government issued in March 2012.

The *McNulty study* found that the rail industry in Britain costs some 30% more than it should (even 40% against some European cases) and identified barriers to efficiency, then putting forward measures to overcome them with a view "to expand the network capacity as necessary", therefore no network reductions are intended.

The barriers to efficiency identified include: fragmentation of structures and interfaces (that does not foster alliances towards efficiencies), the role of Government and industry, ineffective and misaligned incentives (referring not only to RUs being isolated from changes in infrastructure access charges, but also to rolling stock: RUs do not have incentives to manage rolling stock costs).

The *McNulty Report* advocated clarity in rail policy, improvements in structures and interfaces also with incentives. It further encouraged more industry involvement in strategic discussion (a "Rail Delivery Group" has promptly been set up by the RUs and *Network Rail*), and better management in several areas of the rail supply chain, including "approaches to enable lower-cost regional railways".

The study underlined, for instance, that *Network Rail* works in a too centralised way and that RUs take short term views of the industry. It is also pointed out that franchise periods are "relatively short" (one effect of this is the planned change of the *Greater Anglia* franchise, lasting for the period 2012-2014 and recently awarded, to become 15 years' long) and that there are "*overly-prescriptive franchises, insufficient risk transfer from Government, and difficulty in agreeing changes to franchise agreements*". The study also pointed out that "*whole-system approaches are difficult to apply in an industry that often needs them*".

Among the many recommendations, the *HLOS/SoFA* process should "*include specific cost objectives and a greater degree of longer term planning*". In fact the Government with its *Command Paper* of March 2012 seems to have postponed a response on this to the forthcoming *HLOS* document, expected in July 2012, which should include elements such as incentives to deliver savings and industry alliances.

The *McNulty study* also recommended having at least two "joint ventures/alliances" between *Network Rail* and RUs as well as one vertically integrated pilot, both by 2013/2014 and with a view to explore closer alignment of infrastructure and operation. The first device is seen with some concern by freight operators (since the passenger RUs would be part of the partnerships), while the second awaits implementation after initial suggestions to try integration in the 25 years' long Merseyside franchise, which is a special case as it is self-contained and managed by the local *Passenger Transport Executive* (*PTE*) only, without intervention from the *DfT*.

Another recommendation of particular interest here was to "*move towards the industry having a single Regulator, the ORR*". The *McNulty study* envisaged the *ORR* becoming the Regulator of the franchises (now this role is with the *DfT*), still procured by the *DfT* as they are now. In this view *ORR* would also be in charge of overseeing fares. The rationale is that division of roles between the Government and the Regulator would be clearer.

The recommendations put forward in the *McNulty Report* may lead to a further round of reforms in areas as diverse as industry objective and outputs, leadership, incentives, fares, safety and standards, or asset ownership and private investment, although recent Government response with the *Command Paper* is not yet driving changes.

The main events that have marked the evolution of the British railway system are summarised in Table 24. Their effects on the main actors in the system and the changes of those are depicted against time since 1988 in Figure 8. That figure allows appreciating for how long each kind of actor has been part of the sector. The changes intervened led us to characterise four milestones in the institutional changes which are singled out in Figure 9 along with the main events determining them.

Table 24. Brief account of the main points on the evolution of the regulatory and competition arrangements

Year	Evolution
1992	The *New opportunities for railways White Paper* issued by the *DfT* points towards competition, vertical separation, and direct involvement of the private sector in rail to obtain responsiveness to customer needs, service quality and improved efficiency against a trend of decreasing rail usage and increasing State funding
1993	The *Railways Act* incorporates the recommendations of the *New opportunities for railways White Paper* opening the way to the privatization of the railways
1994	*Railtrack*, a new company owned by the State, takes over the railway infrastructure from *British Railways* (*BR*) *BR* infrastructure services are sold to seven infrastructure maintenance companies and six track renewal companies *BR* rolling stock for passenger services is transferred to three *Rolling Stock Leasing Companies* (*ROSCOs*) still State owned Competition for the tracks is introduced for passenger services (open access is to be introduced gradually to ensure viability of the franchises) Open access is introduced for freight services The freight sector of *BR* is separated into six freight operating companies *ORR*, the *Office of Rail Regulator*, is created as independent Regulator of *Railtrack*. It grants *Railtrack* its licence with requirements for asset's stewardship and safety, determines rail charges, approves access agreements *OPRAF*, the *Office of Passenger Rail Franchising*, is set up to award franchises, pay subsidies and monitor the delivery of the services by the RUs Safety of rail operators is managed by *Railtrack*, whose safety arrangements are, in turn, the responsibility of the *Health and Safety Executive* (*HSE*) as overall safety regulation
1995-1997	The six freight operating companies are sold to private investors
1996	*Railtrack* is sold to the private sector *ROSCOs* are sold to the private sector
1996-1997	25 private Train Operating Companies (RUs) are awarded the first franchises (some lasting 7 years some 15 years, longer ones against commitments in investments)
2001	In October *Railtrack* is placed into administration due a major financial crisis following the Hatfield accident, happened the previous year *OPRAF* (the *Office of Passenger Rail Franchising*) becomes the *Strategic Rail Authority* and its role widens to include the strategic development of the rail industry(no strategic planning body was present during the period with *ORR* and *ORR/OPRAF* as Regulators)
2002	The ownership of the infrastructure is transferred from *Railtrack* to *Network Rail* a not for divided company (it may make profits but has to reinvest them or build up a financial reserve)
2004	The former *Office of the Rail Regulator* becomes the *Office of Rail Regulation*. Behind the name change of the *ORR* there is an important organizational change: the introduction of a Board for decision making Government White Paper putting forward the abolition of the *SRA* and the transfer of its role to the *Department for Transport*
2005	Strategic and financial responsibilities as well as the duties for setting the national level of outputs for the railways industry were transferred to the Department of Transport and the role of the *Office of Rail Regulation* is reinforced. The *HLOS/SoFA* procedure to determine funding, access charges and outputs of *Network Rail* for a period of 5 years is introduced.
2007	The *HLOS/SoFA* procedure is started for the first time with the indication of *HLOS* on the *White Paper Delivering a Sustainable Railway*
2011	The *Rail Value for Money (McNulty) report* delineates action to tackle the high costs of railways in Britain

Source: Compiled by authors, Nash, Smith, & Matthews (2005), Nash and Smith (2010), website of authors

The following two charts offer an overview of the institutional evolution in Britain from 1988 to 2011 (Figure 8) and a summary of the milestones in institutional evolution and of the reasons for the changes (Figure 9).

Legend for the overview of the institutional evolution and the milestones

The overview of the institutional evolution is a matrix composed by as many columns as the years between 1988 and 2011 plus an initial column for the situation before 1988 and a final column for planned changes after 2011 that are already known.

There are four horizontal bands or clusters of rows.

The top cluster of rows includes the railway market set-up over the years. The chart reports separately the set-up for the passenger rail market, divided by long-distance and regional/local, and for the freight market. Different market set-ups are depicted by coloured bands spanning the columns representing the relevant years. Colours have no particular meaning but have mostly the role of making changes visible. Wherever a market set-up is the same or similar, the colour is the same. Alternatively, different colours are used. However, for this cluster of rows only, a homogenous colour coding has been used across charts for different countries: light yellow is associated to legal monopoly, orange to concessions or franchises (a separate band indicates the possibility of open access) and light blue refers to open access. Cases where PSO services and open access (may) co-exist are indicated by horizontal orange and light blue stripes.

The second and largest set of rows refers to each kind of actor/railway body whose evolution is depicted along the rows. The focus is on the passenger sector, since this is the focus of this project. Therefore, while there are rows regarding the incumbent and new entrants in the freight markets, the rows about station and about rolling stock provisions refer to the passenger sector only. Several actors may correspond to a kind of actor and this is written or depicted along the row. Actors or types of actors are depicted by coloured rectangles. A continuous contour of the rectangle indicates a public body; a dashed contour indicates a private body. Colours of rectangles have no particular meaning but have the role of making changes visible. Wherever a body is the same, the colour is the same. Alternatively, different colours are used. Names of bodies are written only on the rectangles depicting their first appearance.

Large rectangles with dashed blue contour spanning across the first and second set of rows identify the milestones in institutional evolution that are singled out for use in the next chart.

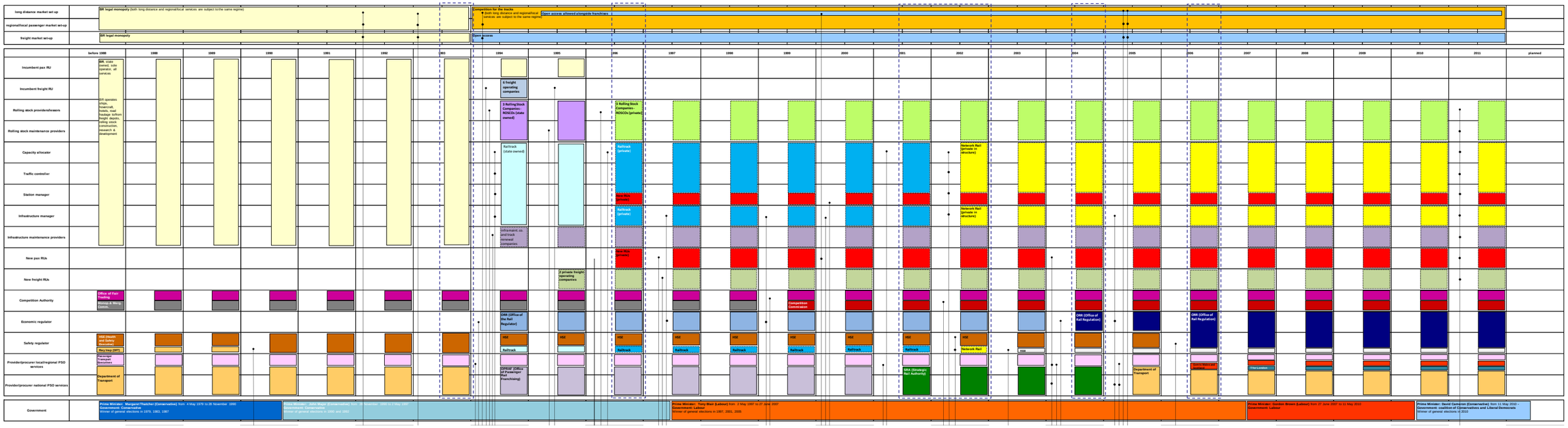
A third band includes only one row and refers to the sequence of Governments, the relevant dates and the main figures.

The bottom band, with columns indicated with alternate white and grey background, includes text rectangles reporting main facts within the rail industry or with an influence on the rail industry. Facts are linked to market set-ups or actors where immediately relevant.

Legend for the summary of the milestones in institutional evolution

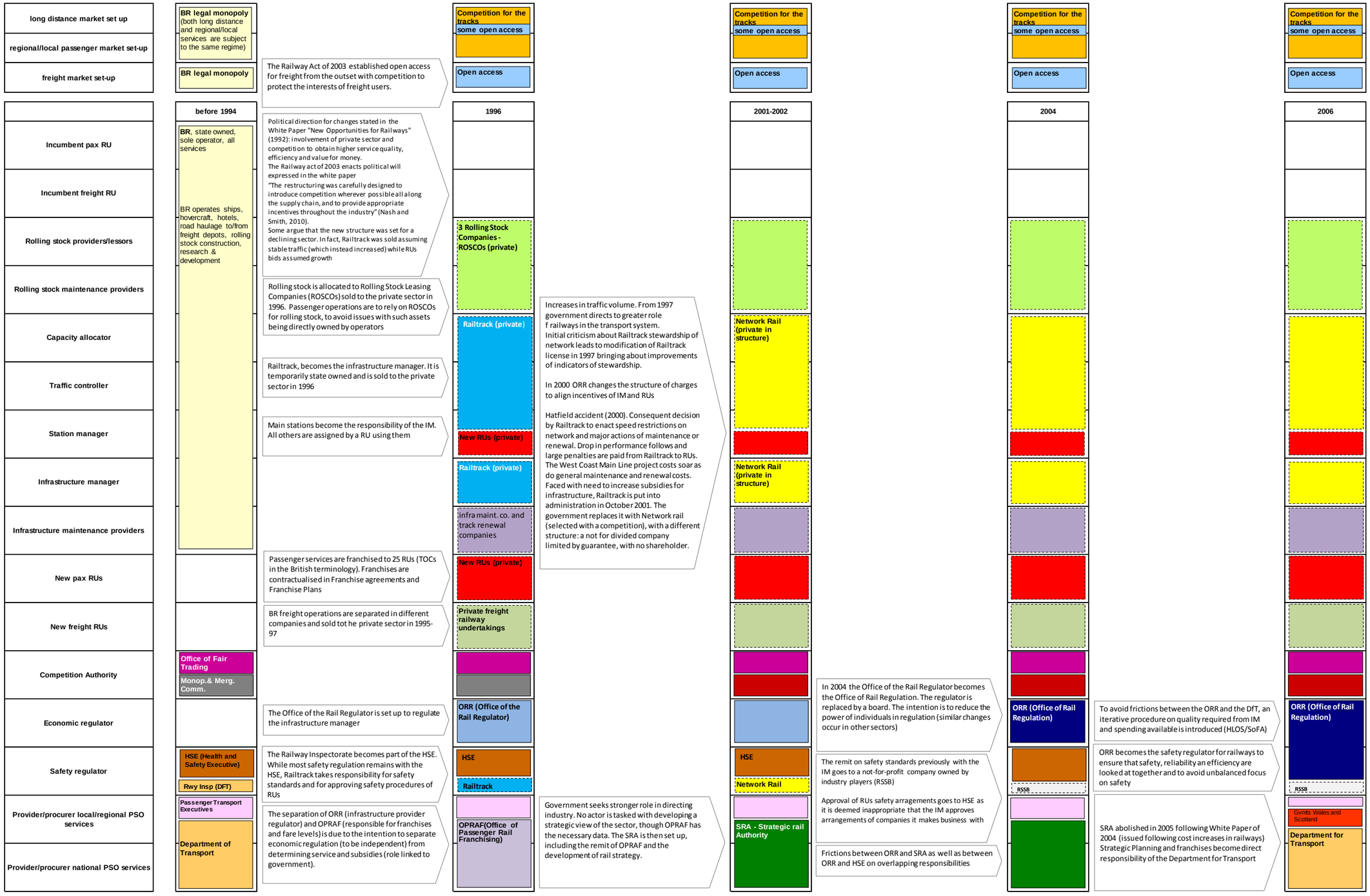
In Figure 9 the milestones of the institutional evolution have been singled out of the previous figure and brief texts explaining the changes occurred have been added between each pair of milestones. Therefore the picture depicts the milestones by using the same structure in columns and rows used previously. However, while each column refers to a particular year or cluster of years, the distance between columns is not to scale and is simply to leave room for the details of the changes. These are contained in arrows pointing to the actors resulting from the changes or affected by them.

Figure 8. Evolution of institutions in the British railway sector, 1988-2011. The full size picture is too large to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature and, partly, thanks to personal communications of experts



Source: Compiled by authors, based on the following: Nash, Smith and Matthews (2005), Nash and Smith (2010), Nash (2012), Abrantes (2012), OECD (2010)

Figure 9. Milestones in the evolution of the railway sector in Great Britain, 1988-2011. The full size picture is too large to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature and, partly, thanks to personal communications of experts



Compiled by authors, based on the following: Nash, Smith and Matthews (2005), Nash and Smith (2010), Nash (2012), Abrantes (2012), OECD (2010)

3.6 The Netherlands

Outline

The Netherlands have a railway system divided in two parts from the operational viewpoint: a "core" network where national passenger services are run by a single operator (*Nederlandse Spoorwegen - NS*, the incumbent) on a concession awarded by the State, and a number of peripheral lines with local relevance along which services are contracted by Local Authorities to operators via public tendering (those lines were separated from the main network in 1998-2005 since loss making for *NS*). Funding for services on peripheral lines also comes from the State although it is administered by the Local Authorities. Local passenger services have seen much interest from private operators, which recently are also suggesting that their role could extend to services on the core network. *NS*, the State owned passenger operator resulting from the reorganisation of the former single railway company, has the concession to carry out services on the main network and has to operate commercially and be profitable. Freight is an open market since 1996 and is particularly relevant due to the traffic linked to the ports, notably that of Rotterdam. The freight branch of the former single railway company has been acquired in 2000 by *DB Schenker*.

ProRail, State owned, is the IM for almost all the network. *ProRail*, besides being in charge of infrastructure management, is responsible for traffic control and capacity allocation. Infrastructure management, including the other responsibilities just mentioned, is carried out by *ProRail* on concession by the State. The current concession runs along the same time span of that for NS: from 2005 until 2015.

The following tables and figure introduce the dimension of railway transport in the Netherlands, the main actors and their role (see also Appendix I).

Table 25. Selected statistics, The Netherlands (2005-2009)

Criteria	2005	2006	2007	2008	2009	2010
Km of rail	2,797	2,801	2,888	2,896	2,886	-
Train km, in thousand	134,615	135,394	151,386	n.a.	n.a.	139,685
Pax km, in million	15.15	15.89	16.32	16.31	16.42	-
T km, in million	5.87	6.29	7.22	6.98	5.58	6.39

Source: Eurostat, Transport in Figures 2011 (EC, 2011)

Table 26. Summary of provisions for access to the Dutch rail market

Passenger services	The market is not open and a concession is required to operate: The main network services in concession to NS until 2015 20 peripheral lines are tendered by local Governments
Freight services	Open market since 1998

Source: Compiled by authors

Table 27. Regulatory institutions relevant to the Dutch railway market

Economic Regulator	*Nederlandse Mededingingsautoriteit(NMa)/Vorvoerkamer*
Safety Regulator	*Inspectie Verkeer en Waterstraat* (*IVW*)
Other Regulatory Agencies involved (if any)	*NMa* is the Authority for Competition, the Rail Regulator is a department of it

Source: Compiled by authors

Table 28. Main information about the economic (and safety) Regulator of the Dutch rail industry

Name of Economic Regulator	*Nederlandse Mededingingsautoriteit(NMa)/Vorvoerkamer*
Name in English	Netherlands Competition Authority/Office of Transport Regulation
Creation of Agency	2004 (Office of transport Regulation); 1998 *NMa*
Nature of Regulatory Agency	Independent
Scope of intervention	Limited to market; security is supervised by independent NSA (*IVW*)
Role and mission	Regulation; non-discriminatory access to rail and services; user charge (article 30 2001/14/EC)
Composition	3-member executive board
Sanctioning powers	Fines until 10% of revenue
Enquiry and information powers	Yes: as in competition law
Relation to Competition Authority	Same organization (combined)
Budget	Financed by Ministry of Transport
Personnel	7 FTE on rail regulation (380 FTE all of *NMa*)
Relationship to Parliament	Annual report

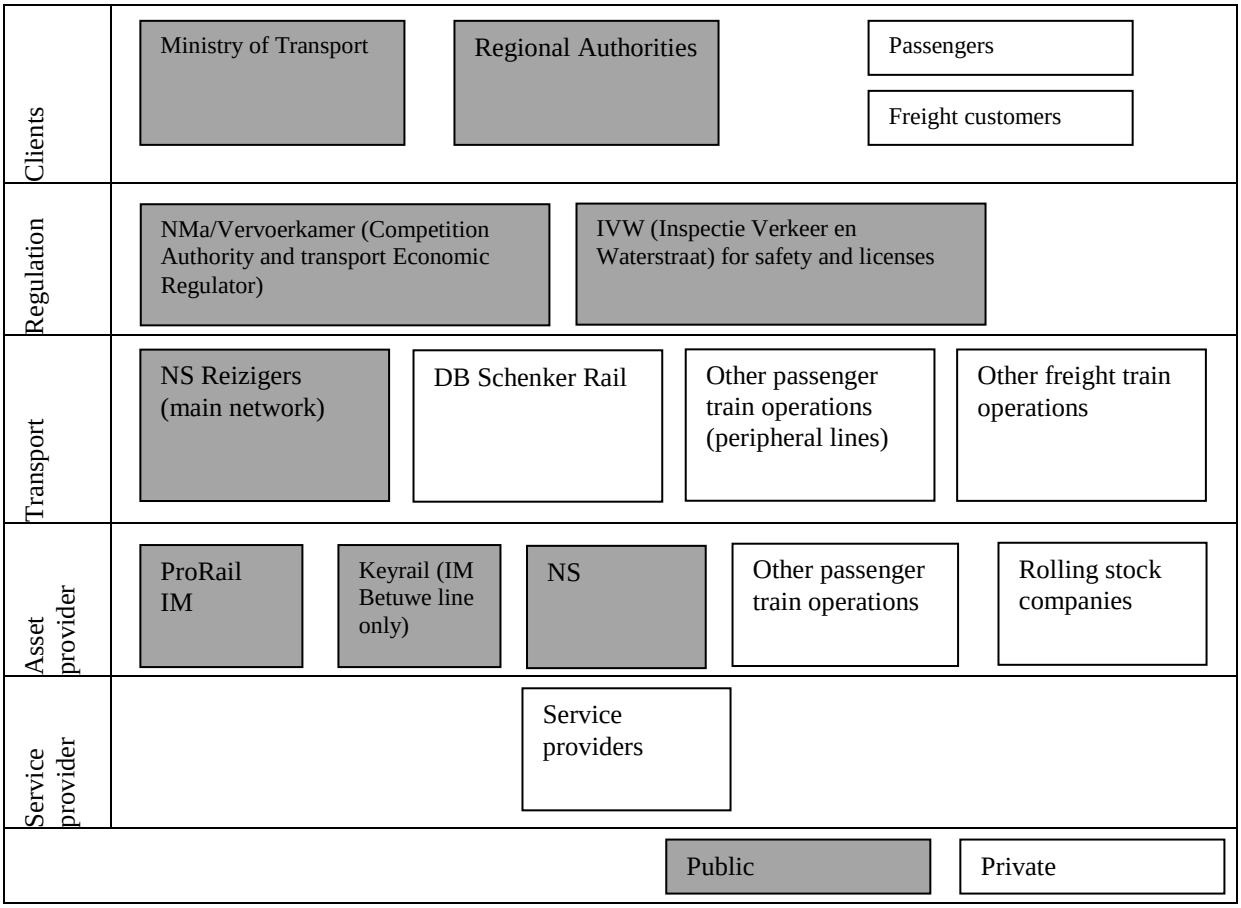
Source: Compiled by authors

Table 29. Infrastructure management and path allocation in the Dutch railway market

Infrastructure management	*ProRail* (concession until 2015)
Path allocation	*ProRail* (concession until 2015)
Traffic control	*ProRail* (concession until 2015)

Source: Compiled by authors

Figure 10. Main actors of the Dutch railway system



Source: Compiled by authors, adapted from Merkert et al. (2008)

In more detail, *ProRail* (fully owned by the State but separate from *NS*) is the IM on the basis of a concession started in 2005 – and lasting until 2015 – as a result of the new Railway and Concession Act. *ProRail* is responsible for:

- Rail capacity management;
- Train path management;
- Real-time passenger information;
- Management of passenger transfer spaces at the stations;
- Infrastructure management and development.

There is another IM, *Keyrail*, but its role is limited to the Betuwe line. The latter has been opened in 2008, and goes from the port of Rotterdam (the major port of the Netherlands and one of the most important in Europe) towards Germany, and is for use by freight trains. *Keyrail* is a joint venture of *ProRail* and the Rotterdam and Amsterdam Port Authorities, and it is currently contracted as the IM for the Betuwe line for a fixed period of 5 years.

As a result of a concession started in 2005 and lasting until 2015, *NS Reizigers*, the rail passenger incumbent passenger operator, enjoys the exclusive right to providing long distance passenger services on the main Dutch network and receives no subsidies (the latter point was one of the guiding aims of the reforms). Also, the concession of *NS* entails working against PIs: *NS* has to propose each year realistic target values for them to the Parliament. If

the agreed target levels of the PIs are not met, *NS* has to explain the reason and may be given penalties. More recently thresholds are being set rather than targets.

Other operators have entered the market of local passenger services, procured by Local Public Authorities on funds transferred by the State, and the open market of freight services.

Regulation

The actors in Dutch rail regulation are:

- *NMa/Vervoekamer*, as Economic Regulator, which is part of *NMa*, the Dutch Competition Authority;
- IVW (Inspectie Verkeer en Waterstraat) as Safety Regulator.

The task of *NMa* (*Nederlandse Mededingingsautoriteit*), the Dutch Competition Authority, is "making markets work" and this includes:

- Oversight of all industries of the Dutch economy;
- Enforcement of compliance with the Dutch Competition Act;
- Taking action against parties that participate in cartels;
- Taking action against parties that abuse a dominant position;
- Assessing mergers and acquisitions;
- Regulating the energy markets and transport markets.

On the 1st January 2004 the Office of Transport Regulation of *NMa* (*NMa/Vervoekamer*) was established as Railway Regulator. This office is independent of the Ministry of Transport and Economic Affairs but their independence is limited by the fact that the Transport Minister is responsible for monitoring observance of Directive 2001/14/EC.

The Office of Transport Regulation since 2009 has merged with the Office of Energy Regulation (still part of the *NMa*) to form the Office of Energy and Transport Regulation.

The scope of the Office of Transport Regulation spans railways, aviation (Amsterdam Schipol airport) and pilotage (in ports), as well as public transport (such as trams, metro and bus transport) in Amsterdam, The Hague and Rotterdam. In more detail, its tasks are (NMa, 2010):

- Regulating compliance by the IM with parts of the concession regulations with regard to managing the main railway network;
- Regulating non-discriminatory access to the railway infrastructure;
- Regulating a correct and on-time development and publication of the Network Statement;
- Regulating non-discriminatory access to additional services and facilities on and off the rail network;
- Regulating compliance with access agreements;
- Regulating non-discriminatory allocation of the railway network capacity and of other essential rail-related services and framework agreements;
- Regulating the infrastructure charges;

- Approving long-term (more than five years) framework agreements between IM and operator;
- Monitoring competition in the rail transport services industry;
- Cooperation on a European level.

The Office of Transport Regulation may act on complaint or by carrying out an *ex officio* investigation. In the first case it must issue a decision within two months of receiving the necessary information and acts pursuant to the provisions in sect. 71 of the Dutch Railway Act and art. 30, par. 2 of Directive 2001/14/EC. It acts *ex officio* if it suspects that the Railway Act is or has been violated. NMa members may investigate within the undertakings' premises, inspect documents on site, and make enquiries. *Ex officio* investigations are carried out according to sect. 70 of the Dutch Railway Act.

NMa/VK also issues informal opinions on the request of a regulated party.

The Office of Transport Regulation publishes a yearly "Railway monitor" including general conclusions on the market. For instance, the 2010 issue underlines the need for an international one-stop shop for capacity allocation, deals with the network occupation by the IMs for maintenance and provides a summary and analysis of its own decisions in the light of the state of industry.

The *IVW* is the Safety Regulator and covers the main rail, tram, metro and other railways and is part of the Ministry of Transport, Public Works and Water Management. *IVW* certifies operators, their rolling stock, their workplaces and provides operators with safety licences.

Competition and related regulatory action

In 2008 the European Commission sent a letter of notice to all except one railway equipped countries in the EU about their failure to implement the First Railway Package. The Netherlands is the only EU member that did not received the letter of notice. The points made by the Commission were in general (EC press release IP/08/1031):

- Lack of independence of the IM in relation to railway operators;
- Insufficient implementation of the rules of the Directive on track access charging, such as the absence of a performance regime to improve the performance of the railway network and the lack of incentives of the IM to reduce costs and charges;
- Failure to set up an independent Regulatory Body with strong powers to remedy competition problems in the railway sector.

In 2008 the Office of Transport Regulation published 11 decisions related either to the art. 70 or 71 or the Railway Act, providing respectively for *ex officio* investigations and handling of complaints (dispute mediation). One decision following a complaint – a dispute mediation – was published in 2009.

As mentioned above, The *NMa*/Transport Office, the Dutch Railway Regulator, may act *ex officio* or upon complaint. Investigations recently carried out *ex officio* included looking into issues with the allocation of capacity by the IM *ProRail* to itself (for maintenance) and with the relevant allocation procedure, verifying the information provided in the network statement finding incorrect, missing or unclear content. Moreover, in April 2010

NMa/Transport Office published the report from an investigation into access, capacity, quality of facilities, lack of information and level of charges for using refuelling station for diesel freight trains. The investigation originated from a Transport Office analysis and the closing report indicates that the capacity issues had been eased since the investigation started by a switch to using electric locomotives, rather than diesel ones, by a reduction in demand for container trains (due to the economic climate), and by a change in technology (the new one allowing faster refuelling) and opening times of the diesel refuelling facilities. The information issues should be addressed by a change in the *ProRail* network statement that the *NMa* is to check (source: NMa news and press release 23.04.2010).

The *NMa*/Transport Office dealt with a number of complaints, for instance about capacity allocation by the IM *ProRail* to itself, which included regular complete closure of line at night for possible maintenance decided *a priori* and that conflicted with requests by operators, *for* which ProRail has been ordered to provide customised solutions to RUs requesting capacity when such blanket stops to circulation would be imposed. The NMa/Transport Office stated that requests of capacity for maintenance should be treated on the same level as requests by rail operators. There were a number of complaints on such issue (as they related to different lines and were by different operators). Deciding on one of those, the *NMa*/Transport Office ruled also that if no solution is found to resolve capacity conflicts, *ProRail* should provide and independent dispute resolution.

In 2008 the Transport Office decided that a complaint by *ProRail* against *NS Reizigers* about a reduction in liability limit that *ProRail* claimed was forced to accept by NS, on the threat of not finalizing the access agreement. *ProRail* argued that it was forced to accept conditions that were discriminatory towards other undertakings. However the Transport Office found the complaint unfounded since NS had only taken advantage of the possibility of carrying out negotiations that other RU had not pursued. Therefore there was no discrimination.

NS complained in 2008 against *ProRail* for an increase of the fees for using the main network in 2008 (which it felt related to NS only and were not stated on the network statement) and the fact that access charges are payable one month in advance of using the train path. The latter part of the complaint was rejected while that on fees increase was upheld by *NMa* even though *ProRail* explained that higher charges were requested due to higher maintenance costs for night and weekend work. *ProRail* and NS came to an agreement in accordance with the conclusion of *NMa*, thus reducing the fees payable by NS for 2008.

In 2009 *NMa* decided against the setup of a performance scheme used in 2008 and 2009 by *ProRail* to reduce noise during braking. After a complaint filed by *DB Schenker*, which carries out only freight transport, *NMa* noted that the performance scheme lead to different bonuses for freight and passenger rolling stock which *ProRail* was not able to justify. *ProRail* was ordered to correct of the performance scheme.

The *NMa*/Transport Office recently had also a decision taken after a complaint overturned in court and then finally confirmed by an appeal court in 2008. The appeal court ruled that the IM cannot set unilaterally the infrastructure changes and that those are negotiable. This had already been stated in a decision by the *NMa*/Transport Office previously, but an appeal to a court had overturned the decision.

Services provided under PSOs

In the Netherlands services on the trunk network have to be profitable overall and are run by *NS Reizigers*, which holds a concession. PSO obligations on the main network are therefore established by the State and are compensated only by granting exclusive operations rights.

Some unprofitable local railway services have been separated from the main network of services run by *NS*. Responsibility over them has been transferred to Local Transport Authorities, which put the relevant concession out to tender, open to any railway operator.

This set-up has part of its origin in the transitional contract between the Dutch State and *NS* covering the years 1996-2000, which included a gradual reduction of subsidies to passenger rail services and allowed *NS* to stop performing non-profitable services.

From 1994 tendering of bus services had been used as the test base for tendering of all public transport services (except those of the cities of Amsterdam, Rotterdam, The Hague), which has been generalised and made compulsory with the Law for passenger transport 2000, enacted in 2001 without being initially applicable to rail. The same law became effective for regional railway services in 2005, after some years of experimentation with the decentralisation and tendering of rail passenger services, started in 1998.

With such decentralised system, the national Government sets the policy goals (in the case of regionalisation of public transport: better, more effective public transport), transfers the funds to the Regional Authorities that are responsible for tendering, and determines the goals, specifications, service delivery and possible sanctions. It is up to the Regional Authorities to design the tenders (for gross-cost or net-cost contracts) and their details. The decentralization started with the Regional Authorities receiving the same level of subsidy that was used before decentralisation as an incentive to use those sums to seek more efficient and higher quality rail services. The maximum duration of the concessions awarded by Local Transport Authorities is typically 5 years. The duration of 10-15 years is agreed when there are commitments by the operator to introduce new rolling stock.

The transfer of powers and limited opening of the market for local rail services resulted in the appearance of several operators. For instance, the bus operator *Oostnet* (later *ConneXXion*) won an early competitive tender to operate a local railway line in the East of the Netherlands that was being dismissed as loss making by *NS* and proposed for closure. *NoordNed*, a joint venture between *NS Reizigers*, *Arriva* and a bank, was awarded a non-competitive contract to operate a bus-train network in Friesland, and in 2003 *NoordNed* won a competitive tendering to operate routes in the Province of Groningen. In later tenders those operations were awarded to Arriva. *NS Reizigers* also entered joint ventures with other operators such as *ConneXXion* and *Keolis*.

While tendering of bus services is relevant to the whole country (except the major cities mentioned) rail services tendered by Public Authorities are a minority: van Dijk (2007) reports that they are about 8% of heavy rail transport. In the period 1998-2006, 13 services were regionalised, 10 of which tendered (seven of the tendering procedures focused mainly on the goal of minimum subsidy and 3 on improving the quality and quantity of supply), and after 2006 four more services were tendered. The services contracted out were on peripheral lines so as to have limited interference with the main railway network. In fact, the concessions are rather small (typically 1-3 rail services with a maximum of 6), which is also

intended to limit the risk of the private RUs. This, however, limits also the chances of good offers when new rolling stock is to be acquired.

According to van Dijk (2007) there are mixed results on whether it has been better to give responsibility for the development of the transport offer to the Regional Government or the transport company. When transport undertakings were in charge little innovation has been observed while when Regional Authorities took responsibility there were more ideas and plans but also more prescription. Moreover, the results expected were not all successfully achieved.

Still van Dijk (2007) reports that experience from the 1998-2006 period shows that Regional Authorities have gained quality improvements (extra supply, new rolling stock) or savings in operating costs (20-50%) for the same services which compares with smaller savings (0-10%) obtained when contracts have been directly awarded. This can be explained by with different working practices and lower overhead and operation costs compared to when NS was operating the same services.

Van de Velde (2010) explains that the 2.75% increase in passenger-km per year between 2000 and 2006 on peripheral lines (compared to 0.7% on the core network) may be explained with service improvements such as more supply (wider time coverage, more frequent trains), new rolling stock and integration with bus services. Indeed, companies running such rail services are also running bus services in the same area.

Initial experience showed also the importance of monitoring and the need for performance checks performed by the public Authority or by consultants rather than having the operators handing in their own figures, as noted by van Dijk (2007). Also the same initial experience suggested the need for the possibility of changes to the service provided to be put forward during the execution of the contracts but also the importance of having the means to propose and to judge those changes clearly stated at the beginning of the contract.

The dependence upon NS, the incumbent, for rail ticket integration and revenue-settlements has also been found to be an issue.

Evolution of institutions in the Netherlands

The main events marking the evolution of the institutional landscape of the Dutch railway sectors are recalled in Table 30. Before the table we add some details about how the current IM came to replace a set of organisations to an extent similar to those still managing part of the infrastructure value chain in France. Then we mention what the literature report about a recent item (the 2008 review of the 2004 changes) and the current debate about the extent, and possibly the organisation, of the core network.

These notes are followed by the chart depicting the evolution of the actors since 1988 (Figure 11) from which we extracted four milestones, as detailed in Figure 12.

The set-up of *ProRail* in 2003 meant the actual separation of infrastructure management and train operations in the Netherlands. The provision of the services that *ProRail* is responsible for is carried out against a set of target PIs which are updated every year. If the agreed target levels of the PIs are not met, *ProRail* has to explain why and may be given penalties.

The current framework for infrastructure management stems from the initial provision of traffic control, infrastructure management, capacity allocation and railway safety by means of three task organization set within *NS* but separate from it, and directed and financed by the Ministry of Transport. In 1999 the Dutch National Audit Office (*Algemene Rekenkamer*) issued a report stating that the Ministry of Transport had failed in its supervisory and steering role for those task organizations. The Ministry had not adequately specified the tasks, and had not implemented incentive schemes. It had been ascertained that contractually permitted direct intervention by *NS* board had led to improved efficiency but the independence of task organizations was no longer guaranteed. *ProRail* was then formed to actually separate infrastructure management from *NS*.

The new legal framework for railways set up in 2004 required that an evaluation of how the system works be carried out in 2008. This appeared in (2008) found that:

- The structure of the sector need to be put to better use;
- Patronage is increasing;
- Transport operators and the IM are primarily responsible for day to day operations;
- The legal system could work better.

Therefore no radical reorganisation is required (van de Velde, 2010). Still van de Velde (2010) mentions that the evaluation underlined the importance of cooperation among actors, rather than legislation only, in achieving improvements in the rail sector.

In particular the local services, on concession by Provinces or City Regions, are the only market where private operator may operate, and have been operating since the start of the current set-up (2000, after some years of tests).

Currently, there is a debate about the extent of the core network (whether it should be reduced and how much) and about interfaces between the core network and the local lines from 2015 onwards, when the new concession for operating service on the core network will be issued (most likely again to *NS*). Services from local lines extend on the core network only if *NS* agrees. However regional operators have shown interest in services on the core network, one of them with the intention of becoming responsible for the whole core network, others with the idea of seeing it split into several concessions. They state they would do better for less and would achieve enhanced coordination of bus and rail services as they did when taking over services of regional interest.

Table 30. Brief account of the main points on the evolution of the Dutch regulatory and competition arrangements

Year	Evolution
1995 Dutch railway reform	*NS*, the State railway, is reorganized into a commercial part and three task organization, all remaining State owned. The commercial part includes: *NS Reizigers* (the former passenger division) *NS Cargo* (the former freight division) *NS Station* (developing and operating stations) *NS Vastgoed* (real estate) The three task organization are independent of the rest of *NS* and directed and paid for directly by the Ministry of Transport: - *Railned* licensing operators, allocating capacity, overseeing railway safety - *NS Verkeersleiding* in charge of traffic control and real time passenger information - *NS Railinfrabeheer* as IM (maintenance and construction)
1996-2000	No infrastructure charges are levied Subsidies from State to *NS* are gradually reduced Unprofitable services identifies and contracted separately to *NS* with reduction in subsidies
1996-1999	Sole case of open access rail passenger operator: *Lovers Rail*. It competes with NS on the short stretch of line Amsterdam Haarlem (17 Km) After *Lovers Rail* ceases services in 1999
1998	Opening of rail freight market
2000 Passenger Transport Act	Transfer of competence for bus, tram, metro and regional railway services to Local Public Authorities Competitive tendering for public transport services becomes mandatory (competition for the track with concession with subsidies put out to tender). National rail services are exempted from this requirement as are services within Amsterdam , Rotterdam and The Hague (the city services are exempted since they are awarded in house) Competition on the rails for passenger services is no longer possible
1999	The Dutch Audit Office issues a report stating that the Ministry of Transport had failed in its supervisory and steering role of the three task organizations within *NS*. Independence of task organizations form *NS* was seen as no longer guaranteed
2003	As of 1st January *ProRail* (fully owned by the State but separate from *NS*) replaces the previous IMs and becomes responsible for: - rail capacity management - train path management - real-time passenger information - management of passenger transfer spaces at the stations - infrastructure management and development - infrastructure is therefore separated from operations
2004	On 1st January *NMa/Vervoekamer* is established as Railway Regulator. The Office of Transport Regulation is part of the Dutch Competition Authority New Railway and Concession Act and text of the Concessions
2005	Main line passenger services are awarded with a 10 year exclusive concession to *NS Reizigers* Infrastructure management is awarded with a 10 year exclusive concession to *ProRail* Both concessions are linked to the achievement of PIs which are revised every year

Source: Compiled by authors, main sources van de Velde (2005); van de Velde (2010)

The following two charts offer an overview of the institutional evolution in the Netherlands from 1988 to 2011 (Figure 11) and a summary of the milestones in institutional evolution and of the reasons for the changes (Figure 12).

Legend for the overview of the institutional evolution

The overview of the institutional evolution is a matrix composed by as many columns as the years between 1988 and 2011 plus an initial column for the situation before 1988 and a final column for planned changes after 2011 that are already known.

There are four horizontal bands or clusters of rows.

The top cluster of rows includes the railway market set-up over the years. The chart reports separately the set-up for the passenger rail market, divided by long-distance and regional/local, and for the freight market. Different market set-ups are depicted by coloured bands spanning the columns representing the relevant years. Colours have mostly the role of making changes visible. Wherever a market set-up is the same or similar, the colour is the same. Alternatively, different colours are used. However, for this cluster of rows only, a homogenous colour coding has been used across charts for different countries: light yellow is associated to legal monopoly, orange to concessions or franchises (a separate band indicates the possibility of open access) and light blue refers to open access. Cases where PSO services and open access (may) co-exist are indicated by horizontal orange and light blue stripes.

The second and largest set of rows refers to each kind of actor/railway body whose evolution is depicted along the rows. The focus is on the passenger sector, since this is the focus of this project. Therefore, while there are rows regarding the incumbent and new entrants in the freight markets, the rows about station and about rolling stock provisions refer to the passenger sector only. Several actors may correspond to a kind of actor and this is written or depicted along the row. Actors or types of actors are depicted by coloured rectangles. A continuous contour of the rectangle indicates a public body; a dashed contour indicates a private body. Colours of rectangles have no particular meaning but have the role of making changes visible. Wherever a body is the same, the colour is the same. Alternatively, different colours are used. Names of bodies are written only on the rectangles depicting their first appearance.

Large rectangles with dashed blue contour spanning across the first and second set of rows identify the milestones in institutional evolution that are singled out for use in the next chart.

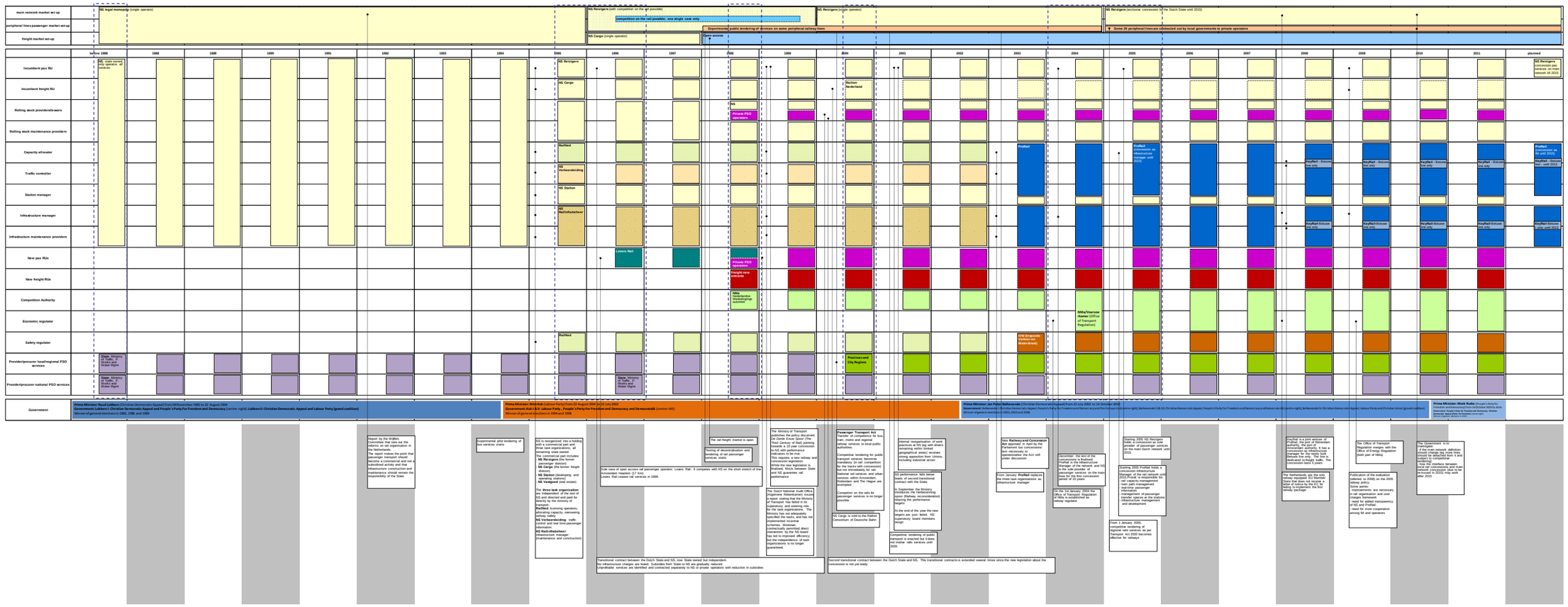
A third band includes only one row and refers to the sequence of Governments, the relevant dates and the main figures.

The bottom band, with columns indicated with alternate white and grey background, includes text rectangles reporting main facts within the rail industry or with an influence on the rail industry. Facts are linked to market set-ups or actors where immediately relevant.

Legend for the summary of the milestones in institutional evolution

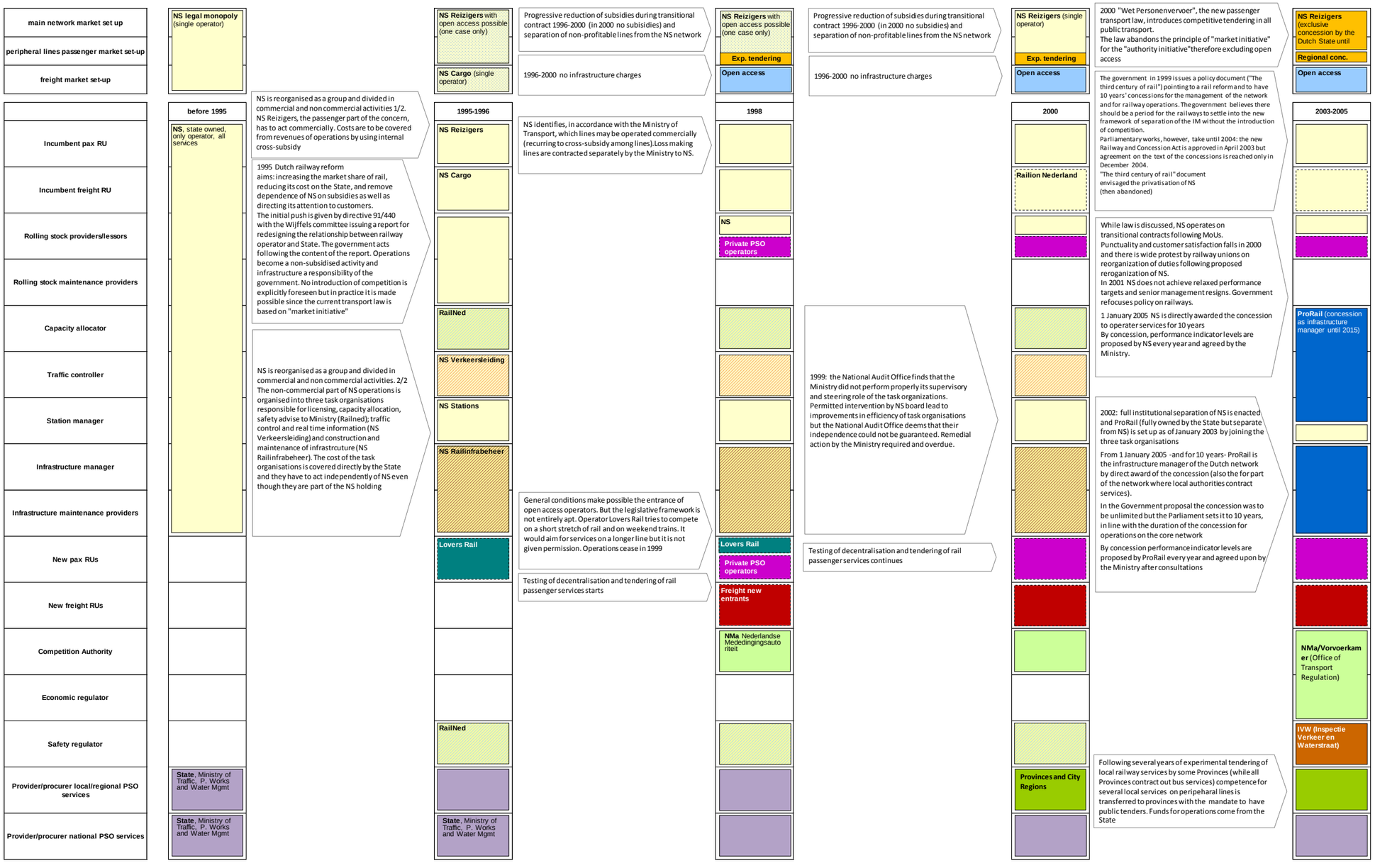
In Figure 12 the milestones of the institutional evolution have been singled out of the previous figure and brief texts explaining the changes occurred have been added between each pair of milestones. Therefore the picture depicts the milestones by using the same structure in columns and rows used previously. However, while each column refers to a particular year or cluster of years, the distance between columns is not to scale and is simply to leave room for the details of the changes. These are contained in arrows pointing to the actors resulting from the changes or affected by them.

Figure 11. Evolution of institutions in the Dutch railway sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based on: van de Velde (2005), van de Velde (2010), CER (2011), websites of actors

Figure 12. Milestones in the evolution of institutions in the Dutch railway sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based on the following: van de Velde (2005), van de Velde (2010), CER (2011), websites of actors

3.7 Sweden

Outline

Sweden is likely the European country with the most liberalised railway system and that started relevant reforms earliest. In fact, the first step, the separation of the State railways into IM and railway operator, dates back to 1988. As of October 2010 any service may be offered on open access grounds, even if overlapping with services funded under PSOs. A book by Gunnar Alexandersson, appeared in 2010, on the evolution of the land passenger transport sector in Sweden and titled "the accidental deregulation" clearly states that liberalisation was not an intention of the initial reforms, though those reforms made it possible.

For such a complete change, institutions and their roles have evolved during the years and the current actors, some of which appeared or were reshaped very recently, are listed in the tables below (see also Appendix I).

Table 31. Selected statistics, Sweden (2005-2009)

Criteria	2005	2006	2007	2008	2009	2010
Km of rail	11,017	11,020	10,972	11,032	11,138	-
Train km, in thousand	127,683	131,453	135,904	142,468	135,812	138,588
Pax km, in million	8.94	9.62	10.26	11.10	11.30	11.22
T km, in million	21.68	22.27	23.25	22.92	20.38	23.46

Source: Eurostat, Transport in Figures 2011 (EC, 2011)

Table 32. Summary of provisions for access to the Swedish rail market

Passenger services	Framework phased out in October 2010 Profitable lines operated by *SJ AB* (the incumbent RU) under monopoly right (ceased from October 2010, see below). Open access provision for night services, commercial weekend services, chartered trains, international services Unprofitable long-distance and regional services contracted by PTAs to RUs on a competition for the track basis (whether a line is unprofitable is defined by *SJ AB*)
	Framework phased in as of October 2010 Open access for all passenger services, including those previously reserved for *SJ AB* (the incumbent RU) Actual effects from the 2011 timetable Unprofitable long-distance and regional services contracted out respectively by *Trafikverket* and by PTAs as before (from 1 January 2012 being replaced by Regional Transport Authorities)
Freight services	Open access since 1996

Source: Compiled by authors

Table 33. Regulatory institutions relevant to the Swedish railway market

Economic Regulator	*Transportstyrelsen* (Swedish Transport Agency) since 2009, when it has replaced the previous *Järnvägsstyrelsen* (Swedish Rail Agency) – established in 2004 – and other modal Agencies
Safety Regulator	*Transportstyrelsen* (Swedish Transport Agency) since 2009, inheriting the remit of *Järnvägsstyrelsen* which, in turn, had replaced the previous Railway Inspectorate in 2004
Other Regulatory Agencies involved (if any)	*Konkurrensverket* (Swedish Competition Authority)

Source: Compiled by authors

Table 34. Main information about the Economic (and Safety) Regulator of the Swedish rail industry

Name of Economic (and safety) Regulator	*Transportstyrelsen* (from 2009, previously *Järnvagässtyrelsen*)
Name in English	Swedish Transport Agency
Creation of Agency	2004 (as *Järnvagässtyrelsen*)
Nature of Regulatory Agency	Independent Agency under the Ministry of Transport
Scope of intervention	All modes
Role and mission	Fair regulation + economic emphasis + Rail Competition Authority
Composition	7-member council
Sanctioning powers	Decisions of *Transportstyrelsen* are legally binding and it has the power of imposing fines. There are no fixed rules on the level of the fines and they are determined so that it is more expensive to continue paying fines than to comply with the decisions. However, before a fine is imposed, a court has to decide whether the fine shall be imposed and at what level.
Enquiry and information powers	Important
Relation to Competition Authority	Cooperative
Budget	6 million euros annually
Personnel	65 FTE in the Rail Department
Relationship to Parliament	Annual report + quarterly meetings

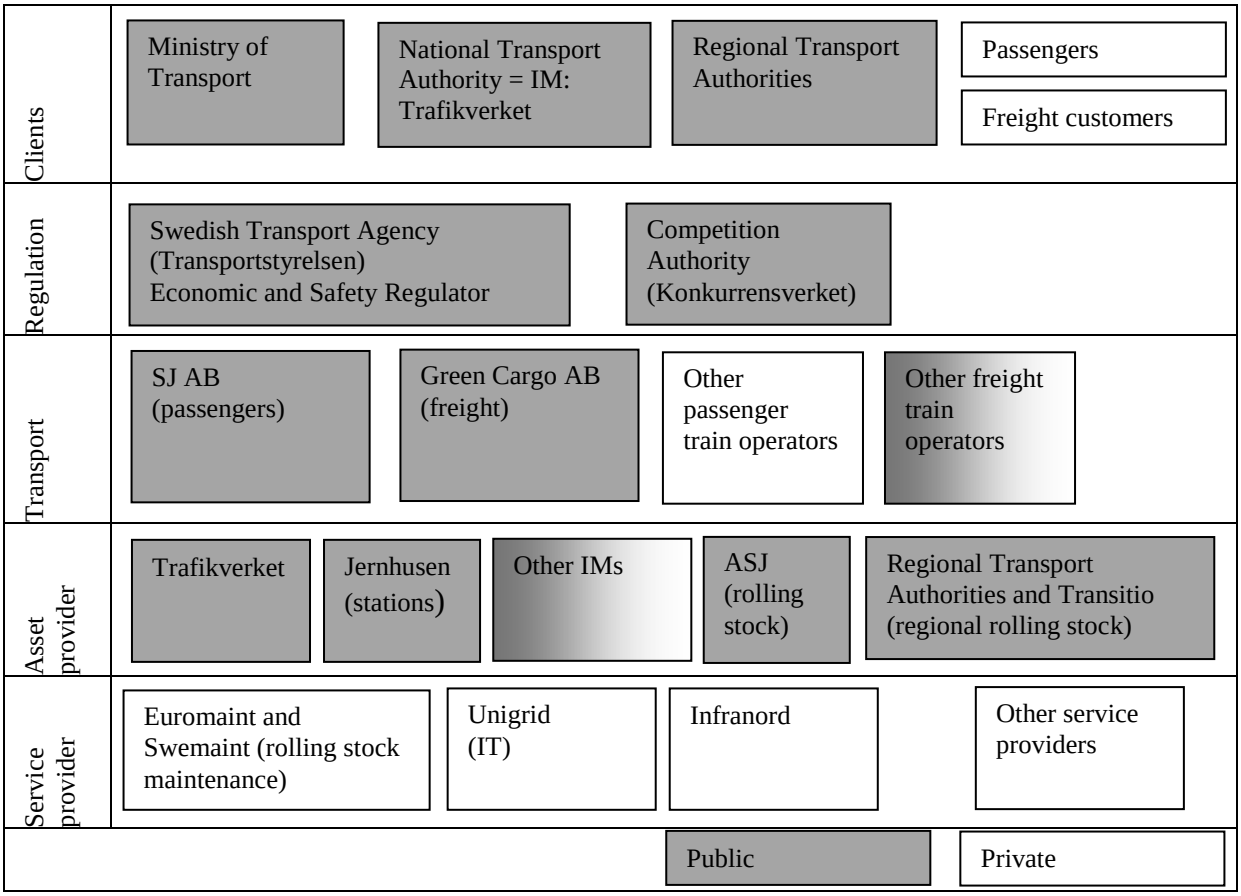
Source: Compiled by authors

Table 35. Infrastructure management and path allocation in the Swedish railway market

Infrastructure management	*Trafikverket* (Swedish Transport Authority) since April 2010 (replaces the previous Railway Authority and other modal Authorities) owns and manage most (approximately 80%) of the rail network Other main IMs are: *A-Train*, *Öresund Bridge Consortium*, *Port of Gothenburg*, *Inlandsbanan AB*
Path allocation	*Trafikverket* (Swedish Transport Authority) or relevant IM; path requests over the infrastructure of more than one IM need be submitted to one only
Traffic control	*Trafikverket* (Swedish Transport Authority)

Source: Compiled by authors

Figure 13. Main actors of Swedish railway system



Source: Compiled by authors, adapted from Merkert et al. (2008)

SJ, the incumbent and State owned, RU nowadays concentrates on passenger transport only and is one of the nine passenger only operators present. Several have operated over the years since the beginning of the reforms and have later disappeared. There are also some 15 operators dedicated to freight transport, among which *Green Cargo*, the incumbent, set up in 2001 from the freight division of the former State railways. Both *SJ* and *Green Cargo* are still the main operators in their sector.

The main actors in Swedish railway infrastructure are *Trafikverket*, *Jernhusen* and the Regional Authorities. *Trafikverket* (successor of *Banverket* and other administrations since 1 April 2010[15]) is the National Authority owning and maintaining the State's rail infrastructure (80% of the total), and being responsible for traffic control. *Trafikverket* owns also a number of stations and simple stops (others being in the ownership of *Jernhusen* or of Regional Authorities).

Trafikverket gets its resources by grants decided by the Parliament for periods of several years and from track access charges. As of 2004 track access charges, set as marginal costs for operations and maintenance, covered 11% of total fund used by *Banverket* for operations and maintenance and are currently scheduled to increase.

[15] On 1st April 2010 *Trafikverket* (the Swedish Transport Administration) took over the activities of the Swedish Rail Administration (*Banverket*), the Swedish Road Administration, sections of the Swedish Maritime Administration, and the Swedish Institute for Transport Communication and Analysis. On the previous day *Banverket*, and the other organizations replaced by *Trafikverket* had been closed.

At the end of 2009 the production unit of *Banverket* (as it was still called then) has been privatized as *Infranord AB*. While *Trafikverket* manages the State owned infrastructure, there are a number of other IMs, the major ones as defined in (Järnvagässtyrelsen, 2008) being *A-Train*, *Öresund Bridge Consortium*, *Port of Gothenburg*, *Inlandsbanan AB*. Other infrastructure is managed by Regional Authorities, ports, factories and municipalities. In fact, at the end of 2008 there were 449 IMs, the majority of these being industries with sidings (Transportstyrelsen, 2010).

Jernhusen is the State owned manager of railway real estate and owns over 100 stations, 12 freight terminals, and facilities for the maintenance of rolling stock. *Jernhusen* also invests in real estate located close to stations. Regional Authorities own and maintain some stations and stops. Many freight terminals are owned by several different actors.

Trafikverket is also responsible for procuring by competitive tendering interregional passenger services by all modes and coordinating services procured by Local Transport Authorities. It took over this role in 2010 from *Rikstrafiken* which had been the multimodal National Passenger Transport Authority since 1998. *Rikstrafiken* has been phased out when its remit passed to *Trafikverket*.

The County Passenger Transport Authorities (CPTA - *Trafikhuvudmän*) are responsible for characterizing and either providing or procuring unprofitable bus or rail passenger services in their respective counties. Rail services are procured by competitive tendering (competition for the tracks), mostly using gross cost contracts. Some CPTAs work together to procure through services that are useful to each of them separately. Joining forces to organise public transport across county border has just become readily possible with 1st January 2012new Swedish Public Transport Act, whereby Regional Transport Authority will replace CPTAs.

Other actors that should be mentioned are *Transitio* and *ASJ*. The former is a company owned by several CPTA and leasing rolling stock to operators winning the tenders for local services, as well as providing heavy maintenance for leased rolling stock. *ASJ* forms part of the State owned railway companies and leases rolling stock for long distance services to companies running PSOs for *Trafikverket* (and formerly, *Rikstrafiken*).

Regulation

The two actors in regulation of railways in Sweden are *Transportstyrelsen* (Economic and Safety Regulator) and *Konkurrensverket* (the Swedish Competition Authority).

Transportstyrelsen is the Swedish Transport Agency and was established on 1st January 2009. It has replaced *Järnvägsstyrelsen* (the Swedish Rail Agency), the Railway Regulator, which had been set up by the railway law of 2004, to enact the regulatory functions required by the EU, as well as other modal Agencies. *Transportstyrelsen* has departments concerned with different modes of transport (rail, road, maritime, civil aviation), it maintains the traffic registry and has a development department (dealing e.g., with issues relating to human factors and technology).

The railway department of *Transportstyrelsen* issues licenses and it acts as Economic and Safety Regulator on railway, light rail and underground systems. The aim of *Transportstyrelsen* as Economic Regulator is to promote an efficient railway market with fair

competition and equal conditions of access. They supervise track access and relevant charges, capacity allocation, and may be called upon to settle disputes e.g., on allocation of capacity by the IM, on the charges or on the provision of services.

Transportstyrelsen has been active in its role as dispute settler on several cases. Reports from investigations are available in Swedish on its website: there have been three decisions in 2008 and two in 2006. The decisions of *Transportstyrelsen* are legally binding and it has the power of imposing fines. Lewerentz (personal communication, 2011) clarified that there are no fixed rules on the level of the fines and they are determined so that it is more expensive to continue paying fines than to comply with the decisions. However, before a fine is imposed, a court has to decide whether the fine shall be imposed and at what level. On competition monitoring *Transportstyrelsen* works carrying out routine duties (e.g., an annual sector analysis of the RUs), and further monitoring either of their own initiative or on the request of actors on the rail market that observe competition limiting phenomena.

In the area of competition, the Swedish Transport Agency cooperates with *Konkurrensverket*, the Swedish Competition Authority, whose main role is to ensure that parties abide by the Swedish Competition Act (issued in 1993).

As Safety Regulator, *Transportstyrelsen* has inherited from its predecessor *Järnvägsstyrelsen* the duties of the former Railway Inspectorate set up in 1991, and is therefore concerned with safety on the railway, light rail and underground systems. They approve infrastructure, vehicles and technical systems before they may be put into service. *Transportstyrelsen* approves also station names and education/training plans for railway personnel where safety is concerned and carries out market surveillance to ensure that technical systems adhere to *TSIs*.

Competition and related regulatory action

As for the passenger market Nash and Nilsson (2009), while recognising the dominance of *SJ* on the passenger market, suggest that there is substantial competitive pressure. Their point relates to the fact that savings on contracts have been obtained and maintained and that the literature has never agreed on how many bidders are required to make for an acceptable degree of competition. They also remark that it is acknowledged that the savings in costs when the number of bidders increases beyond three is not very large.

Järnvägsstyrelsen, now *Transportstyrelsen*, the Economic and Safety Regulator, in its "Sector analysis of railway undertakings" (consulted ones are the 2006-2007 issue – based on 2007 data – and, the latest, the 2008-2009 issue based on 2008 data) on the basis of different considerations has a less optimistic view of the Swedish rail market. In those documents the Regulator remarks the presence of barriers to entry in both the passenger and freight rail market (although it should be noted that the market analysed retained the exclusive right for *SJ AB* to run profitable interregional services, now phased out). The same reports noted that there is no effective competition in either the passenger or the freight market since both are dominated by the incumbent, respectively *SJ AB* and *Green Cargo AB*, which means that competition is weak (the ideal competitive environment would see several competitors of similar importance) and there is "gentlemanly competition". This is noted in particular for the freight market over 10 years after the introduction of open access. Indeed, Alexandersson and Hultén (2009) remark that buyers of freight services have been slow to make use of the new

competitive market and when they have used it has often been aimed at making the incumbent *Green Cargo* lower its prices, rather than actually switching to another operator.

The recent step of opening the market of all passenger services starts a new transformation of the Swedish rail system as it implies the reconsideration of the way services procured by public Agencies are managed, also accounting for the fact that current contracts will expire at different points in time. Services that are currently subsidized will likely continue to be in the future although whether a line is unprofitable will no longer be decided by *SJ*, as in the past.

The open market of long distance passenger transport might also bring about new issues in path allocation. This is possibly the reason for the recent introduction of auction as a mechanism for path allocation in case of conflicts on lines declared as congested, and should other methods fail (Trafikverket, 2010).

Transportstryrelsen or its predecessor *Järnvägsstyrelsen* made 8 decisions on disputes from 2005 onwards, as reported on the Agency website. It also made a determination on the conditions of access agreements. The dispute resolutions concerned for instance access fees setting for ports, the response times set in the network statement by the IM, the information content of the network statement, allocation for capacity by the IM.

Konkurrensverket (*KKV*), the Swedish Competition Authority established in 1992, examined several cases related to the railway market. Many of the cases examined by *KKV* are related to alleged anti-competitive collaboration or information sharing between RUs.

In one case the behaviour of *SJ AB* has been investigated by the Competition Authority, which in 2000 fined it for predatory behaviour for submitting an under-priced bid to a CPTA in order to exclude a competitor.

KKV also expresses opinions on Government proposals. For instance, in 2004 and 2007 they advised against establishing joint operating rights on the West coast of Sweden in the belief that such transformation would create a large monopoly endangering viable transport operations in its vicinity, limit the possibility of establishing commercially viable traffic, limit competitive solutions and would be a major departure from the railway operation model being established. In this case the Government did not follow *KKV* view.

In annual reports *KKV* makes its points towards a more liberalised rail market. For instance in the 2004 annual report it recognizes the new solutions brought by new operators, the reduced costs due to procurement of services and argues for the end of the privilege for *SJ* have a monopoly over long-distance profitable services (and this is a recurrent call over annual reports). *KKV* also pushes for reduction of State involvement in services, again in 2004, suggesting that *TGOJ*, a freight company linked to the State owned freight incumbent *Green Cargo*, should be privatized. Moreover, *KKV* has lamented the lack of an actual international railway market (due, in its view, to different standards) whose existence would possibly bring to Sweden new entrants from abroad. In the 2006 annual report, *KKV* pointed to a number of areas in need of development, in both the passenger and the freight sectors, such as vehicle supply, access to service and maintenance facilities, terminals and other joint functions as well as capacity distribution and its supervision.

Services provided under PSOs

Competitive tendering of PSO passenger rail transport services in Sweden started in 1989 with regional lines, and continued then in 1992 with unprofitable long-distance services. Tendering of railway lines has been made possible by provisions that did not aim for it but were intended to separate the national RU operations and infrastructure to reduce the burden of its deficit on the public purse. As noted by Alexandersson and Hultén (2009), tenders have since proven a successful means to lower costs and increase efficiency, and legislation to frame tendering practices has been introduced with time (the same authors remark that procurements was not initially subject to any strict regulation). Contracted rail services now cover most of both regional and interregional lines.

There have been two major changes very recently: *SJ*, the incumbent and still the main Swedish RU, has lost its monopoly on profitable lines as of October 2010 and the market is open. On 1st January 2011 *Trafikverket* has taken over the responsibilities for contracting long distance services that since 1998 were with *Rikstrafiken*, the National Passenger Transport Authority. One reason for founding *Rikstrafiken* had been to have an Authority covering all modes of transport. With establishment of *Trafikverket*, acting across transport modes, there was no longer need for a separate Agency (Lewerentz, 2011, personal communication). As already remarked in other sections, further changes may be expected, for instance due to the possible need to clarify the interface between PSO and commercial services. This stems also from the fact that, as part of the monopoly just ceased, *SJ* would characterise the services that it considered unprofitable and dismiss them, at which stage they would become candidates for PSO subsidies, which could be for the continuation of the services by rail or another mode. Now services subsidised and contracted by Public Authorities and commercial services are on the same level.

There are two different and separate markets for PSO rail passenger contracts in Sweden: local services and long-distance services. As told in Alexandersson and Hultén (2008) the beginning of public procurement of unprofitable passenger services on local railway lines has been marked by the Transport Policy Act of 1988 which, besides separating railway operations and infrastructure in different bodies, transferred the Authority over running unprofitable passenger services on local railway lines from the State to the CPTAs (*Trafikhuvudmän*). Those had already been operating for almost ten years, since 1979, to coordinate and, in some cases, procure local bus services. In 1988 they acquired the wider responsibility of characterizing and either providing or procuring unprofitable bus or rail passenger services in their respective counties. CPTAs received also the necessary rolling stock as well as funds equivalent to the subsidies previously claimed by *SJ* to run the services for which they were given responsibility. Vertical separation of railways and transfer of responsibilities for unprofitable regional services to CPTAs opened the door to contracting those services to operators different from SJ with public tenders. The first new Swedish passenger RU, *BK Tåg*, started operations in 1990 in that framework. The second, *Sydtåg*, followed in 1995. It should be noted that not all the CPTAs initially went for tendering their rail services and some chose to negotiate long term contracts directly with *SJ*.

Some CPTAs work together to procure through services that are useful to each of them separately. Moreover, some CPTAs joined forces to acquire *Transitio*, a company set up in 1998 that owns or leases the rolling stock for regional services and procures its financing, production (aiming for standardization) and maintenance, and then leases the rolling stock to the RUs which have been awarded passenger rail service contracts (RUs remain responsible

for light maintenance). The provision of rolling stock to RUs obviates a possible barrier to entry, is aimed to achieving economies of scale in rolling stock supply, and makes up for the misalignment in the duration of transport service contracts and working life of rolling stock (considering that fact that rolling stock may have a working life of more than 30 years while contact for operators may end after less than 10). It is worthwhile noting that, while rolling stock was initially only transferred to CPTAs, in 2001 the national Government started subsidising the purchase of new rolling stock by the counties.

Procurement of services by CPTAs is characterized mostly by gross-cost contracts. Planning and marketing of the services, as well as decisions on ticket price levels, remain the responsibility of the CPTAs. However, sometimes the operator receives a share of the revenues in order to stimulate performance (Alexandersson and Hultén, 2009). Otherwise, systems of penalties are commonly used. Contract periods vary between 3-5 years, but there is often a clause making it possible to extend the period by 1-3 years if results are satisfactory.

Following the vertical separation of *SJ* in 1988, long-distance rail services, after dismissal by *SJ* and if considered worthy of subsidy by the Parliament, were initially contracted again to *SJ* by a State negotiator following annual negotiations (instead of covering the deficit of *SJ* as a whole, the State had thus a clearer view of funds' destination). In 1992, after a change in regulation, it became admissible for the State negotiator to use public procurement for inter-regional railway lines (in a similarly way to that possible for regional lines), and until 2000 all those services were awarded by competitive tendering to SJ. In 1998 a new transport policy bill had provided for a new National Passenger Transport Authority, *Rikstrafiken*, to become responsible for procuring long-distance transport services (by all modes of public transport). *Rikstrafiken* commenced operations in 1999 taking over from the State negotiator, with the aim of coordinating the services tendered by the CPTAs. As mentioned, *Trafiverket* has in turn taken over the remit of *Rikstrafiken* as of the beginning of 2011, and *Rikstrafiken* has ceased to exist. Since the change is very recent, practices by *Rikstrafiken* are still relevant to this report.

Rikstrafiken has established a practice of using net-cost contracts for long distance services. Bidding operators have to forecast costs and revenues and bid for the subsidy of the difference, and are able to influence the service more than under gross-cost contracts. However, price levels, minimum supply, and quality requirements cannot be changed during the execution of the contract. As reported by Alexandersson and Hultén (2009), those parameters are also used in the evaluation of bids in the tender, which is therefore not based only on the lowest request of subsidy. Recently *Rikstrafiken* has published the weights attached to each parameter so as to enable bidders to have an understanding of the strength of their bid. Contract periods for long-distance services have been initially as short as 1 year (due to short term commitment to keep services by the State) and have been then extended to 5 years. Duration is now between 3 and 12 years with an option for additional years, typically activated.

Rolling stock for services contracted out by *Rikstrafiken* is typically leased by *ASJ*, the administration remaining from the former vertically integrated *SJ*.

Contracts generally include *bonus-malus* mechanisms based on performance but deficits not foreseen by the operator when bidding for the service cannot be refunded by the procuring Authority.

The literature points both to advantages and issues with procurement of rail PSOs in Sweden. Among the advantages are innovations (in rolling stock, management, ticket systems, working practices), increases in patronage, reduced subsidies. Available data (see Table 36 below) show the savings obtained. There have also been reductions in subsidy level for lines procured by the State even before actual entry of new companies. Alexandersson and Hultén (2009) note that on average CPTAs' tenders have attracted more bidders (2-3) than the State's tenders (1-2), and it has generally been difficult for firms to win tenders for a specific line of traffic system twice in a row.

Table 36. Examples of effects on subsidies in competitive tenders

Lines procured by CPTAs (regional lines)	**tender no.**	**Year**	**subsidy effect**
Network in county of Jönköping etc.	1	1989	-21%
	2	1993	-25%
	3	1997	Minor increase
Ystad-Simrishamn	1	1995	-18%
	2	1998	-10%
Herrljunga-Hallsberg	1	1994	-10%
	2	1999	-3%
	3	2002	Minor increase
Borlänge-Malung	1	1991	n.a.
	2	1994	-20%
	3	1996	Minor
Uppsala-Tierp	1	1991	n.a.
	2	1999	-20%
Stockholm, commuter trains	1	1998	-32%
	2	2005	+10%
Lines procured by the State (interregional lines)	tender no.	Year	subsidy effect
All lines	1-2	1992-93	-21%
	3-6	1994-98	No increase
	7	1999	-28%
Northern trains	7	1999	-20%
	10	2002	-42%

Source: Alexandersson and Hultén (2009)

Among the issues with the existing systems, Alexandersson and Hultén (2009) characterise unfulfilled bids, the predatory behaviour of some bidders, and sometimes worsened possibilities for passengers to find connecting journeys involving several operators. They also noted that *SJ* monopoly on profitable services (phased out in October 2010) affected the general competitive situation and the prospects for the development of the sector. *SJ* involvement was an issue when it was in charge of providing rolling stock and access to stations and terminal buildings while there have been improvements as those services have been taken over by other organizations. Those issues were felt directly by the public procurement Authorities, which had to reach agreements with *SJ* on the costs of those services.

Tenders have suffered from scarcity of bidders, sometimes only one or two, therefore possibly hindering a good functioning procurement. Unfulfilled contracts have resulted in renegotiations, reduction of services, and substitution of rail services with buses. Two companies involved in regional services went bankrupt (and even *SJ* risked bankruptcy in 2002-2003 after placing optimistic bids).

There have also been issues with strategic behaviour on the part of *SJ*, refusing coordinate ticketing with other operators or providing lower quality connections with the services by another operator (this was the case after *BK Tåg* won the tender of *Stångådalsbanan* in 2002).

Evolution of institutions

Sweden can claim to have been a precursor in railway reforms and market opening in Europe, starting with the 1988 separation of infrastructure and operations of the national railways until the decision taken in 2009 by the national Parliament to open the market for long distance rail passenger services as of October 2010, with full market opening for rail freight already effective from 1996. The changes have been gradual over the years, and the development has not been initiated with the aim of introducing competition but to solve the State Railways' financial problems. Much of the reform process has also been independent of EU development as Sweden joined the EU in 1995.

SJ now reports profits but in 2003 the State had to transfer a large sum of money to it in order to avoid its bankruptcy. Observers (e.g., Alexandersson and Hultén, 2005) note that this was due to the fact that the 2001 reform was underfinanced but some (e.g., Nash and Nilsson, 2009) note also that one alleged reason for the bad shape of *SJ* balance sheet was related to having won contracts on non-commercial services on bids below their cost.

Entrance of new operators on long distance contracted services has not happened until 2000. Whenever competitors appeared, *SJ* reduced its own bid during the process in order to keep other operators from entering the market. Observers also note that, more in general, there were initially several too low bids for unprofitable regional services.

Along with deciding for full market opening of passenger services, in 2009 the Government started looking into a new framework and legislation for public transport. In spring 2009 a Government Committee suggested a wide liberalisation of services with Local Authorities waiting for companies to take on commercial services before tendering subsidized ones (Westin, 2009). The proposal has not gone on. While there will be a general market opening, commercial services will not take precedence onto subsidised ones. In such a set-up information sharing about services and their operations is to become even more important, also for travellers.

The market opening for commercial passenger services may possibly require a general re-thinking of the set-up also in view of the interfaces with subsidized services (now run on contracts that expire at different points in time) that dominate as they are active on unprofitable lines, which are the majority of the Swedish railway lines.

There seem to be also the necessity for adjustments to allow for easier entries into the market, and easier access to rolling stock and services. The 2007 "Sector analysis of railway undertakings" by the Economic Regulator *Järnvägsstyrelsen* concluded with recommendations to lower barriers to entry investigating the feasibility for actions to widen the possibilities of purchasing or renting used rolling stock (investigating the possibility that rolling stock dismissed by *SJ* or *Green Cargo* is not scrapped but put on the market either on sale or for rent, should there be request). In fact the issue of the access to suitable rolling stock is reported by Alexandersson and Hultén (2009) as the item more discussed during the process of liberalisation, an issue also mentioned by the *Everis report* (Everis, 2010). The

2007 recommendations by *Järnvägsstyrelsen* also mentioned the idea of establishing an independent company for shunting and marshalling operations, since at the time of the analysis those operations were completely in the hands of *Green Cargo* – the freight incumbent – therefore smaller companies, which do not have the possibility of purchasing locomotives for the purpose, would find themselves dependent on their main competitor. In wider terms, issues with access to infrastructure are also mentioned in the *Everis report* (2010) that tells about problems had by one operator with accessing *Jernhusen*-owned railway stations (*Jernhusen* is the railway real estate operator, State owned) for selling ticket and marketing services (putting up posters and signs).

The main events directing the evolution of the Swedish rail sector are recalled in Table 37.

The following two charts offer an overview of the institutional evolution in Sweden from 1988 to 2011 (Figure 14). From that figure we characterised six milestones in the evolution and of the reasons for the changes in Figure 15.

Table 37. Brief account of the main points on the evolution of the regulatory and competition arrangements in Sweden

Year	Evolution
1988 Transport Policy Act	The Swedish State Railways (*SJ*) are vertically separated into: - *SJ*: operator (that retains capacity allocation and traffic control) with monopoly over profitable long distance passenger traffic - *Banverket*: IM Both remain State owned. CPTAs become responsible for providing unprofitable regional passenger services and receive relevant rolling stock and subsidies. They may use public procurement to provide services. Long distance unprofitable services are run by *SJ* on the basis of annual negotiations with the State for subsidies
1989-1990	First services procured by a CPTA with entrance of a new railway operator
1992	Public procurement allowed for unprofitable long distance passenger services
1995	Sweden joins the EU *SJ* sells *ASG*, a leading truck transport operator, to follow the instruction of concentrating on being a rail operator
1996	Traffic control and capacity allocation transferred from *SJ* (incumbent) to *Banverket* (IM) Open access for rail freight services *SJ* sells *Swebus* (to *Stagecoach*), the largest bus transport operator in Sweden, to follow the instruction of concentrating on being a rail operator
1998 Transport Policy Bill	*Rikstrafiken* is created to take over from the State's negotiator the procurement of interregional public transport, including rail services
2000 Railway Bill	*SJ* divided in several companies. Among them: - *SJ AB*, passenger operator - *Green Cargo AB*, freight operator
2004	Set up of *Järnvägsstyrelsen*, the Swedish Railway Agency, acting as both Economic and Safety Regulator
2007	Liberalization of provision of charter and night train services
2009	*Järnvägsstyrelsen* merges with other modal Regulators to form the Swedish transport Agency, *Transportstyrelsen* Open market for holiday and weekend passenger services (1st July) Open market for international services (1st October) A bill opens access from Oct 2010 to profitable long-distance passenger services, so far a SJ monopoly *Banverket* production unit is privatized and becomes *Infranord AB*
2010	*Banverket*, the IM, joins other modal transport administrations to become *Trafikverket* *Trafikverket* becomes also responsible for contracting long distance unprofitable services under PSOs. *Rikstrafiken*, which had this role previously, is phased out. October. Formal opening of market for all passenger services including profitable long-distance services and services that may overlap with others funded under PSOs. The actual first effects to come into being with the Dec 2011 timetable. The *Arlanda* line is exempted by the opening since it is run with exclusive right by *A-Train AB* as part of a Build Operate Transfer contract
2012	CPTAs are reshaped into Regional Transport Authorities and gain more freedom of action (they may join forces to organise services together without asking the Ministry)

Source: Compiled by authors, (main sources: Andresson and Hultén, 2005; Alexandersson and Hultén 2008; Alexandersson and Hultén, 2010, Alexandersson *et al.* 2012)

Legend for the overview of the institutional evolution

The overview of the institutional evolution is a matrix composed by as many columns as the years between 1988 and 2011 plus an initial column for the situation before 1988 and a final column for planned changes after 2011 that are already known.

There are four horizontal bands or clusters of rows.

The top cluster of rows includes the railway market set-up over the years. The chart reports separately the set-up for the passenger rail market, divided by long-distance and regional/local, and for the freight market. Different market set-ups are depicted by coloured bands spanning the columns representing the relevant years. Colours have mostly the role of making changes visible. Wherever a market set-up is the same or similar, the colour is the same. Alternatively, different colours are used. However, for this cluster of rows only, a homogenous colour coding has been used across charts for different countries: light yellow is associated to legal monopoly, orange to concessions or franchises (a separate band indicates the possibility of open access) and light blue refers to open access. Cases where PSO services and open access (may) co-exist are indicated by horizontal orange and light blue stripes.

The second and largest set of rows refers to each kind of actor/railway body whose evolution is depicted along the rows. The focus is on the passenger sector, since this is the focus of this project. Therefore, while there are rows regarding the incumbent and new entrants in the freight markets, the rows about station and about rolling stock provisions refer to the passenger sector only. Several actors may correspond to a kind of actor and this is written or depicted along the row. Actors or types of actors are depicted by coloured rectangles. A continuous contour of the rectangle indicates a public body; a dashed contour indicates a private body. Colours of rectangles have no particular meaning but have the role of making changes visible. Wherever a body is the same, the colour is the same.

Alternatively, different colours are used. Names of bodies are written only on the rectangles depicting their first appearance.

Large rectangles with dashed blue contour spanning across the first and second set of rows identify the milestones in institutional evolution that are singled out for use in the next chart.

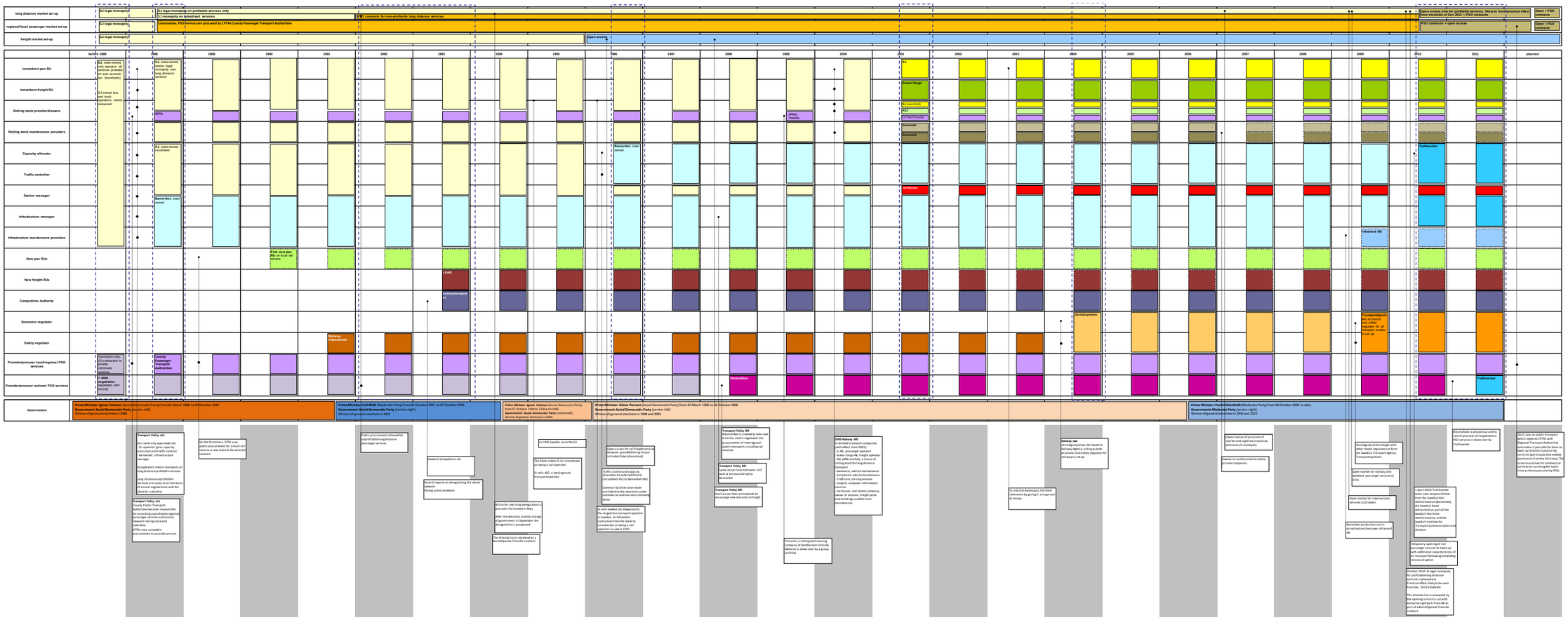
A third band includes only one row and refers to the sequence of Governments, the relevant dates and the main figures.

The bottom band, with columns indicated with alternate white and grey background, includes text rectangles reporting main facts within the rail industry or with an influence on the rail industry. Facts are linked to market set-ups or actors where immediately relevant.

Legend for the summary of the milestones in institutional evolution

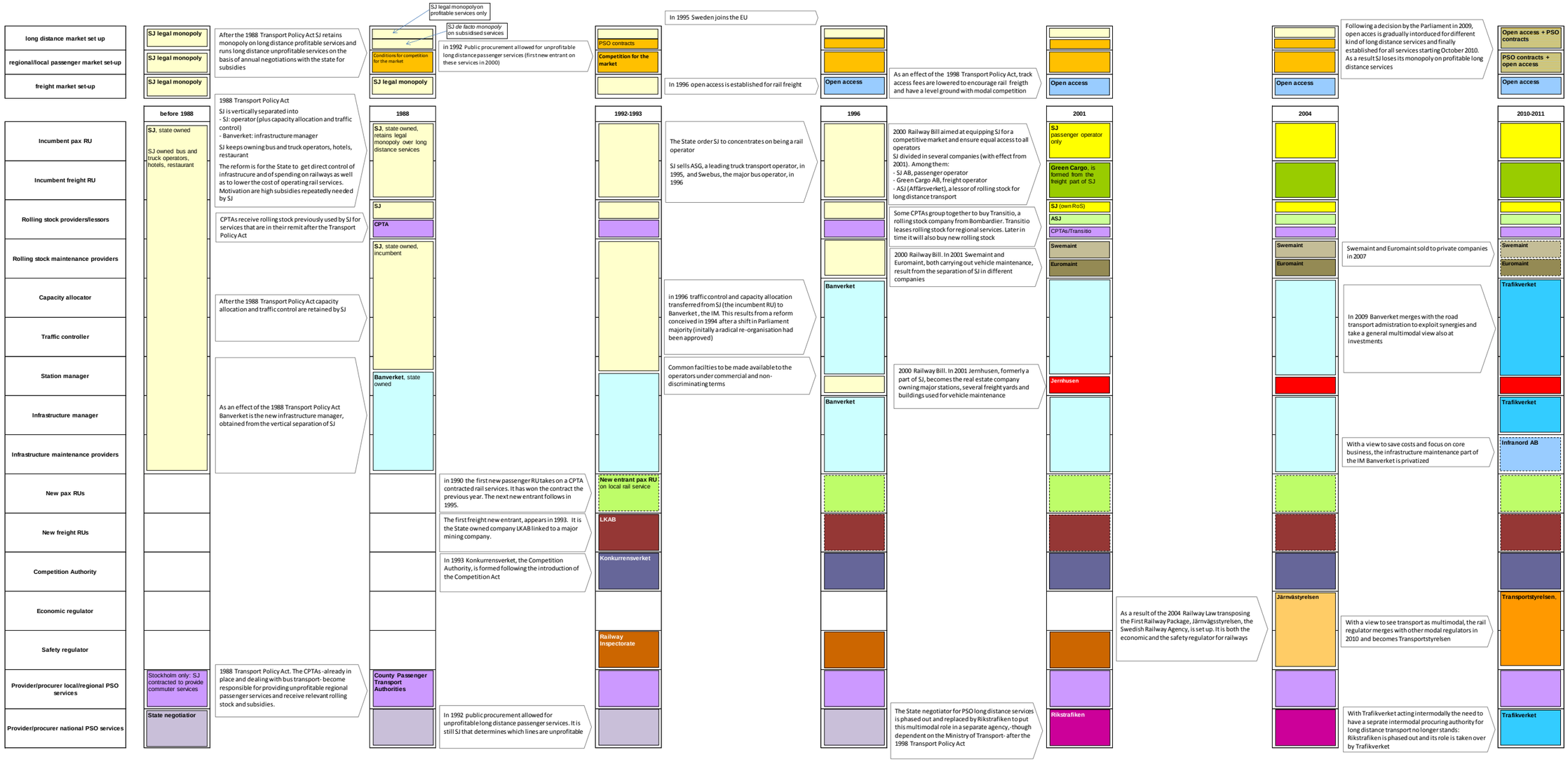
In Figure 15 the milestones of the institutional evolution have been singled out of the previous figure and brief texts explaining the changes occurred have been added between each pair of milestones. Therefore the picture depicts the milestones by using the same structure in columns and rows used previously. However, while each column refers to a particular year or cluster of years, the distance between columns is not to scale and is simply to leave room for the details of the changes. These are contained in arrows pointing to the actors resulting from the changes or affected by them.

Figure 14. Evolution of institutions in the Swedish railway sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based on the following: Nilsson (1995), Alexandersson and Hultén (2005), Alexandersson and Hultén (2008), Alexandersson and Hultén (2010), CER (2011), websites of actors

Figure 15. Milestones in the evolution of institutions in the Swedish railway sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based on the following: Nilsson (1995), Alexandersson and Hultén (2005), Alexandersson and Hultén (2008), Alexandersson and Hultén (2010), CER (2011), websites of actors

3.8 Switzerland

Outline

Switzerland, the reference country for this study, has separated accounts of its main Federal railway company *SBB* as a consequence of bilateral agreements with the EU in 1999 and has a railway sector that remains publicly owned, even though companies other than *SBB* are often referred to as private railways. The sector is characterised by an integrated public control and by passenger services provided on concession while freight rail transport is on open access since 1999. There are several differences from other States reviewed: the main actors in the institutional landscape of Swiss railways and outlines in the following tables and figure.

Table 38. Selected statistics, Switzerland (2005-2009)

Criteria	2005	2006	2007	2008	2009	2010
Km of rail	3,399	3,563	3,563	3,557	3,599	-
Train km, in thousand	-	-	-	207,697	215,618	-
Pax km, in million	16.14	16.58	17.43	18.03	18.59	-
T km, in million	11.68	12.47	11.95	12.27	10.57	11.07

Source: Eurostat, Transport in Figures 2011 (EC, 2011)

Table 39. Summary of provisions for access to the Swiss railways

Passenger services	Long distance – market closed and reserved for *SBB* on the basis of a concessions granted by the Confederation
	Regional – ordered by the Federal Office for Transport and the Cantons to RUs either via direct request or, potentially, by tender
Freight services	Open access since 1999

Source: Compiled by authors

Table 40. Regulatory institutions relevant to the Swiss railways

Arbitration commission (supervision of capacity allocation)	*Schiedskommission im Eisenbahnverkehr* (*SKE*) - *La commission d'arbitrage dans le domaine des chemins de fer* (*CACF*) - *Commissione d'arbitrato in materia ferroviaria* (*CAF*) - Swiss Rail Arbitration Commission (RACO)
Safety Regulator	*Bumdesamt für Verkehr* (*BAV*) - Federal Office for Transport (FOT)
Other Regulatory Agencies involved	*Preisüberwacher* – Price Supervisor *Bumdesamt für Verkehr* (*BAV*) - Federal Office for Transport (FOT)

Source: Compiled by authors

Table 41. Main information about the Arbitration Commission

Name of Regulator	*Schiedskommission im Eisenbahnverkehr* (*SKE*) - *La commission d'arbitrage dans le domaine des chemins de fer* (*CACF*) - *Commissione d'arbitrato in materia ferroviaria* (*CAF*) - Swiss Rail Arbitration Commission (RACO)
Name in English	Swiss Rail Arbitration Commission (RACO)
Creation of Agency	2000 (as a result of Railway Reform I, in 1999)
Nature of Regulatory Agency	Administratively part of the Federal Office of Transport
Scope of intervention	Capacity allocation, access charges
Role and mission	Judicial activity: RACO is an appeal body dealing with complaints

	concerning network access. By agreement, it also supervises Swiss railway capacity allocator *Trasse Schweiz* to ensure fairness and transparency of allocation
Composition	Board of 7 members
Sanctioning powers	Legal powers in case of access; no power to sanction in case of supervision of *Trasse Schweiz*
Enquiry and information powers	*Ex post* enquiry and information powers in case of network access. No power at all in case of *Trasse Schweiz*
Relation to Competition Authority	None
Budget	CHF 459,600 (2009) equal to EUR 366,500 approximately
Personnel	1 FTE
Relationship to Parliament	Annual report addressed to the Federal Assembly

Source: Compiled by authors, SKE website and annual reports, OECD (2006b)

Table 42. Infrastructure management and path allocation in the Swiss railways

Infrastructure management	SBB-CFF-FFS or private companies
Path allocation	*Trasse Schweiz* AG (since 2006) after receiving timetable drafts prepared by relevant IM (*SBB-CFF-FFS* or private companies)
Traffic control	Relevant IM (*SBB-CFF-FFS* or private companies)

Source: Compiled by authors

The IMs of the Swiss railway network are mostly vertically integrated RUs providing open access to their infrastructure: *SBB-CFF-FFS* (the Swiss Federal Railways) and 41 (as of 2008) private railways among which BLS (organised as a holding), the main 'private' railway company. Capacity allocation is coordinated by a further company (*Trasse Schweiz* AG).

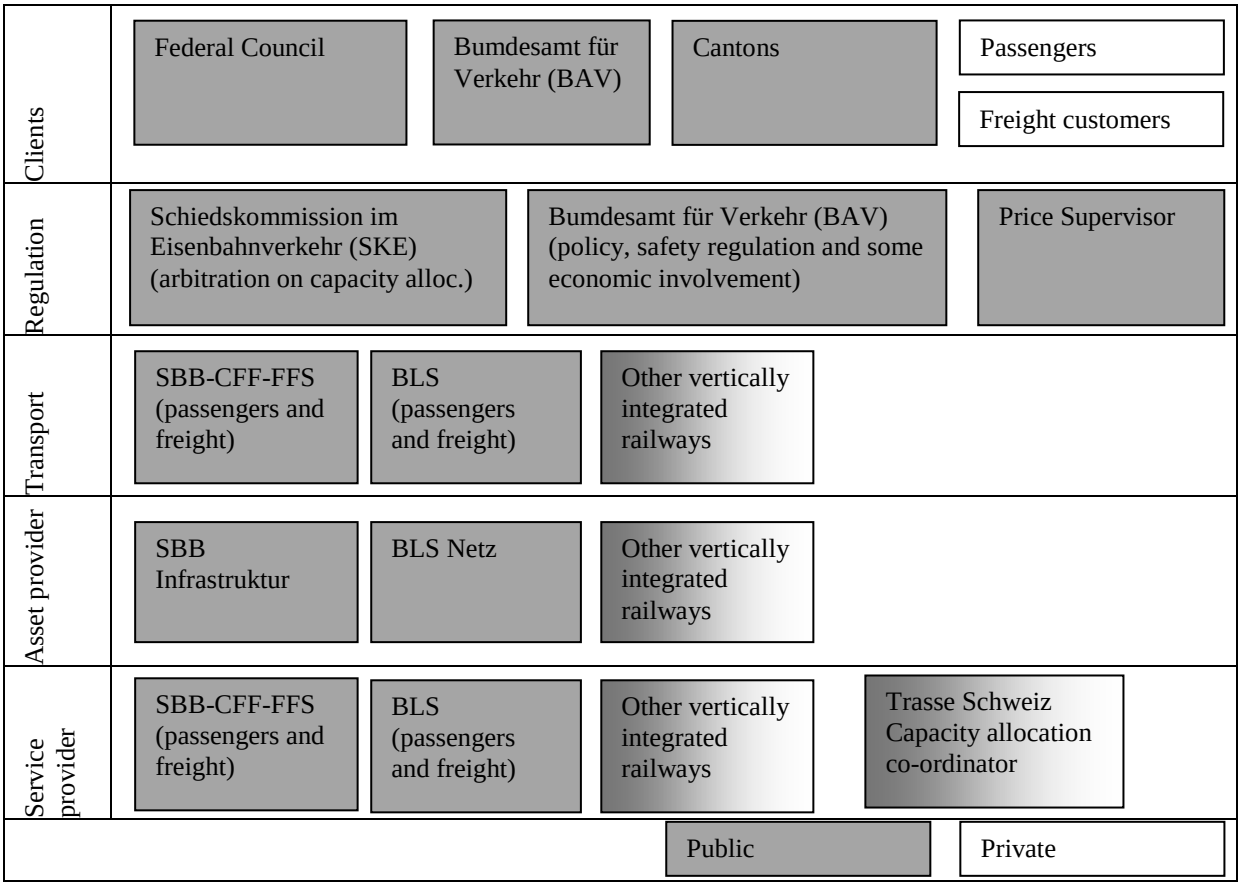
SBB-CFF-FFS is the main railway company in Switzerland and holds the concession, granted by the Confederation, to operate long distance passenger services. *SBB* is owned by the Confederation and the Federal Council sets its objectives every four years.

The division *SBB* Infrastructure is the manager of the infrastructure belonging to the company, since an internal reorganization implemented in 1998. The Swiss rail network extends for some 5,000 Km, 1,382 of which are narrow gauge, and 3,139 of which are the *SBB* network (source Bundesamt für Verkehr - BAV website); all of the *SBB* network is standard gauge (with one small exception) and totally electrified (Weibel, 2005).

BLS, or Bern-Lötschberg-Simplon -Lötschbergbahn AG, mostly owned by the Canton of Bern (55.8%), is a 'private railway' which has its own infrastructure and currently concentrates on the *Bern S-Bahn* (the second biggest S-Bahn in Switzerland) and on freight traffic. *BLS* also runs bus lines and lake navigation lines. The *BLS* subsidiary managing infrastructure is *BLS Netz* (*BLS* owns 33.4% of it while the remainder belongs to the Confederation, 50.1%, and the Canton Bern, 16.5%). *BLS Netz* manages 520 Km of rail infrastructure, 434 of which are actually owned by BLS. Part of the *BLS* infrastructure is the Lötschberg tunnel, opened in 2007. The Lötschberg tunnel has been built by the subsidiary *BLS AlpTransit AG* which on 1st January 2009 merged into *BLS Netz*.

Other infrastructure is the property of other private railway companies, which run their own services.

Figure 16. Main actors of Swiss railway system



Source: Compiled by authors, adapted from Merkert et al. (2008)

The presence of a capacity allocator is a unique feature of this country among those reviewed in this research. *Trasse Schweiz AG* is the capacity allocator and provides non-discriminatory access for 94% of the Swiss standard gauge network. *Trasse Schweiz* is a not-for-profit limited company owned with equal shares by the three main RUs (*SBB, BLS, SOB*) and by *VÖV UTP* (*Verbandes öffentlicher Verkehr, Union des transports publics, société cooperative Unione die trasporti pubblici, società cooperative*), the association of public transport. It commenced operations in 2006 and was set up following the bilateral agreements on land transport between Switzerland and the EU which required that capacity be allocated by an independent organization. A development of the legal basis of *Trasse Schweiz* is expected with the second stage of the railway reform (Isenmann, 2010). In 2009, a clear majority in Parliament supported the idea of turning *Trasse Schweiz AG* into an independent public-law Agency. However, there was no agreement about whether this should be instead of full unbundling between transport and infrastructure, or in addition to such unbundling. Moreover, there was continuing uncertainty about the developments in EU law in this area developments that Switzerland would like to take into account as much as possible (Cf. art. 27 of the EU-Swiss Treaty on transport over land of 1999.) For these reasons, the future organization of the track allocation process is one of the topics that have been put to the independent group of experts established in October 2010, who are expected to publish its report in the spring of 2012.

Trasse Schweiz collects the capacity requests, sends them to the IMs asking them to design a draft timetable, coordinates capacity conflicts solutions and motivates rejections of capacity requests, and finally approves the annual timetable attributing the paths. It may declare a

railway line congested and, in such a case, it puts forward short and medium term actions to solve congestion. It also checks and publishes the catalogues of the paths for the Gotthard and Lötschberg-Simplon axes.

Previous to *Trasse Schweiz*, namely before 2006, capacity allocation on *SBB* and *BLS* networks was the responsibility of a joint office, the *One Stop Shop* (*OSS*), set up in 2001 by the two RUs.

Capacity allocation by *Trasse Schweiz* is supervised by the arbitration committee, *Schiedskommission im Eisenbahnverkehr* (*SKE*).

Management of day to day railway traffic is typically the responsibility of the relevant IM.

Regulation

The three actors in Swiss rail transport regulation are the *SKE*, which is the Railways Arbitration Commission (RACO), the *BAV*, which is the Federal Office of Transport (FOT) and the *Preisüberwacher*, which is the Price Supervisor.

The *SKE* is a commission set up by the Federal Council as a result of the first Railway Reform in 1999. It was formed following the bilateral agreements between Switzerland and the EU, which planned the creation of an arbitration commission, and started work at the beginning of the year 2000. The role of *SKE* is to act as an arbiter in disputes about open access to the railway network or about infrastructure charges. Therefore it only acts upon complaint, which may be filed by any user of the railway network (such as a RU) or IM. The permanent staff is currently one person, forming the secretariat, while the commission includes seven people, who are appointed by the Federal Council and sit on the commission for a four years period, which may be renewed. The Commission rules at the request of the Secretariat, which is responsible for carrying out the enquiries. The Arbitration Commission's entire activity is subject to the provisions of the Federal Act on Administrative Procedure (*Verwaltungsverfahrensgesetz - VwVG*; SR 172.021), the Railways Act (*Eisenbahner Baugenossenschaft Basel - EBG*; SR 742.101) and the Federal Department of the Environment, Transport, Energy and Communications - DETEC Ordinance on the Railways Arbitration Commission (SR 742.122.7) (SKE website, 2010). The decisions by *SKE*, which must be taken within two months of the completion of the relevant investigations, may be appealed at the Federal Administrative Court.

As of 2004, the remit of *SKE* has been extended to monitoring capacity allocation supervising initially the relevant office jointly set up by *SBB* and *BLS* and, since 2006, monitoring the work of Trasse *Schweiz*, which replaced the previous capacity allocator.

SKE is based in Bern, has the status of extra parliamentary commission, is supervised by the Federal Council and Assembly, and the President, the member of the commission who chairs its activities, must submit a report once a year to the Federal Council. Administratively, it is part of the Federal Office of Transport.

Since its formation, the *SKE* has not been called to make decisions on any complaint: filed complaints have been resolved by promoting talks. To monitor non-discriminatory

assignment of paths, *SKE* interviews RUs on a regular basis. *SKE* also develops international activities.

According to the message of the Federal Council to the Assembly on the second stage of the second part of the Railway Reform II, *SKE* is to acquire the power to start *ex officio* investigations (DETEC, press release, 20.10.2010).

The *BAV* is part of the Ministry for Transport and Energy and is competent for all inland transports, railways included. Its role includes contributing to designing Swiss transport policy on public transport. It is moreover the Safety Regulator of railways and has an economic regulatory role. The infrastructure division of *BAV* plans all railway infrastructures, deals with authorization procedures and monitors construction, contributing to organizing funding. As part of its railway safety responsibilities, *BAV* approves rolling stock and is in charge of regulation about technical equipment, operations and staff. *BAV* also issues concessions to build and operate railway lines, safety certifications and track access permits to RUs.

Track access permits are valid up to 10 years, are renewable and are issued by *BAV* after checking against a number of characteristics related to safety, employment, solvency and insurance of a railway company, as specified in art. 9 of the Federal Law on Railways.

Track access agreements are negotiated directly between the prospective operator and the IM and State track access charges. However minimum track access charges are set by the *BAV* along with the principles of path allocation. Conversely, the *BAV* has no say on the actual path allocation.

In the public purchasing of services subject to PSO, *BAV* orders from the railway companies the services or the infrastructures necessary and finances or co-finances them. This does not only refer to passenger PSO services but also to freight PSO services (rolling motorway and unaccompanied intermodal transport).

BAV also approves the compensation stated in the contracts between Cantons and operators for the supply of PSO railway services.

The *Preisüberwacher*, the Price Supervisor, derives his competence from the Act on the Supervising of Prices (*Preisüberwachungsgesetz*, 1985). Pursuant to art. 4 of this Act, he observes the development of prices and intervenes when a price increase is abusive. This Authority applies to all markets for goods and services, and has on occasion been used in the railway industry. Companies with significant market power, like *SBB*, have to pre-clear their price increases with the Price Supervisor.

The Price Supervisor is elected by the Federal Government and is administratively linked to the Federal Department of Economic Affairs. Parliament is currently considering proposals to eliminate or sharply reduce his role in the railway industry.

The *Wettbewerbskommission* (*WEKO*), that is the Swiss Competition Commission, is competent according to the Federal Act on Cartels (1995, modified in 2004), the Ordinance on merger control (1996), the Law on the internal market (1995), and the Law on technical trade barriers (1996). The competence on railways of the *WEKO* is limited by art. 3 of the Federal Act on Cartels. The *WEKO* makes decisions on competition and merger cases, has

the status of extra parliamentary commission and is administratively linked to the Federal department of economic affairs.

Competition and related regulatory action

The Swiss market for freight services is open since 1999 while the market for long-distance passenger railway transport is closed and reserved by concession to the Federal Railways *SBB-CFF-FFS*, which are fully owned by the Confederation. Regional services are run by *SBB* or by private railways after procurement by Cantons which may be carried out by ordering directly the services to an operator or by tendering them.

There exists in fact some 40 *Privatbahnen* (private railways) or more correctly *Konzessionierte Transportunternehmungen* (licensed transport companies). Indeed, they are set up as private enterprises but the majorities of the shares belong to Public Authorities (the Confederation, the Cantons, the municipalities) so the influence of private capital is minimal, as noted by van de Velde (1999).

Separation of infrastructure and services is legally required at accounting level but narrow gauge and smaller railway companies are exempted from this provision.

Accounting separation of infrastructure and operations makes possible open access, which is relevant also for passenger services, for instance *BLS* runs part of the Bern S-Bahn on *SBB* tracks.

Statistics published by LITRA suggests the difference in importance between the rail services provided by *SBB* and those by private operators: in 2008 *SBB* carried 285 mio passengers while 145 mio travelled with private railways.

In terms of public bodies enabling competition (but necessary also for fair open access) it should be noted that Switzerland lacks a full Railway Regulator: *SKE* has only some of the remits and powers of a fully-fledged Railway Regulator, so much so that in OECD (2006a) the Swiss regulatory approach to railways is indicated as light handed. Moreover the path allocator is not an independent public body but a company owned by the major railways and the association of public transport.

In fact, rather than competition, a key element of the Swiss public transport system so far (including the rail system) is integration made possible by punctuality, good connections, timetable (whose preservation is a key principle in service changes preparation), and through common ticketing between railway companies and local bus services. These elements have been listed by van de Velde (1999) who, however, remarked also that "*a total economic proof of the advantage of this integrated system, which avoids all competition between services, does not seem to exist*".

There is little to report about the actions of the Railway Regulator *SKE* or the Competition Commission *WEKO*. For both Authorities the few complaints filed have been resolved finding agreements before a pronouncement by the commission was required. The *SKE* has received three complaints since its formation, but on none of those the commission had to make a decision: the *SKE* in all cases facilitated talks that have led to agreements among the

parties and the withdrawal of the actions. On this Schiesser (2009) argues that the main purpose of *SKE*, to avoid lawsuits, was thus achieved.

A less positive balance is expressed by OECD in 2006 when it was remarked that "[the *SKE*'s] role remains marginal, however, with only two cases so far, which essentially involved complaints by the *CFF* against other companies". The same source argues further that "there is no independent supervision of charges. The only independent Regulatory Body in the current Swiss institutional structure is the RACO. However, this very small Agency, which has modest resources and has very limited activity thus far (2 cases handled in 4 years), cannot really play a counterbalancing role". Still OECD (2006b) notices that the *SKE* does not have the power to sanction non-compliance with its decisions and that, in practice, irreconcilable path allocation requests are dealt with pragmatically on a "first come, first served" basis. In the event of bottlenecks, the law gives priority to passenger transport movements at regular interval, as well as to connecting trains.

The *WEKO*, according to OECD (2006a) plays a minor role on railway transport, also since there is an exclusion under art. 3 of the Cartel Act.

During the years 2000-2009 there were only two actions by *WEKO* that relate to the railway market. In 2000-2001 *WEKO* conducted an investigation for abuse of dominant position against *SBB* which would offer to new operator *Lokoop* certain services only as part of a comprehensive service, unlike requested by operator *Lokoop*. The secretariat had suggested ordering *SBB* to change its commercial behaviour but SBB changed its offer to satisfy Lokoop requests before the decision by *WEKO* and the investigation was closed (OECD, 2006a; WEKO, 2001).

In 2009 *WEKO* has been involved in the consultations for the railway reform programme 2. In the opinion expressed it suggested that tendering procedures for rail services should be extended by making them compulsory. Moreover it underlined the need to keep making sure that minimum track access charges and access charges calculation methods do not distort competition.

The most recent major intervention by the Price Supervisor was in July 2011, when he objected to the price increase *SBB* intended for 2012. After detailed negotiations, the average price increase was reduced from 6.4% to 5.9%. This is the usual approach taken by this official, whose powers are potentially far reaching, giving him the leverage necessary to negotiate price reductions. (Dietrich & Bürgi, 2005).

Services provided under PSOs

Services under PSO obligations are ordered and co-financed by the Confederation (in practice by the *BAV*) and, when they have regional importance only, also by the Cantons. Passenger PSO national services are ordered by the *BAV* from *SBB*, which holds the relevant concession. Freight PSO services include unaccompanied combined transport and the rolling motorway, which are co-financed in order to facilitate transferring freight traffic from the road to the rail, for instance the rolling motorway through the Swiss Alps.

While in the past services have been performed directly by companies owning lines, in 1996 optional tendering was introduced for regional lines by the Ordinance on indemnities, loans

and financial aids according to the railway law ADFV (Schweizerische Bundesrat, 1999). CER (2005) reports that, as of 2005, only two Cantons had taken such provision into the Cantonal law but had not yet made use of the possibility. Still CER (2011) indicated that the "*the legal basis for doing so is not clearly defined and subject to different interpretations*". This stems likely from the possibility of tendering being based simply on Ordinance.

Cantons may now choose a company and order the services or, potentially, tender the services every two years. The duration of the provision of services is the result of a change to the Ordinance on the indemnities for regional passenger transport which came into force on 1st January 2010: prior to the change services were ordered every year. Tenders may be used when important changes on several lines are planned or when the offers are not satisfying. Alternatively, the procuring Authority may decide to tender services at regular time intervals. In any case, the Cantons are responsible for negotiating and finalizing public service contracts with RUs but the *BAV* helps with comparing offers against others across the network. On the request of the Cantons, the *BAV* may also step in to help with comparing very different offers. Whenever a line serves more than one Canton, the responsibility for procuring the services rests with one of the concerned Cantons only.

The Ordinance on indemnities, loans and financial aids according to the railway law sets the minimum number of services per day and requires, in case of sufficient patronage, hourly services, leaving room to intensify the service where needed. When requested to provide services for a Canton, a RU submits an offer and the two parties negotiate the compensation, which is determined in advance on the basis of a budget, and the timing of the payments. The compensation, then, needs to receive the approval by the *BAV*. Cantons have to cover the costs not funded from the contributions of the Federal Government. However, at least 20% total costs must be covered by the revenues. The RU that is awarded a service has exclusive right to run that service. Fares must be comparable for similar services across the Confederation, independently of the costs of production.

PSO services cannot have profits: possible profits are collected in a special fund devoted to cover PSO services deficits only. Drawing money from such funds is the only way to compensate companies for deficits deriving from PSO services, as the compensation determined prior to the beginning of the contract cannot be revised.

Rolling stock is acquired by the RUs but, if the financing to acquire them has been approved by the body procuring the relevant services, in case a new RU steps in following of a tendering procedure, the latter may be requested to take over the rolling stock by the undertaking leaving the service.

Evolution of institutions

The two milestones for the dynamics of Swiss railway institutions after 1988 that we characterised are 1999-2000 (with the rail reform, the overland transport agreement, the change of structure of *SBB*, the introduction of the *SKE*, the ordering principle for regional transport) and then 2006 (when *BLS* changed to a holding and *Trasse Schweiz* was set up). Such milestones and the status of all actors at the time are characterised in Figure 18. The milestones have been obtained looking at the evolution of the actors since 1988, which is depicted in Figure 17, and noting the main events that have characterised the rail sector in Switzerland, as recalled in the following Table 43.

Table 43. Brief account of the main points on the evolution of the regulatory and competition arrangements in Switzerland (evolutions of the Regulatory Agencies in italics)

Year	Evolution
1987 Rail2000	The *Rail2000* bill is approved by popular vote
1992 AlpTransit	The Swiss electors approve the construction of the new transalpine rail corridors under the Gotthard massif and under the Lötschberg massif
1993	Message on the revision of the railway law (Regional traffic) by the *Groupe de Réflexion Reorganization* of SBB regional traffic
1994	Alps initiative to keep transalpine goods traffic through the Swiss territory on the rail
1996	Introduction with an ordinance of the possibility of tendering public services by Cantons
1998	Message on railway reform March 1998. The Law on passenger transport becomes applicable also to rail transport: concessions give exclusive right to carry out passenger transport services on a line September 1998. Performance related heavy lorry tax: 1/3 of the income goes to the Cantons, 2/3 to the modernization of the railway network November 1998. Federal Act concerning the construction and financing of the infrastructure projects of public transport: the financing for *Rail2000*, *AlpTransit*, the connection of Eastern and Western Switzerland to the European high speed network and for noise protection along the railway lines is secured December 1998. Railway Reform 1 The railway reform, a transposition of the EU Directive 91/440/EEC, which introduces non-discriminatory access to the network and aims to increase efficiency in public transport. The railway reform is conceived as a rolling reform: the set of acts of the first reform may be followed by further laws SBB becomes a joint-stock company and is reorganized internally. The Federal Council defines a performance agreement that *SBB* has to comply with, covering a period of four years and items such as finances, productivity, safety and others. The performance agreement is prepared in cooperation with *SBB* and is finally be approved by the Parliament. A framework of payments to *SBB* for the same period is decided upon by the Chambers of the Federal Government The Federal Act on the refinancing of the Swiss Federal Railways reliefs *SBB* of its existing debt Railway Reform 1 provides for the establishment of the Railway Arbitration Commission (*SKE/CACF/CAF*)
1999	Bilateral land transport agreement signed between Switzerland and the European Union Open access for freight
2000	The Railway Arbitration Commission (*SKE/CACF/CAF*) is set up on 1st January
2001	*SBB* and *BLS* set up a joint office (the *One Stop Shop*) to sell train paths
2004	The remit of the Railway Arbitration Commission (*SKE/CACF/CAF*) is extended to include supervision of train path allocation performed until 2006 by the *One Stop Shop* set up by *SBB* and *BLS* 12 December 2004. Completion of the first stage of the *Rail 2000* project implementation (B21). With the aim "more frequent, more rapid, more direct, and more comfortable routes"
2005	The Assembly determines that the second stage of the Railway Reform will be delivered in packages: (1) revision of public transport provision, (2) interoperability, access to the network, (3) financing of infrastructure
2006	*Trasse Schweiz* is set up as the capacity allocator for the rail network owned by *SBB*, *BLS*, *SOB* (94% of the Swiss railway network) With the creation of *Trasse Schweiz*, *SKE* monitors capacity allocation by the new body
2010	1st January 2010. The first package of Railway Reform 2 concerning revised provision for public transport becomes operational In October message from the Federal Council to the Assembly about the second stage of Railway Reform 2, to give a basis to *SKE* in the new law and to allow it to act *ex officio*

Source: Compiled by authors based on Weibel (2005), SKE website, DETEC website

Legend for the overview of the institutional evolution

The overview of the institutional evolution is a matrix composed by as many columns as the years between 1988 and 2011 plus an initial column for the situation before 1988 and a final column for planned changes after 2011 that are already known.

There are four horizontal bands or clusters of rows.

The top cluster of rows includes the railway market set-up over the years. The chart reports separately the set-up for the passenger rail market, divided by long-distance and regional/local, and for the freight market. Different market set-ups are depicted by coloured bands spanning the columns representing the relevant years. Colours have mostly the role of making changes visible. Wherever a market set-up is the same or similar, the colour is the same. Alternatively, different colours are used. However, for this cluster of rows only, a homogenous colour coding has been used across charts for different countries: light yellow is associated to legal monopoly, orange to concessions or franchises (a separate band indicates the possibility of open access) and light blue refers to open access. Cases where PSO services and open access (may) co-exist are indicated by horizontal orange and light blue stripes.

The second and largest set of rows refers to each kind of actor/railway body whose evolution is depicted along the rows. The focus is on the passenger sector, since this is the focus of this project. Therefore, while there are rows regarding the incumbent and new entrants in the freight markets, the rows about station and about rolling stock provisions refer to the passenger sector only. Several actors may correspond to a kind of actor and this is written or depicted along the row. Actors or types of actors are depicted by coloured rectangles. A continuous contour of the rectangle indicates a public body; a dashed contour indicates a private body. Colours of rectangles have no particular meaning but have the role of making changes visible. Wherever a body is the same, the colour is the same. Alternatively, different colours are used. Names of bodies are written only on the rectangles depicting their first appearance.

Large rectangles with dashed blue contour spanning across the first and second set of rows identify the milestones in institutional evolution that are singled out for use in the next chart.

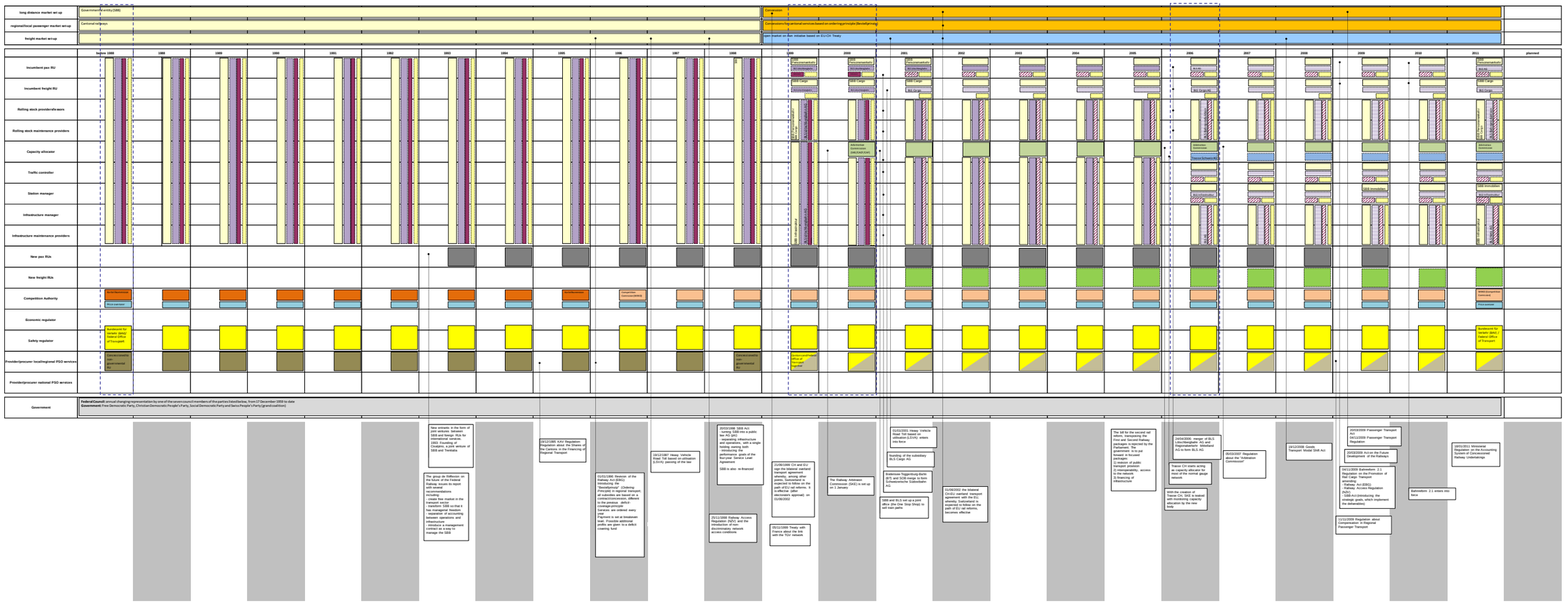
A third band includes only one row and refers to the sequence of Governments, the relevant dates and the main figures.

The bottom band, with columns indicated with alternate white and grey background, includes text rectangles reporting main facts within the rail industry or with an influence on the rail industry. Facts are linked to market set-ups or actors where immediately relevant.

Legend for the summary of the milestones in institutional evolution

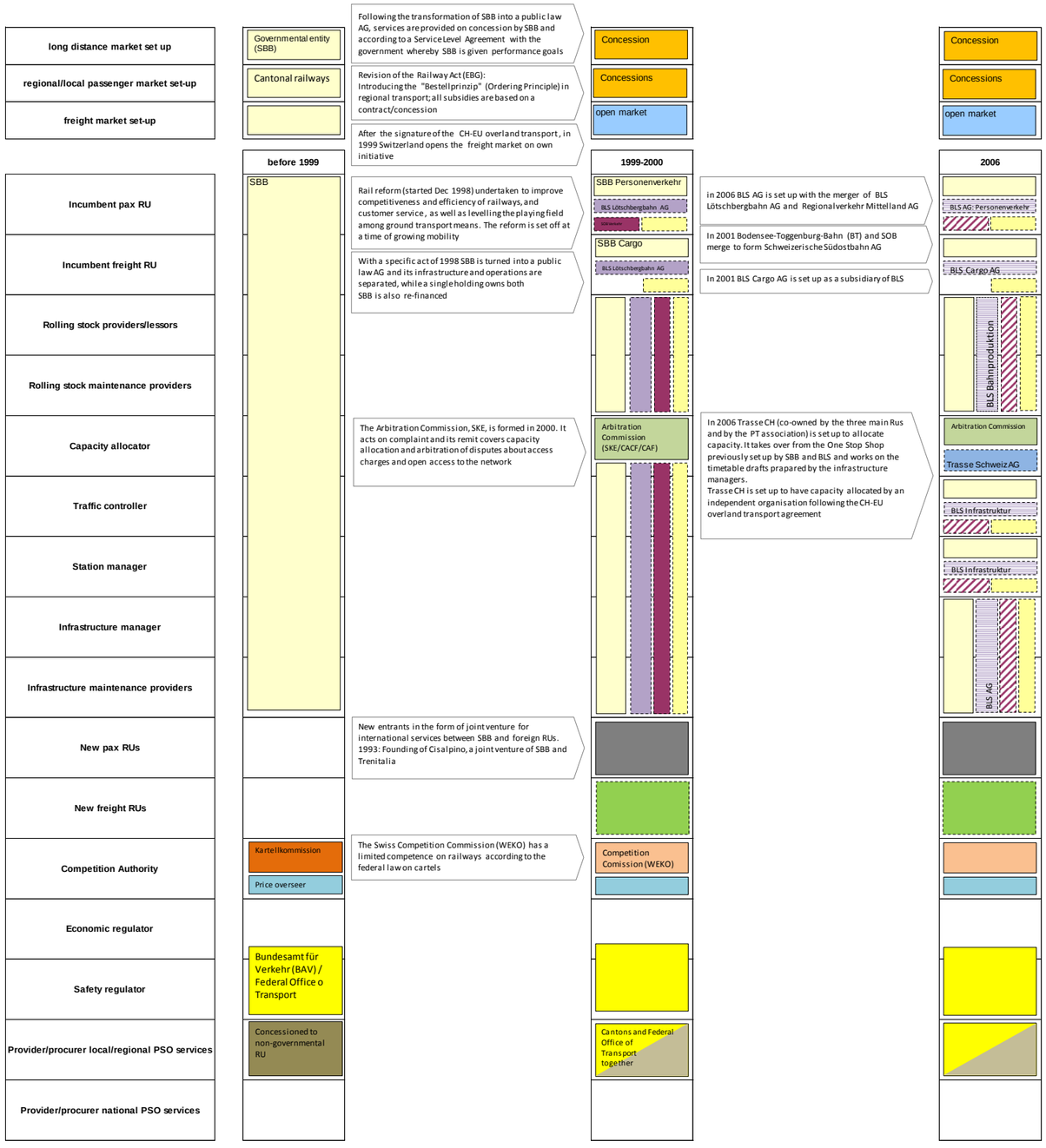
In Figure 18 the milestones of the institutional evolution have been singled out of the previous figure and brief texts explaining the changes occurred have been added between each pair of milestones. Therefore the picture depicts the milestones by using the same structure in columns and rows used previously. However, while each column refers to a particular year or cluster of years, the distance between columns is not to scale and is simply to leave room for the details of the changes. These are contained in arrows pointing to the actors resulting from the changes or affected by them.

Figure 17. Evolution of institutions in the Swiss railway sector, 1988-2011. The full size picture is too big to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based upon: van de Velde (1999), Weibel (2005), Meyer and Meier (2010), CER (2011), websites of actors

Figure 18. Milestones in the evolution of institutions in the Swiss railway sector, 1988-2011. The full size picture is too large to be included here and is attached as a spreadsheet to this report. The overview has been obtained by collecting information from the literature



Source: Compiled by authors, based upon: van de Velde (1999), Weibel (2005), Meyer and Meier (2010), CER (2011), websites of actors

3.9 Intermediary summary

This section closes the chapter by summarising the main aspects of the arrangements in each country studied and by listing some of the key distinctive characteristics. We proceed then to put forward a classification or typology of the institutional arrangements observed.

France

Among the five case studies, France is likely the least open to the idea and to the practice of competition in the passenger market. In spite of an early reform which saw the separation between the IM (*Réseau Ferré de France* or *RFF*) and the historical operator (*SNCF*) in 1997, there is virtually no competition as of today and few signs that significant competition could emerge before a number of years. The French railway market can be basically divided in two: regional and high speed (*TGV*)/long-distance/international lines. The introduction of competition in each segment is likely to be treated separately. In fact, whereas the regional traffic is heavily subsidized (and could probably not exist without support), long-distance and *TGV* traffic appear on average profitable and could thus lead to an open access system. However, there is the need to subsidise certain long distance conventional services. Experts caution about the opening of *TGV* lines to competition. The recent creation of a Regulator (*ARAF*) has brought hopes in certain quarters that the new institutional arrangement would move the political debate to more legal aspects and by so doing give a chance to open a breach in the dominance of *SNCF* in the French railway market. The French Competition Authority mentioned in 2009 that the incumbent operator must be under scrutiny on both its core and related markets, so that new entrants can gain access to the French market under the conditions fixed by EU regulation.

Some key characteristics resulting from the review of the French developments are:

- There is no competition for passenger services;
- Reports from committees tasked with exploring possibilities to open passenger markets suggest a staged approach (some voluntary tests should be run first). Issues include possible misalignment of staff conditions of employment as well as rolling stock and maintenance facilities;
- High speed and long distance profitable service are run by *SNCF* on own account (and many conventional long-distance services have been replaced by *TGV* ones);
- Long distance unprofitable services have become the direct responsibility of the Ministry since 2010 (*TET*);
- Organization of regional services is the responsibility of the Regions since 2002; this has led to increase in passenger-km and renewal of rolling stock;
- Literature on regional operations point to the difficulty for Regions to achieve favourable agreement with *SNCF* due to the lack of choice;
- Freight open access is in force since 2006;
- An actual Regulator (*ARAF*) operates since beginning of 2010. Before its creation the Commission had pointed out the lack of independence and powers of the previous Regulatory Body;

- The Economic Regulator *ARAF* is an independent administrative Authority, with a mission to allow non-discriminatory access to network, which has strong enquiry powers and can sanction discriminatory behaviour;
- Opinions in the literature indicate that *ARAF* powers should increase (eg *ex ante* on network statements);
- The Competition Authority has been active recently pointing at governance of stations (now with *SNCF*) and at the need for *ARAF* to review access fees *ex ante*;
- The Economic and the Safety Regulator are different bodies;
- The IM does not have complete control of the production line since key services (traffic control, maintenance) are contracted back by law to the national rail undertaking (the Commission has voiced its complaints on this);
- The remuneration of *SNCF* for maintenance is fixed so there are no incentives at the *RFF-SNCF* interface.

Key elements determining our characterization of four milestones in the institutional evolutions in France are:

- 1997: setting up of *RFF* as an IM, beginning of test for regionalization of services;
- 2002: with the law *LOTI*, the Regions get in charge local services, to be contracted to *SNCF*;
- 2006-2007: open access for freight, *EPSF* (Safety Regulator) and *MCAF* (regulatory office) are set up;
- 2010: the *ARAF* (independent Rail Regulator) is established; traffic management is with the *DCF* (independent body within *SNCF*); the State becomes the procuring Authority for long distance services.

Germany

Germany has a railway system with complete open access since the reforms of 1993, and only regional services are contracted (on a non-exclusive basis) under PSOs. It is a case of a very open system. The restructuring of the historical operators in 1994 saw the creation of an integrated railway company (*DB*) with subsidiaries offering different services (e.g., *DB Netz* provides energy, *DB Schenker* provides logistics services). This major reorganization was then followed in 1996 by devolution of regional passenger transport to the *Länder* and by the creation of a multi-sector Regulator (*Bundesnetzagentur*) in 2006, taking over from the function of regulation from the Federal Railway Authority (*EBA*).

There are almost 70 passenger operators and around 300 freight operators licensed, only a few of the latter actually operating. On long distance transport *DB* is practically the only operator, while on local and regional traffic other operators are responsible for more than 20% of the traffic (21.8% in 2010, according to the *Wettbewerber Report* 2010/2011) and *DB* sees them as increasing their presence in the immediate future (several contracts for regional traffic will be awarded in the coming years).

Some key characteristics resulting from the review of the German developments are:

- Access to the network is open;
- Long distance passenger services are supplied on a commercial basis;

- Regional passenger services are supplied on PSO-based contract (though they are not concessions);
- Since 1996 regional passenger services are the responsibility of the Regions (*Länder*),which receive the necessary funding from the Federal Government and are free to contract them with or without public procurement;
- Experience with regionalization is positive (increase of services and quality for same or less funding);
- Regional services are the only those where there is a presence of new entrants (21.8% of train-km according to the *Wettbewerber Report* 2010/2011);
- Some Regional Authorities provide rolling stock to run local regional services;
- The incumbent is now a holding. It was initially set up as a company to be divided and privatized (with the infrastructure to remain in public control). The privatization plan has been abandoned;
- The IM, which is responsible also for capacity allocation and traffic control, belongs to the same holding as the major passenger and freight operators;
- In 2009 the Commission complained about lack of safeguards for the independence of the IM and insufficient incentives for the IM to reduce costs and access charges;
- There is a strong and independent Regulator *Bundesnetzagentur*, dealing also with other network industries, with a mission covering market and network regulation; the Regulator is in its current form since 2006; it has strong enquiry powers and can sanction discriminatory behaviour. Among other remits, the Regulator deals with rail related services;
- It exists also a Monopolies Commission with the mission to advice on policy of several industries, among which railways, by issuing bi-annual status reports.

Key elements determining our characterization of three milestones in the institutional evolutions in Germany:

- 1994-1996: marked by the changes introduced in 1993, notably the opening of the network, the merge of *Deutsche Bundesbahn* and *Deutsche Reichsbahn* into *DB*, a private law AG with a privatisation option, and the transfer (in 1996) of regional transport responsibilities to the Regions;
- 1999: *DB* becomes a holding company;
- 2006: marked by the creation of the *Bundesnetzagentur*.

Great Britain

Great Britain is a leading country when it comes to experimenting with railway liberalisation and in particular with the introduction of competition in the passenger segment.

In-depth reforms started in 1993 with the passage of the *Railway Act* and the creation of *Railtrack*, a State owned company. The handover of the former *British Rail* infrastructure to *Railtrack* was accompanied by the transfer of infrastructure maintenance and rolling stock companies to State owned companies, and later by the sale to private ones. The railway institutional landscape was further modified by the introduction of competition via a franchising mechanism. In 1996, 25 franchises were awarded to private train operators (the incumbent was not allowed to be among them). In 2002 ownership and management of infrastructure was transferred to a new entity (*Network Rail*), which is now set up as not-for-dividend company. In parallel to the changes in the "market", important changes took place

from a regulatory perspective. The former *Office of the Rail Regulator* became the *Office of Rail Regulation* (*ORR*) while the *Strategic Rail Authority* was merged into the *Department for Transport*, which is now in charge of levels of output. In 2005, *ORR*'s role and responsibilities were reinforced. Whereas the output in passenger-km has constantly been on the rise for the past decade overall costs also escalated. The realisation that whole-system costs in the United Kingdom are much higher than in other countries has triggered an extensive debate around the value for money of the British railway system. The recommendations put forward in the *McNulty Report* (2011) will most likely lead to a further round of reforms in areas as diverse as industry objective and outputs, leadership, incentives, fares, safety and standards, or asset ownership and private investment. Some of the changes already under way include *Network Rail*'s devolution of business routes (a form of decentralisation of network infrastructure).

Some key characteristics resulting from the review of the British developments are:

- There is full vertical separation;
- There is no incumbent operator, the whole sector is privatised;
- Passenger services are run as franchises awarded by the *Department of Transport* (with some involvement of Local Authorities) or Transport Scotland;
- There is some very minor open access, and at present it is not likely to increase;
- The freight market is open;
- There is an independent Regulator, also responsible for safety, whose remit covers railway only and works in cooperation with the Competition Authority; it has strong enquiry and sanctioning powers;
- Safety and economic regulation are with the same organisation;
- The *HLOS/SoFA* procedure involving the IM, the Ministry and the Regulator is used to set out the output expected of the IM, and its access charges, against the public funds available;
- Some of the changes in regulation have been carried out against a tension between the Regulator and the Government, with the latter intending to have more influence on the sector;
- Costs of the system are considered too high, approximately 30% more than they should be, this was ascertained by the *McNulty Report*, issued in 2011 and likely designing some of the next changes in the system;
- The McNulty report identified (i) barriers to efficiency including, (ii) fragmentation of structures and interfaces (those do not foster alliances towards efficiencies), (iii) the clarification of the roles of the government and industry, (iv) ineffective and misaligned incentives (referring not only to RUs being isolated from changes in infrastructure access charges, but also to rolling stock: RUs do not have incentives to manage rolling stock costs);
- Still the *McNulty Report* called for more strategic view, more clarity in rail policy, and involvement of the whole industry;
- The *McNulty Report* also asked for *ORR* to become also the Regulator of the franchises, still to be issued by the *Department for Transport*.

Key elements determining our characterization of four milestones in the institutional evolutions in Britain:

- 1996: the changes towards privatisation started by the 2003 *Railway Act* have completed a re-shaping of the industry. The railway sector is vertically separated and privatised. The *ORR* and the *OPRAF* have been established;
- 2001-2002: Railtrack is put into administration and replaced by *Network Rail*, a not for profit company limited by guarantee; the *OPRAF* is replaced by the *SRA*;
- 2004: the Regulator is replaced by a Board and the *ORR* becomes the *Office of Rail Regulation*;
- 2006: the *Department of Transport* takes over the remit of the *SRA*; the *HLOS/SoFA* procedure is introduced; the *ORR* becomes also the Safety Regulator.

The Netherlands

The Netherlands have a railway system divided in two parts from the operational viewpoint: a "core" network where national passenger services are run by a single operator on a concession awarded by the State, and a number of peripheral lines with local relevance along which services are contracted by Local Authorities to operators via public tendering (those lines were separated from the main network in 1998-2005 since loss making for *NS*). Funding for services on peripheral lines also comes from the State although they are administered by the Local Authorities. Local passenger services have seen much interest from private operators, which recently are also suggesting that their role could extend to services on the core network. *NS*, the State owned operator resulting from the reorganisation of the former single railway company, has the concession to carry out services on the main network and has to operate commercially and be profitable. Freight is an open market since 1996 and it is particularly relevant due to the traffic linked to the ports, mostly that of Rotterdam. The freight part of the former single railway company has been acquired in 2000 by *DB Schenker* (at the time of the merger this was *Railion Nederlands*). It is worth noting that NS has several interests in other companies. In particular, until recently it was the owner of *Strukton*, the main contractor for rail infrastructure maintenance in the Netherlands. *Strukton* was sold in 2010.

ProRail, State owned, is the IM for almost all the network. *ProRail*, besides being in charge of infrastructure management, is responsible for traffic control and capacity allocation. Infrastructure management, including the other responsibilities just mentioned, is carried out by *ProRail* on concession by the State. The current concession runs along the same time span of that for NS: from 2005 until the end of 2014.

Some key characteristics resulting from the review of the Dutch developments are:

- There is full separation between network management and operations;
- The whole passenger system is run on concessions, one for the core network, administered by the Ministry, and several small ones for peripheral lines, managed by Local Authorities;
- The holder of the concession for the network, *NS*, receives no financial compensation from the State for running services: services on the core network have to be profitable overall;
- The freight market is open;
- The IM also has a concession for its role, which runs for 10 years, parallel to the passenger transport concession for the core network;

- All concessions are based on systems of PIs. Those for the core network and for infrastructure management are operationalized each year after consultations;
- There has been a time when traffic management, capacity allocation and infrastructure maintenance were with organisations within *NS*, but the experience has been unsatisfactory as for separation from the incumbent, and an independent infrastructure manage has been set up;
- Van de Velde (2010) in recounting the positive outcome of the 2008 official evaluation of the railway system in place after 2004 (no radical changes were required) mentioned that rather than legislation only the evaluation underlined the importance of cooperation among actors in achieving improvements in the rail sector;
- Decentralisation of responsibilities for public transport was preceded by a test phase;
- Decentralised operators have a multimodal view (both Authorities and operators are interested in rail and bus networks);
- Decentralised operations are the only point of entrance for companies different from *NS*, although they are now lobbying to have a greater role;
- van Dijk (2007) reports that experience from the 1998-2006 period shows that Regional Authorities have gained quality improvements (extra supply, new rolling stock) or savings in operating costs (20-50%) for the same services, which compare with smaller savings (0-10%) obtained when contracts have been directly awarded;
- The same author discusses issues for regional operations among which dependence upon *NS*, the incumbent, for rail ticket integration and revenue-settlements;
- The Economic Regulator is an independent body with 7 FTE dedicated to rail. It is, part of the Competition Authority, working on non-discriminatory access to rail and services and on user charges. It has strong enquiry powers and may issue fines and it relates to the Parliament with an annual report;
- Work by the Regulator included an investigation on refuelling stations for diesel engines, allocation of capacity allocation by the IM to itself, access agreements, access fees, the latter also in relation to a performance scheme;
- The Economic and the Safety Regulators are separate bodies.

Key elements determining our characterization of four milestones in the institutional evolutions in the Netherlands:

- 1995-1996: Dutch rail reform and reorganization of *NS* in commercial and non-commercial activities (those linked to infrastructure management). Start of the short-lived and only open access experience in the Netherlands (likely unintended by the legislators);
- 1998: start of experimental regionalization and tendering of services on peripheral lines that *NS* has identified as loss making;
- 2000: passenger transport act and actual transfer of responsibilities to Provinces for local public services. Competition on the rail is no longer possible. Competitive tendering for all public transport but it involves railways only starting 2005;
- 2003-2005: 2004, full institutional separation of NS and *ProRail* (the newly set up IM); 2004 set up of Economic Regulator; 2005, start of 10 years' concessions for *NS* and *ProRail*.

Sweden

Sweden has completely opened to competition all railway services. Opening of passenger operations on main lines in October 2010 has completed the liberalisation. While full effects are expected from the timetable change of December 2012, two private companies are already operating services previously reserved for the incumbent and still major passenger operator *SJ* (State owned but directed to operate commercially). Regional traffic is procured by CPTAs since 1988. Unprofitable traffic is procured by the State since 1993, most recently via the multimodal Swedish Transport Administration. The freight market is open since 1996. Altogether some 25 railway companies operate on the Swedish network, most of which with a mother company based out of Sweden. Reforms started in 1988, well before Sweden joined the EU in 1995, motivated by the intention of the State to control finances of railways and deal effectively with the deficit of the State owned and vertically integrated rail company. Other reasons were realising expenditure savings and the will to create a level "playing field" across transport modes. Starting points were the division of the operator from the IM, which has since received much funding for rail development, and the procurement of rail services initially possible only for regional services in the responsibility of County Authorities. County Transport Passenger Authorities are in charge of procuring transport services (i.e., either by bus or by rail).

A multimodal approach is one of the main drivers of the most recent round of reforms. Since 2009 the independent Safety and Economic Regulator for railways is a multimodal Agency, *Transportstyrelsen*. As of 2010 there is no longer a rail IM but a multimodal infrastructure planner and manager, *Trafikverket*, the Swedish Transport Administration, State owned and responding to the Ministry of Infrastructure throughout all the recent institutional changes. From a policy point of view the distinction between modes is fading. The focus is on transport provision: the vision of the Swedish Transport Agency is that "everybody arrives smoothly, the green and safe way". No mention of mode, consistently with current State policy while the predecessor of *Trafikverket* for rail, concerned with rail only, had the mission to develop the rail system and rail travel. To complete the picture it should be mentioned that *Trafikverket* is in charge of rail capacity assignment, traffic control, and information provision as well as of procurement of long distance traffic. The latter role as well as the role of planning the future infrastructure, extends across modes. Over the years, rail patronage has increased as well as service levels and investments in infrastructure.

The overall evolution path has been one of progressive adaptation of the system to changing needs, political directions and new challenges. Very different options have been examined at times. Most recently the possibility of reducing the role of County Transport Authorities to leave much space to the market in determining the services has been shelved to keep PTAs in charge of planning the services that may be taken on by commercial companies or procured. Further evolutions may be expected, for instance to deal with capacity and its assignment with the full opening of the market. There are bottlenecks due to capacity requests, and the newest network statement mentions auctioning as a last resort to assign contended paths.

Some key characteristics resulting from the review of the Swedish developments are:

- There is full vertical separation between network management and operations;
- The market for both passenger and freight services is completely open (freight since 1996, passenger since 2010);

- Contracted PSO services may co-exist with commercial services: there is no concern about economic equilibrium of PSO services;
- Long distance PSO services is contracted by public tendering (though not compulsory) by an Agency that is now part of the IM;
- The IM is multimodal;
- Local/regional PSO services are contracted (not necessarily via public tendering) by CPTAs, to be reshaped in Regional Authorities more linked to political decision making and able to organize services according to passenger flows rather than administrative divisions;
- CPTAs own rolling stock for the services they contract;
- There is an independent multimodal Regulator, *Transportstyrelsen*, covering both economic and safety issues; it has a mission to promote an efficient railway market with fair competition and equal conditions of access; it has strong information powers and its decisions are legally binding, the fines it puts forward have to be confirmed by a court;
- There are mixed remarks in the literature about the level of competition in the Swedish market: in the past the Competition Authority has called it "gentlemanly competition" and asked a more liberalized market;
- The literature points to positive effect of competition on contracted services: innovations (in rolling stock, management, ticket systems, working practices), increases in patronage, reduced subsidies;
- Still the literature points to some issues; unfulfilled bids, the predatory behaviour of some bidders, and, sometimes, worsened possibilities for passengers to find connecting journeys involving several operators (Alexandersson and Hultén, 2009); even *SJ* risked bankruptcy in 2002-2003 after placing optimistic bids; at the beginning of the opening there have been issues with strategic behaviour on the part of incumbent, refusing coordinate ticketing with other operators or providing lower quality connections with the services by another operator;
- There is not enough experience to evaluate the competition for open access on passenger service, though it is notable that the first open access operators have been on one of the busiest link of the network (capacity allocation problems are foreseen in the future) but on niche market: "low cost" services and luxury transport;
- The separation between infrastructure and operations in 1988 has been a way for the Government to control railway spending especially in infrastructure; this has since increased.

Key elements determining our characterization of six milestones (after the initial status) in the institutional evolutions in Sweden:

- 1988: with the Transport Policy act *SJ* is vertically separated into an operator and an IM (*Banverket*), but traffic control and capacity allocation remain with *SJ*; *SJ* retains a monopoly on all lines it does not declare unprofitable; procurement of local/regional services is transferred to the CPTAs, along with funds and rolling stock; CPTAs may use public procurement;
- 1992-1993: public procurement allowed on unprofitable long distance services;
- 1996: open access for freight; capacity allocation and traffic control transferred to *Banverket*;
- 2001: separation of *SJ* into several companies, among which *SJ* (now passenger operator only), green cargo (freight operator only); the State negotiation for long distance unprofitable services is phased out and replaced by *Rikstrafiken*, a multimodal Agency;
- 2004: the Economic and Safety Regulator *Järnvägstyrelsen* is set up;

- 2010-2011: starting 2010 access on the whole network is gradually opened; SJ loses its monopoly on profitable long distance services; the IM has merged in 2009 with the corresponding road administration becoming multimodal; being multimodal, the new IM is also tasked with procuring long distance services and replaces *Rikstrafiken*; the Regulator is reorganized into a multimodal one in 2010.

Switzerland

Switzerland has separated accounts of its main Federal railway company *SBB* as a consequence of bilateral agreements and has a railway sector that remains publicly owned, even though companies other than *SBB* are often referred to as private railways. The sector is characterised by an integrated public control. Long distance services are provided on concession from the State to *SBB* within the framework of a performance agreement covering a period of four years. In the agreement the Federal Council defines the performance required. Regional services are provided within a framework that sees each Canton ordering the services directly to a company, and then co-finance them with the Federal Office of Transport (*BAV*). While two Cantons have included in their legal provision the possibility to tender services, as introduced by the Ordinance on indemnities, loans and financial aids according to the railway law (OILFR), none has chosen this option as yet. There is open access for freight since 1999. Path allocation on non-discriminatory basis is provided since 2006 by *Trasse Schweiz*, a company co-owned by the major railway companies and by the association of public transport. There is no fully fledged Economic Regulator, although some of its activities are carried out by other bodies. Arbitration of issues regarding access is in the remit of *SKE*, the arbitration commission, which also supervises *Trasse Schweiz*. Minimum path fees are fixed by the Federal Office of Transport, which is also in charge of approving the compensations agreed by companies and Cantons when regional services are ordered. Particularities of Switzerland are the presence of a Price Supervisor and the fact that the Competition Authority has a remit on railways limited by an article of the Cartel Law due to railways being set up as a public service. A further Swiss peculiarity is the dense and densely used network and the high market share for both passenger and freight services.

The arrangements outlined above are mostly the result of an on-going set of reforms in fact conceived from the outset as a rolling reform and started with the Railway Reform 1 in December 1998. By decision of the Federal Assembly the second stage of the Railway Reform will be delivered in packages focussing respectively on the revision of public transport provision, interoperability and access to the network and on the financing of infrastructure.

Some key characteristics resulting from the review of the Swiss developments are:

- The Swiss system is run on concessions since 1999;
- All railway companies are publicly owned: also the private railways are typically owned by Cantons;
- Railway companies are integrated and are both operators and infrastructure manages (and control traffic); *SBB* has separated accounts, *BLS*, which is the second major company, is a holding;
- Passenger operators work on their own infrastructure (with the exception of *SBB* and *BLS*, working on each other infrastructure);

- Local services are ordered by Cantons to railway companies every two years and co-financed by the relevant Cantons and the Federal Office of Transport; no tendering has taken place although two Cantons have this provision in their legislation; possible profits from local services are put into a special fund directed to cover deficits;
- Freight services are run on open access grounds since 1999;
- There exist a capacity allocator since 2006, jointly owned by the three main rail companies and by the association of public transport;
- There is no Economic Regulator as in other countries reviewed;
- There is an arbitration commission (*SKE*), whose mission covers capacity allocation and access charges; since its creation in 2000 it has never had to make decisions; it has legal powers in case of network access (for obtaining information and issuing sanctions), it has no power towards the capacity allocator;
- Part of the remit of an Economic Regulator is with the Federal office of Transport: it approves minimum access charges and funding of local services;
- The Federal Office of Transport is the Safety Regulator.

Key elements determining our characterization of two milestones in the institutional evolutions in Switzerland:

- 1999-2000: marked by the reorganisation of *SBB* into a public law AG, the signature of the Overland Transport agreement between EU and Switzerland, the opening of the Swiss freight market, the introduction of concessions for both national traffic and regional services, the latter ordered by the Cantons;
- 2006: Trasse.ch, the capacity allocator, was formed and *BLS AG* was set up with the merger of *BLS Lötschbergbahn AG* and *Regionalverkehr Mittelland AG*.

3.10 Intermediary analysis: the different institutional arrangements in the various segments

Having described the railway sector in the six countries chosen for the analysis in this chapter, we now aim to address the first of the research question: we seek to determine a typology of institutions for the governance of railways, based on the categories of actors and of arrangements explained in 3.1.

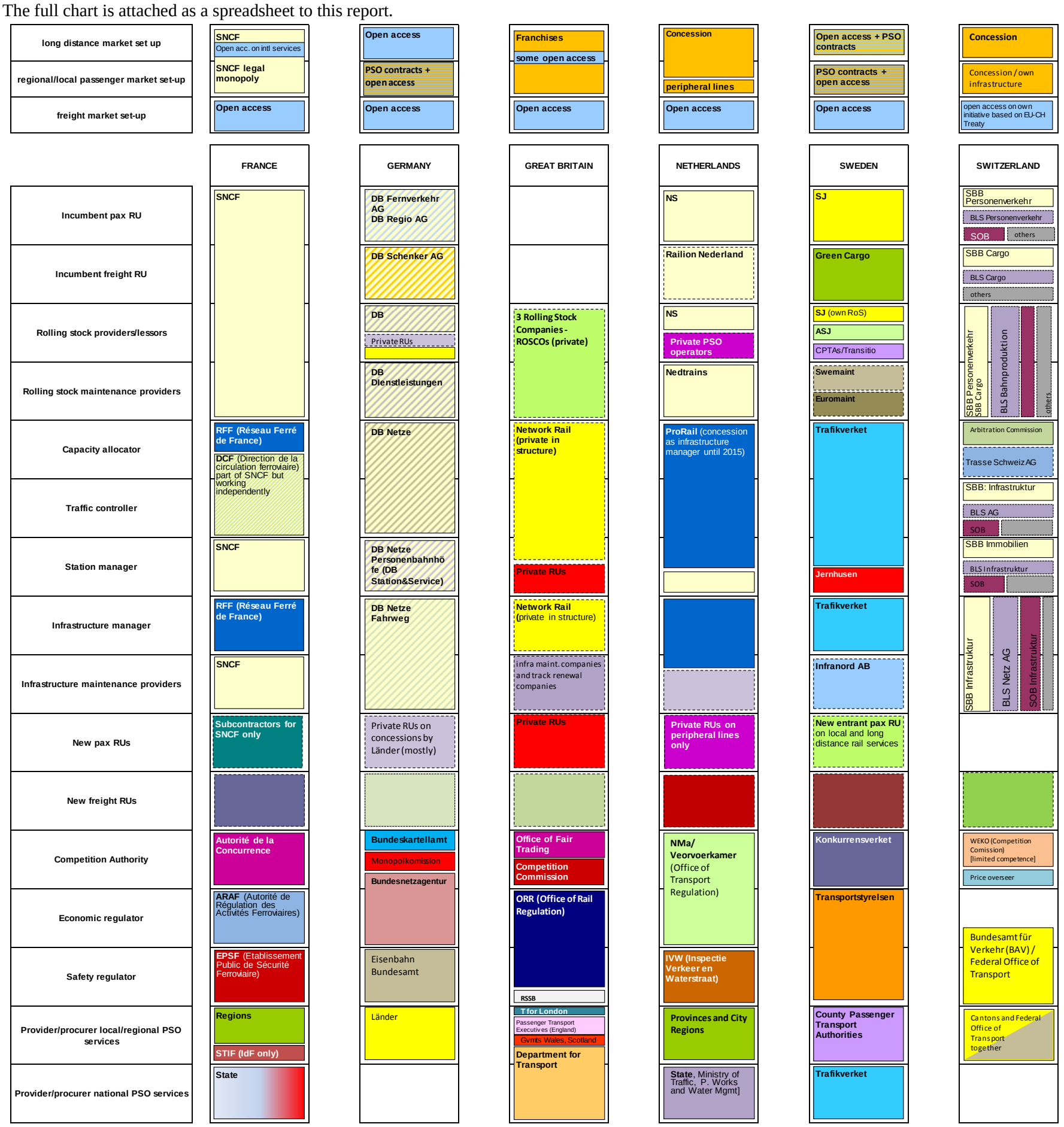
The current institutional arrangements in the six countries examined in this chapter are illustrated in Figure 19. This figure may be read by columns, to see which functions are covered by each actor. This provides a picture of the current state of things. However, to establish a typology we should read it by rows, looking at the characteristics of the actors that are responsible for the same function or which set-up is used for the same rail transport segment in different countries. To be able to do that, we have extracted Table 44 from Figure 19. Some of the rows in Table 44 summarise those seen in the charts for each case. We have combined the sector arrangements and the procuring Authorities (if any) in the two top lines, the lines on operators and infrastructure management have been summarised in the line on structure of IM and RUs. We have instead added line to mark where there is a multimodal IM and a multimodal/multimarket Regulator. The inclusion of the latter derives from the categories actually observed. The categories observed for the item on each line have also determined the sub-items for each line. For instance capacity allocation may be with a special capacity allocator, with an independent IM or with an IM that is part of a holding including an operator.

The columns refer to the countries surveyed to note where each case is observed.

As from the descriptions in the previous sections we note a great amount of heterogeneity. If we take a very broad view as the one used in 2.3 (and borrowed from CEC, 2006, as updated by Nash, 2008) to select the countries object of the study, we see that the situation still stands as it was in 2008. However, looking in greater detail at the arrangements, no State has a railway system like any of the others. There seems to be little scope for a typology of institutions and arrangements based on a detailed view of the sector. Nonetheless, we may characterise the arrangements and type of actors that have emerged in each sector, and we proceed to do so in the next sections. The discussion in the next sections may therefore constitute a categorisation of the segments of the rail sector in each country.

Figure 19. Current (2011) institutional set-up in France, Germany, Britain, the Netherlands, Sweden and Switzerland

Rectangles with continuous borders indicate State owned/public bodies; rectangles with dashed borders indicate private bodies. Colours are only used to highlight different actors. Rectangles of the same colour indicate the same actor but within each column only. For the top three rows only (market set-ups) light yellow indicate monopoly; orange concessions or franchises; light blue open access.
The full chart is attached as a spreadsheet to this report.



Source: Compiled by authors, based on the country charts included in this report. See each chart for the relevant references used

Table 44. A summary of some of salient aspect of the institutional set-ups reviewed. (*) of limited significance since only one operator is allowed

		FR	DE	GB	NL	SE	CH
Long distance market set-up	Monopoly, State as Authority	Yes	-	-	-	-	-
	Concession, State as Authority	-	-	-	Yes	-	Yes
	Franchises, Ministry and Local Authorities	-	-	Yes	-	-	-
	Open access	-	Yes	-	-	-	-
	Open access + PSO contracts with IM as Authority	-	-	-	-	Yes	-
Regional market set-up	Monopoly, Regional Authorities	Yes	-	-	-	-	-
	Concessions, Regional Authorities	-	-	-	Yes	-	-
	Concessions, Regional and Central Authorities	-	-	-	-	-	Yes
	Franchises, Regional and Central Authorities	-	-	Yes	-	-	-
	PSO contracts+ open access, Regional Authorities	-	Yes	-	-	Yes	-
Provision/procurement of rolling stock for concessions	Provided by awarding body	-	In some States	-	-	Yes	-
Structure of IM and RUs	Integrated company with separation of accounts	-	-	-	-	-	Yes
	Holding system (IM and RU)	-	Yes	-	-	-	Yes
	Independent mixed RU(s) and IM	Yes	-				-
	Independent RUs (separate pax and freight) and IM		-	Yes	Yes	Yes	
Multimodal IM		-	-	-	-	Yes	-
Capacity allocation	with capacity allocator co-owned by operators, supervised by arbitration commission	-	-	-	-	-	Yes
	Subcontracted to indep. section of the incumbent RU	Yes					
	with independent IM, supervised by REgulator		-	Yes	Yes	Yes	-
	with IM part of holding as major RU, supervised by Regulator	-	Yes	-	-	-	-
Traffic Control	With independent IM	-	-	Yes	Yes	Yes	-
	Subcontracted to indep .section of the incumbent RU	Yes	-	-	-	-	-
	with IM part of holding company as major RU	-	Yes	-	-	-	Yes
	with IM part of same company as major RU	-	-	-	-	-	Yes
Station management	With major RU for the commercial part and with IM for the remainder	-	-	-	Yes	-	-
	Tiered system - major stations managed by special company, others by IM or local communities	-	-	-	-	Yes	-
	Tiered system - major stations managed by a special company and other stations by RU using them	-	-	Yes	-	-	-
	With IM part same of holding company as major RU	-	Yes	-	-	-	Yes (*)
	With independent part of the incumbent RU	Yes	-	-	-	-	Yes (*)
Safety regulation	With same body as economic regulation	-	-	Yes	-	Yes	-
Economic Regulation	-	CA+RA	CA+ Network Regulator	CA+RA	CA+ Transport Regulator	CA+ Transport Regulator	No fully fledged Economic Regulator Some activities carried out by *BAV* and *SKE*
Multimodal/ multimarket Economic Regulator	-	-	Yes	-	Yes	Yes	-
Peculiarities	-	IM is required by law to subcontract maintenance and traffic control to incumbent	Monopolies Commission	-	-	-	Path allocator; *Preisüberwacher*

Long distance passenger arrangements

There are currently five main types of institutional set-up in the States observed:

- The French mandated monopoly of the national operator with *SNCF* operating on its own account (e.g., high speed services) and with the State as procurer for the *TET*. The only exception to the monopoly is for international services, which are on open access since 1st January 2010;
- The concessions, with two variations, i.e.:
- The British franchises, with the possibility of open access operations as long as they are not primarily abstracting revenue from the franchised services (in practice open access operations are very limited and serve places with no direct connections offered by franchised services). In England services are contracted by the *Department for Transport* with the Passenger Transport Authorities as having a say or as co-signatories (with one exception, *Merseyside PTE*, which is direct and sole responsible for its franchise) and the devolved Governments in Scotland and Wales are responsible for franchises on their territories;
- The concessions proper in the Netherlands and in Switzerland, which are awarded by the State, in both cases directly, although on a different basis, and establish the operator with exclusive right to operate, allowing no open access;
- The German and Swedish open access, considered as two different types.
- In the first case with *DB*, the incumbent, as *de facto* sole operator with minor exceptions;
- In the Swedish case with open access very recently enacted has already attracted new entrants with new services. In Sweden access to all services was opened recently and exists along with contracted services16. The IM (possible a restrictive definition, given its role) has recently acquired the remit for contracting long-distance services. Given the open access set-up, services contracted are only those unprofitable and run under PSOs.

Altogether we may characterise five different arrangements as illustrated in Table 45. Again, noting five different arrangements among six countries underlines the heterogeneity encountered.

Table 45. Long distance market set-ups and the Authority contracting the passenger services

Monopoly	Concession	Franchises (concession + minor open access)	Open access	Open access +PSO contracts
State as Authority	State as Authority	State and local Authority	-	IM + Regional Authorities
France	*The Netherland and Switzerland*	*Britain*	*Germany*	*Sweden*

[16] New entrants are present since 2000 in the market for long distance PSO services.

Regional/local passenger arrangements

The distinction between long distance and regional/local markets is arbitrary, to an extent, and surely country dependent. Here it has been included to account for and describe separately those services that may fall within the remit of Local Authorities alone or in conjunction with national ones. In fact, in the British case the distinction is of little relevance, although from the point of view of passenger flow patterns and of the geographical scope of train services (the two elements best defining the kind of service) it still stands.

Three main arrangements have been observed, which are actually five different arrangements when looked in the details:

- The French mandated monopoly of the national operator, with the presence of new entrants only as subcontractors for *SNCF*. Since 2002 in France the Regions negotiate services with *SNCF*. In the whole Ile de France it is however *STIF* that has the role of Transport Authority;
- The concessions with two variations:
- Concessions proper, not allowing for open access as in the Netherlands and Switzerland: in the Netherlands Local Authorities are responsible and are obliged to tender the services; in Switzerland Local Authorities along with a central one (the Federal Office of Transport) are responsible and order directly the services and may, potentially, tender them[17];
- The British franchises whereby open access is allowed on authorization of the Regulator and only if directed at augmenting services without abstracting revenue from the franchisee. The Authorities contracting the services are the same as those for what we defined above long-distance traffic: in England franchises are contracted by the *Department for Transport* with the Passenger Transport Authorities as having a say or as co-signatories (with one exception, *Merseyside PTE*, which is sole and direct responsible for its own franchise) while the devolved Governments in Scotland and Wales are responsible in the respective nations;
- The open access of Germany and the recently established open access in Sweden, which go along with PSO contracted services, in fact the only existing services. Open access on regional lines in Germany results from the general opening of the railway network. *Länder* contract PSO services but cannot award exclusive use of the network;
- In Sweden open access is the result of the most recent reforms of 2010, which follow a period with concessions for services put to tender or directly awarded[18] by the CPTA. Even with open access, Regional Authorities for transport, as they have recently become, will continue to be responsible for providing, typically via contracted operators, PSO services.

Two key developments may be observed from the evolution of regionals services: the success of new entrants and the regionalisation of responsibilities, in some cases following test trials. We note heterogeneity among States and, recalling the descriptions of the arrangements in the case studies, we may find a further element of heterogeneity, this time within each country: Transport Authorities use the leeway allowed by national legislation and tend to make

[17] The legal framework for contracting services with a public tender is unclear, as noted in CER (2011), and no Canton has made use of this option yet.

[18] They were initially contracted directly to SJ, the incumbent, while now public tenders are commonplace but both options remain open.

different choices as to the detailed arrangements for procuring services (e.g., type of contract, duration, type of procurement).

Table 46. Regional/local passenger set-up and the Authority contracting the passenger services

Monopoly	Concessions	Concessions	Franchises (concession + minor open access)	PSO contracts + Open access
Regional Authorities	Central and Regional Authorities	Regional Authorities	Regional Authorities and Central Authorities	Regional Authorities
France	*Switzerland*	*The Netherlands*	*Britain*	*Germany, Sweden*

The provision of rolling stock and its maintenance

This section was mainly compiled to highlight where rolling stock is provided by the Authority that awards rail service contracts therefore relieving operators from having to provide this asset. Table 47 offers a simple view of a more complex landscape that should possibly be investigated separately, given the potential relevance of taking rolling stock provision away from operators in case of open access and concessions[19]. Awarding Authorities provide rolling stock and related services (workshops and/or heavy maintenance) in Sweden and in the case of some *Länder* in Germany, notably in Lower Saxony. In Sweden CPTAs have since long bought a rolling stock company, *Transitio*, which sources, procures and maintains rolling stock for several of them. In other cases rolling stock and its maintenance is the responsibility of the operator, whether it chooses to have its own asset or to lease it.

Table 47. Current arrangements for the provision/procurement of rolling stock and maintenance for services on concession/franchise

Provided by operator	Provided by Authority
Britain, France, the Netherlands, most of Germany, Switzerland, Sweden	*Sweden, part of German Länder*

Freight market arrangement

The freight transport market is open in all States on which this research has focused. Full market was to be enacted by 1st January 2007 according to Directive 2004/51/EC. Opening has actually occurred for different reasons, often for domestic ones, at different points in time and with a different phasing. Access to infrastructure was opened as a result of railway reforms in 1993 in Germany, and in 1994 in Britain with the six companies in which the

[19] Indeed, rolling stock provision and maintenance allow for mixed solutions, for instance including leased or owned rolling stock, heavy maintenance performed by the operator or by the rolling stock makers; these may typically provide integrated maintenance contracts. Makers are also present more generally in the maintenance market.

former *BR* freight operations had been divided sold between 1995 and 1997. Access for freight was opened in 1998 in the Netherlands and in 1999 in Switzerland. France, instead, opened access to international freight on the Trans-European Rail Freight network only in 2003 and to the whole network in 2007.

Incumbent railway undertakings

The incumbent RUs have disappeared in Britain due to the actions restructuring the railway system in 1994. In all other case States, incumbents have transformed and have remained State owned, even though often directed to operate commercially and be profitable, and are dominant on the market. A summary of the current ownership and structure is given in Table 48.

In the Netherlands and in Sweden the former passenger divisions of the incumbent RU have become independent operators devoted to passenger transport only. German railways *DB*, as BLS in Switzerland, are now holdings with companies specialised in the different parts of rail infrastructure management and railway operations. *SBB* and *SNCF* are companies with separated accounts for the different sectors (*SBB* including also infrastructure management and *SNCF* carrying out by law some of the task of the IM) and are also the only companies that have not been exposed to (the threat of) competition. The one incumbent company potentially exposed to competition is *NS* who holds a 10 years' concession for core network rail services in the Netherlands that is likely to be renewed in 2015. *DB* and *SJ* are normally exposed to competition since they take part in tenders and operate on the long distance open access market.

Looking at the ownership of the freight companies obtained from the reorganisation of the incumbents, Britain and the Netherlands are the only case States where the formerly State owned freight operator has been sold to third parties.

A classification of the current arrangements of the RUs and of the IMs resulting from the former integrated railway companies is presented in Table 49.

Table 48. Summary of current ownership situation of incumbents in the case countries

	IM	**Passenger sector**	**Freight sector**
France (*SNCF*)	State owned	State owned	State owned
Germany (*DB*)	State owned	State owned	State owned
Great Britain (*BR*)	Sold to other parties	Sold to other parties	Sold to other parties
The Netherlands (*NS*)	State owned	State owned	Sold to other parties
Sweden (*SJ*)	State owned	State owned	State owned
Switzerland (*SBB*)	State owned	State owned	State owned

Reading the table by rows, cells with continuous borders indicate complete separation of actors (they have become independent organisations) and cells with dashed borders indicate that they belong to the same holding company (it is only the case for Germany, among the countries listed here). Cells with dotted borders indicate accounting separation within a single company.

Table 49. IMs and incumbent rail undertakings, current arrangements

Independent separate passenger and freight RU(s)	Independent mixed passenger and freight RU	Passenger and freight RUs part of the same holding as the IM	Passenger RU, freight RU, and IM part of a vertically integrated company with separation of accounts
Independent IM	Independent IM		
Britain, The Netherlands	*France*	*Germany, Switzerland*	*Switzerland*

The last column refers particularly to *SBB* in Switzerland. It should be noted that *SBB Cargo AG* is a separate legal entity but it is run like a division (SBB annual report, 2010).

Capacity allocation arrangements

In all cases examined, except two, capacity allocation is the responsibility of the IM, being it independent of the major rail operator (as in Britain, the Netherlands and Sweden) or part of the same holding (Germany). In all those cases a Regulator exists that may act on compliant or *ex officio*. France stands out as an exception since capacity allocation is nominally with the IM but this, by law, has to subcontract key activities to the *DCF*, the *Direction de la Circulation Ferroviaire*, an independent body within the incumbent operator. The other exception is Switzerland with *Trasse Schweiz*, not an IM but a separate body responsible for capacity allocation only, and co-owned by the three major railway companies and by the Swiss Public Transport Association. *Trasse Schweiz* is not supervised by a Regulator similar to those present elsewhere but by an Arbitration Commission (*SKE*). The latter has a remit covering access to infrastructure falling within that of the Economic Regulator elsewhere, but can act only on complaint.

Table 50. Current arrangements for capacity allocation

with independent IM	with capacity allocator co-owned by operators	with capacity allocator co-owned by operators	Subcontracted to independent section of the incumbent RU	with IM part of holding as major RU
Supervised by Regulator	Supervised by arbitration commission	Supervised by arbitration commission	Supervised by Regulator	Supervised by Regulator
Britain, the Netherlands, Sweden	*Switzerland*	*Switzerland*	*France*	*Germany*

In the cases of the Netherlands and Sweden, capacity allocation was the responsibility of sections of the main railway operator after infrastructure and operations separation and before being transferred to the IM.

Traffic control arrangements

Traffic control is the responsibility of the IM except in the case of France where it is with *DCF*, *Direction de la Circulation Ferroviaire*, part of the operator *SNCF* but acting independently of it. Switzerland includes also small special case where a stretch *SBB* lines is managed by *BLS*.

Table 51. Current arrangements for traffic control

With independent IM	Subcontracted to independent section of the incumbent RU	with IM part of holding company as major RU	with IM part of same company as major RU
Britain, the Netherlands, Sweden	*France*	*Germany, Switzerland*	*Switzerland*

In the Netherlands and in Sweden, similarly to capacity allocation, traffic control was handled by the major operator before being moved to the IM. This model, which still applies to France, is likely to disappear in the future also following the pressure from the Commission (see the discussion in 3.3).

Station management

Station management shows a mixed picture. *SNCF* manages stations in France, German railway stations are managed by a company within the *DB* holding, and Swiss railway stations within the remit of *SBB Immobilien* or *BLS infrastruktur*, the *BLS* IM. In the Netherlands the commercial parts of the stations are managed by NS Stations and the remainder by the IM. There are also two instances of tiered systems: in Britain and in Sweden. In Britain major stations are managed by the IM *Network Rail*, and the others by the RU in whose franchise they are. In Sweden *Jernhusen* owns and manages the major stations while the IM owns many other stations, and simpler stops are the responsibility of local communities.

Table 52. Current arrangements for station management

With major RU for the commercial part and with IM for the remainder	Tiered system - major stations managed by special company - other stations by the IM or local communities	Tiered system - major stations managed by a special company - other stations by RU using them	with IM part same of holding company as major RU	With section of the incumbent RU
The Netherlands	*Sweden*	*Britain*	*Germany, Switzerland*	*Switzerland, France*

Infrastructure management and infrastructure maintenance

All IMs descend from the former integrated RUs except for the British one. The IMs are independent of operators in France, Britain, the Netherlands and Sweden. Sweden has an independent and State owned IM and is the first State among those studied that chose such an arrangement and that did so for domestic reasons. Also Britain separated infrastructure management for domestic reasons and it is the only case, among those reviewed, where the

IM has been privatised and now is a not-for-dividend company that has to reinvest its possible profits. Germany has a privatisation options for the companies part of the State owned *DB* holding, therefore for the IM *DB Netz* as well, but it has also a provision to retain State control of the IM in case of privatisation. The Dutch IM *ProRail* is a State owned company independent of operations and, if it were to change at the end of its concession (the current one is from 2005 to 2015), it must be a Dutch company by parliamentary choice made when the law setting up the current organisation was discussed.

Ownership of IMs is depicted in Table 48 above, while their independence or relation with incumbent RUs is illustrated in Table 49.

Another distinction that can be made is between multimodal and rail-only IMs, as in Table 53. Note that the only multimodal IM among those examined, the Swedish *Banverket*, is also independent and has wider role than that of a pure IM: it has recently been given the responsibility for contracting long distance PSO services, by any mode.

Table 53. Current modal arrangements of IMs

Rail only IM	Multimodal IM
Britain, France, the Netherlands, Germany, Switzerland	*Sweden*

The row on infrastructure maintenance on the charts was compiled mainly to note where the relevant production unit of the IM has been privatized, which has happened in Britain and most recently in the Netherlands (until 2010 the major contractor, *Strukton*, was part of the *NS* group, rather than of the IM) and in Sweden, where in 2010 *Infranord* was set up from the privatisation of the production unit of the rail infrastructure *Banverket*. A more detailed look at this part of the railway industry would require a separate investigation.

The new entrants in passenger operations

New entrants in passenger operations have appeared in all States examined except in Switzerland, where they are not admitted (unless we count joint ventures of *SBB* and foreign companies). Britain has a market covered only by new entrants. In France, new entrants may only work as sub-contractors of *SNCF*, while in the Netherlands they may operate only if they place the winning bid for a line of regional interest, out of the core network. New entrants may operate practically anywhere and on any service in Sweden and in Germany. In Sweden they may work on contracted or open access long distance transport and have been present since 1990 in contracts for regional PSO services (most recently local services may be set up also on open access grounds). In Germany new entrants operate on regional transport as PSO transport contractors and have a very minor presence on the long-distance market segment even though that market is open. The current arrangements are summarised in Table 54.

Evolutions of new entrants concern mainly the entrance into the PSO services markets first (or the franchises in Britain) and then in open access markets. Interestingly, Alexandersson and Hultén (2008) note that in Sweden some of the new entrants in the passenger sector come from the freight market. Their role is minor in open access so far and confined to niche

markets (e.g., low cost and luxury services in Sweden), while they claim a larger role in concession in the Netherlands. There the extension of the service on the core network (currently on concession to *NS*, the incumbent) is under review and regional operators have proposed to split it and tender it separately.

Table 54. Current arrangements for the entrance of new operators on the national passenger markets (this table does not refer to international passenger traffic)

Long distance services	Allowed	Not allowed	Not allowed	Not allowed
Regional/local services	Allowed	Allowed (on concession only)	Admitted only as subcontractor of *SNCF*	Not allowed
	Britain, Germany, Sweden	*The Netherlands*	*France*	*Switzerland*

The Safety Regulator

A major distinction with Rail Safety Regulators is about whether they are part of the same institution as the Economic Regulator. This is the case in Britain and in Sweden. In France, Germany, the Netherlands as well as Switzerland, the Safety Regulator is a separate institution focusing on safety.

Table 55. Current arrangements of Safety Regulators

Safety Regulator separate from Economic one	Safety Regulator together with the Economic one
France, the Netherlands, Germany, Switzerland	*Britain, Sweden*

It should be mentioned that in Britain part of the Safety Regulator remit has been initially delegated to *Railtrack* (the private IM) and was then returned to the *Health and Safety Executive* before being delegated to the *ORR* as it was deemed improper that *Railtrack* could decide on the safety arrangements of companies it made business with.

The Competition Authority and the Rail Economic Regulator

According to EU law, Regulatory Bodies should play a dual *ex post* role in ensuring competition in the rail market. Firstly, they should act as an appeal body for discriminatory treatment related to network statements, allocation process, charging scheme and safety certificates. Directive 2001/14/EC sets out the basic requirements. For instance, it contains no legal basis for Regulatory Bodies to guarantee fair competition in rail related services. That said, Member States can enlarge the Regulator's scope to encompass rail related services. Secondly, Regulatory Bodies shall also have the power to request information. They have to decide and take action within two months from receiving information. In order to adequately fulfil the above mentioned roles, Regulatory Bodies should be independent from any IM and/or RU.

In Great Britain, the Netherlands and Sweden, Regulatory Bodies play a strong role and have high credibility. They are independent, adequately staffed and competent. They cover also rail related services (which is not required by EU law) and have access to a large amount of information and data, which enable them to carry out market analysis. It is important to note that these countries have a strong market-based business culture backed by a regulatory regime. Rail operators negotiate contentious matters and find an agreement amongst them before making an appeal to the Regulatory Body. They would rarely dare to refuse to provide a service to competing companies, knowing that the case could be referred to the Regulatory Body; this also allows them to preserve good commercial relations. In Sweden a new Regulator was created in January 2009 to cover rail, road, air and maritime transport and ensure a level playing field between all modes.

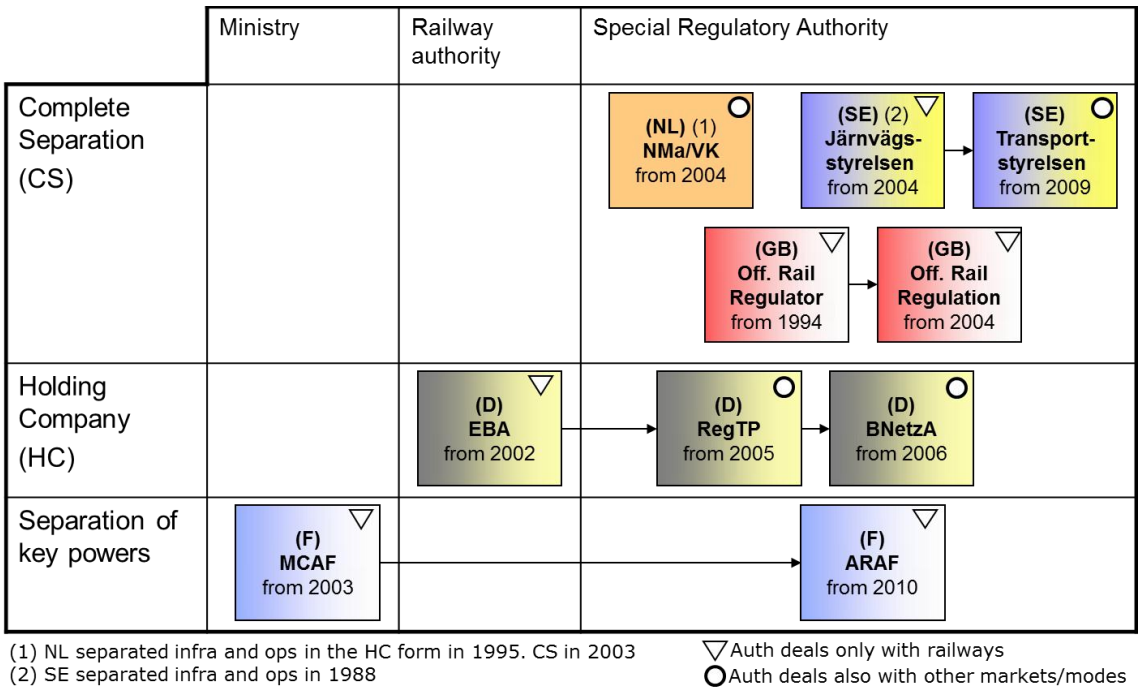
In Germany the Regulator plays a very strong role and has more powers than those required by EU legislation. It plays both an *ex ante* role (it can prevent distortion of competition) as well as an *ex post* role (it can solve competition issues). In addition it has powers of *ex officio* investigation, i.e. it can act even if no complaint has been filed. The Regulator dealt with several cases of distortion of competition caused by preferential treatment to *DB*'s subsidiaries.

In France, the Regulatory Body was until recently poorly staffed and had very weak powers and competences. In order to solve those issues, a law was passed in December 2009 to set up a new Regulator, which has started operations in 2010 and is fully independent.

Switzerland has an Arbitration Commission that deals with capacity allocation on appeal whilst the Federal Office of Transport has some of the remits of a Regulator, such as minimum pricing of paths. However, there is no Regulator as encountered in the other case countries.

The bodies responsible for economic regulation seem to be going in a similar direction, given the EU Directives recalled above: they have all become independent Authorities and there is no case where the Regulator is part of the State or was a former Safety Authority entrusted also with economic regulation. The evolution is summarised in Figure 20, which pictures the evolution of the regulatory arrangements in the case countries against the classification of railway systems by Nash (2008). The picture does not include Switzerland, where part of the remit of the Regulator is with the Federal Office of Transport and part with the Arbitration commission but there is no Regulator as in other countries.

Figure 20. Evolution of the Railway Regulators in the case countries



Source: Compiled by authors

Again Figure 20 shows the point made in the previous paragraph: some Economic Regulators are also concerned with safety, and it can also be read that some Regulators cover more markets or more modes. This categorisation is further reported in Table 56 below.

Table 56. Multimarket remit of Railway Economic Regulators

Regulator focuses on rail	Regulator covers other markets or transport modes
France, Great Britain	*Germany, the Netherlands, Sweden*

A comparison of the characteristics of the Regulators, including SKE for Switzerland, is given in Table 57.

Table 57. Summary of regulatory arrangements

Regulatory Authority	**France**	**Germany**	**The Netherlands**	**Sweden**	**United Kingdom**	**Switzerland**
Name	*Autorité de régulation des activités ferroviaires* (*ARAF*)[20]	*Bundesnetz Agentur* (*BDA*)	*Nederlandse Mededingingsautoriteit (NMa) /Vorvoerkamer*	*Transportstyrelsen* (Swedish Transport Agency)	*Office of Rail Regulation* (*ORR*)	*Schiedskommission im Eisenbahnverkehr* (*SKE*)
Creation (current remit)	2010	2006	2004	2009	2004	2000
Nature of Regulatory Authority	Independent	Independent	Independent	Independent Agency under the Ministry of Transport	Independent	Administratively part of the Federal Office of Transport
Scope of intervention	Limited to railway sector; excludes safety (*EPSF*[21])	Includes other network industries; excludes safety (*EBA*)	Limited to rail market; security is supervised by independent NSA (*IVW*)	All modes; includes safety	Limited to railway sector; includes safety	Rail Capacity allocation, access charges
Role and mission	Allow non-discriminatory access to network	Market and network regulation to develop and promote sustainable competition based on sector-specific regulatory laws	Regulation; non-discriminatory access to rail and services; user charge	Fair regulation, economic emphasis, rail Competition Authority	Independent, fair and effective regulation for safe, well maintained and efficient railways	Judicial activity: SKE appeal body for complaints on network access. Supervises capacity allocator *Trasse Schweiz*
Board composition	7 members appointed by different Agencies[22]	N.A.	3-member executive board	7-member council	7 non-executive directors and 5 executive directors; Appointed by the Secretary of State for Transport	Board of 7 members
Sanctioning powers	Can sanction discriminatory behaviour (up to 5% of revenue)	Can sanction discriminatory behaviour	Fines until 10% of revenue	No fixed rules on the level of fines. Court decision is required before a fine is imposed	Can sanction discriminatory behaviour	Legal powers in case of access; no power to sanction in case of supervision of *Trasse Schweiz*
Enquiry/information powers	Strong Actors must submit relevant data	Strong Actors must submit relevant data	Strong, as in competition law	Strong Actors must submit relevant data	Strong Actors must submit relevant data	*Ex post* enquiry and information powers in case of network access. No power at all in case of *Trasse Schweiz*
Relation to competition authority	Cooperation with *Autorité de Concurrence* (*AC*)	Cooperation with *Bundeskartelamt* (*BKA*)	Same organization (combined)	Co-operative (the Competition Authority is *Konkurrensverket*)	Cooperation with *Competition Commission* (*CC*)	None
Annual budget	8 million euros	160 million euros for all sectors; exclusively Government-financed	N.A. Financed by Ministry of Transport	6 million euros	31 million GBP (13 in licence fees and 18 in safety levy)	CHF 459,600 (2009) equal to EUR 366,500 approximately
Personnel	50	50	7 FTE on rail regulation (380 FTE all of *NMa*)	65 FTE in the Rail Department	300 (120 for economics and 180 for safety)	1 FTE
Relationship to Parliament	Annual report	Annual report; Bi-monthly meeting of *Eisenbahninfrastrukturbeirat*[23]	Annual report	Annual report + quarterly meetings	Annual report; Board accountable to Parliament	Annual report addressed to the Federal Assembly
Legal structure	Independent administrative Authority with "moral personality"	Separate higher Federal Authority within the scope of the German Federal Ministry of Economics and Technology	N.A.	Independent Agency under the Ministry of Transport	Non-ministerial Government department	Status of extra parliamentary commission. Administratively part of the Federal Office of Transport

Source: Compiled by authors

[20] As of 1st January, 2010 *ARAF* replaced MCAF (Mission de Contrôle des Activités Ferroviaires).
[21] *Etablissement Public de Sécurité Ferroviaire.*
[22] Président de l'Assemblée nationale, le président du Sénat et le président du Conseil économique, social et environnemental.
[23] 16 members from Bundestag and 16 members from Bundesrat.

3.11 Conclusions

From the extensive review of institutional arrangements and dynamics carried out in this chapter we conclude with a number of points.

Each country is a type

A first striking point from the presentation above is the variety of approaches developed by the different countries and the fact that, after more than 10 years in most cases, and up to twenty in one, they have not converged. Developments continue and so far no country has reversed its transformations, even partially (except in the political debate, where further reaching changes have been discussed at times). Also, over time no country seems entirely settled. All this leads to the intermediary conclusion that each country actually constitutes a type in itself and that it is very difficult to group countries into similar types.

If we look back at the very high level typology we used to choose the countries to be reviewed (which was previously used in CEC, 2006, and Nash, 2008), it is immediate to see that it still stands, and the countries we have surveyed fall in the same category as they would in 2008. That typology is based on the degree of vertical separation of railway industries:

- Complete separation, still referring to Sweden, Britain and the Netherlands;
- The holding model, still applying to Germany;
- The separation of key powers, still relevant for France.

We may propose a typology for each segment of the rail sector as in the previous section, but in several cases the types are almost as numerous as the States. There is however convergence on the freight segment arrangements and, to an extent, on the regulation, in keeping with the push from the Commission Directives. However, these Directives aim at a number of core functions of the Regulators but debate is still open on other as important functions such as the regulation of rail related services, which some Regulators cover.

Importance of local drivers and context in the reforms

It is also important to note how many changes have happened for entirely domestic reasons, among which the inception of the Swedish and British reforms: the EU Directive are pressing but have not necessarily been the driving force.

Reforms have often been introduced in stages, but developments continue

In most cases the reforms have been introduced in stages: tests of regionalisation have taken place in France, the Netherlands, and Sweden before the reforms were generalised, and the Dutch core network concessionaire was given a transition period to become profitable, during which there were no access charges. Moreover, at a later stage of the Dutch developments, a transition period was set so that both passenger operator and IM would adapt to work with performance objectives. The Swiss railway reform was even conceived as a "rolling" reform.

The continuing developments, also for reforms preceded by tests, demonstrate that no solution may be defined at the outset and that adjustments will need to happen.

Need to perfect interfaces

It is also interesting to note that after many years of changes the governance of the interfaces still needs to develop, and it is likely to go along this way, given that Britain still tries to perfect the incentive mechanisms, and that Regulators and Competition Authorities have taken much action in all countries. Others have interfaces with no incentives as in France, where the IM pays a fixed sum for the services it obtains from *SNCF*.

This demonstrates how complex a railway system is, possibly even more if national particularities (as the interfaces with national and local Governments) are considered.

It is complex also in terms of new relationships among actors and among public actors, and the elected as well as the nominated ones. The experience of the frictions among the Regulator, the Government, and the *SRA* in Britain stresses this item.

More focus on public involvement

Liberalisation, and possibly privatisation, of the railway system at any level of unbundling are far from implying disengagement of public powers from the sector. It seems they imply instead clearer involvement and more focus. Systems to govern interfaces need to be put in place and controlled, services to subsidise need to be identified, and funds need to be clearly channelled to them. Similarly, choices on infrastructure development and maintenance need to be made. Unbundling has been a way for the Swedish Government to direct its funds especially to infrastructure. Looking at infrastructure beside funding, it is clear that public powers intend to continue having a strong influence: in the Netherlands the infrastructure concessionaire has to be a Dutch company (as mandated by the Parliament), and the German Parliament, working towards the 1993 reforms, voted for the State to remain the majority shareholder of the infrastructure, if the privatisation option were even chosen.

Regionalisation, a widespread trend with satisfactory results

The developments of the railway sector have come along with regionalisation of responsibilities. These have happened independently in each local administrative area, as demonstrated by the variety of approaches in all countries, except Britain. This has implied a new role for the public bodies, which leads to overcoming administrative boundaries, if the cooperation among PTAs in the Netherlands and in Sweden is to be taken as an example. Sweden is very advanced this perspective. The latest legislative developments established that PTAs are to be formed at regional level (above the previous level) to account for passenger flows rather than administrative divisions.

Regionalisation has gone along with public tendering in the Netherlands, Sweden, and partly in Germany, while this is not possible in France due to *SNCF* being the only operator. Again, each country developed regionalisation in its own way and Transport Authorities have their local methodology to set up contracts with operators. While exchange of best practice is promoted in the Netherlands, this is an indication neither of an intention nor of the need to have convergence of methods. Experience reported is broadly positive, with higher patronage, more passenger satisfaction, new rolling stock, better integration with other transport services, reduced subsidies (in case of public procurement). However there have also been issues with unfulfilled bids, predatory behaviour of bidders, coordination of timetables, and ticketing.

Multimodality

We have noted recent developments towards a multimodal view for public Agencies. Sweden stands out in this respect, with a multimodal IM and a multimodal Regulator. The IM also took up the role of procurer of PSO services by any transport mode which was previously allocated to a multimodal Agency. Also in the Netherlands there is interest from the Provinces towards taking more important a multimodal role.

New entrants are in PSO services, open access is still of little relevance

Services in the responsibilities of Local Authorities, financed as PSO services, are those were new entrants have developed an increasing presence on the passenger market, sometimes coming from freight services (as there have been some cases in Sweden) or from the bus services (as in the Netherlands).

Open access *per se*, for the limited existing experience, does not imply more services and more operators. The German experience with short-lived developments seems to point in this direction. The small Dutch experience could have been more successful if the new entrant had found a more favourable context. Still it had problems due to the short stretch of line served. The Swedish experience with open access, begun only very recently, suggests that limited operations may point at niches, low cost or luxury travel, at least in that case.

Partially converging regulatory systems

Regulators are the only actors in the railway systems examined that to some extent converged. However, while Rail Regulators have important information powers there are several differences as to the enforcing powers and as for the remit. This, for instance, includes whether Rail Regulator remits extends to rail related services and, on a different matter, whether the same body is in charge of safety as well as economic regulation.

Regulators sometime have a policy related role. This applies also when they are asked to express opinions on proposed changes.

Moreover, despite a common EU framework for competition policy, Member States appear to have found different institutional arrangements as to how they divide the work between Competition and Regulatory Authorities in the railway sector. Both the Competition and the Regulatory Authorities need to evolve in line with the transformation of the industry. Each country studied seems to be on its way to finding the "right" institutional arrangement to divide work between both Agencies. Again, the chosen arrangements are heavily influenced by the existing institutional history and preferences towards administering the economy (i.e., more or less interventionist and with more or less power devolved to the Authorities).

Great Britain, a distinct case

The much examined railway system of Great Britain seems to be of relevance for comparisons with the others that we have reviewed. The system is different due to the absence of an incumbent or a dominant operator, and the important regionalisation that we have seen in all other countries did not happen much in Britain, with the central Government taking the role of organising Authority for all services. Britain is also the only case where use of leased rolling stock has been wide and systematic since the reforms.

There are however areas in which the British experience may be of use beyond its particularities: the effort to set procedures so as to make the transparent the role of the actors in the determination of network charges and the allocation of public funds to the IM[24], and the debate about incentives alignment and behaviour of actors. Both areas relate to one broader topic, namely interfaces, and seem still in their infancy, notwithstanding the long British experience: the *HLOS/SoFA* procedure has been used once only while the debate on the alignment is a matter much brought up by the recent *McNulty Report* (2011).

Britain, to introduce a different point, is also the only case in which a reform with so wide immediate effects has been applied very quickly.

[24] The unique *HLOS/SoFA* procedure (see the section on Regulation in Great Britain starting on page 47) to manage the requests from the Government to the network manager, the money the Government may spend and set the network charges.

4 The performance of railways

The previous chapter provided an exhaustive account of the institutional developments in the countries under consideration. Now it is time to look at the flipside of the coin: performance. If we are to establish a correlation – or even a causal link – between institutional reforms and performance, we need detailed data on both. While our information on the governance of the railway sector was qualitative in nature, in this chapter we will present a wealth of quantitative data.

Throughout, the purpose is to approach the question of performance as broadly as possible. Where scholars have tried to evaluate the consequences of liberalisation in the past, they have often tended to use high-powered econometric tools, which set high demands for the available data[25]. This, in turn, has led them to focus on those aspects of performance where high quality data is most generally available: economic and operational performance. However, in many cases industry actors have argued against (further) liberalisation by emphasising customer satisfaction and similar social performance aspects[26]. Given that our overall analysis is qualitative in nature, there is no reason not to cast the widest possible net.

In what follows, we will begin by summarising the general academic literature on PIs. Then we will provide some background on PIs in the railway sector, before moving on to the main topic of this chapter: trends in performance. Initially, we will present these trends by category of performance, where we distinguish between technical, operational, social economic and environmental performance. Subsequently, however, we will also present these trends on a per-country basis. Finally, we will present some early conclusions on the link between various institutional reforms and performance.

4.1 Performance indicators

Before moving on to the actual data on railway performance, we will first briefly discuss some of the conceptual and theoretical background of the notion. First of all, this means considering the difference between identifying performance purely with outputs or outcomes and identifying performance with efficiency or effectiveness, i.e. with the relationship between outputs/outcomes and inputs. Secondly, we will take a moment to review the literature on performance in general and on working with quantitative performance measures, as opposed to a more qualitative approach.

Generally, public administration literature distinguishes four types of performance (Bouckaert and Halligan, 2008):

- Performance as outputs: the services or products produced;
- Performance as outcomes: the effects produced by the outputs;
- Performance as efficiency: the ratio of outputs to inputs;
- Performance as effectiveness: the ratio of outcomes to inputs.

[25] Cf., for example, Cantos & Maudos (2001), Friebel, Ivaldi & Vibes (2008) and Lalive & Schmutzler (2008). These studies are discussed further below.

[26] Cf. for example this opinion article by then-NS chairman Bert Meerstadt: "Reiziger niet gebaat bij gerommel in spoorsector", NRC Handelsblad 6 April 2004, where he argues against further reforms that were proposed at the time by emphasising the customer satisfaction performance of *NS*.

While outcomes and effectiveness are at least as important for performance evaluation as outputs and efficiency, they stand at a greater remove from the activities being evaluated, because the relationship between outputs and outcomes is greatly influenced by the environment of the sector. Our choice of performance measures in this chapter is somewhat pragmatic: because we are relying on data collected by others, data that was generally gathered in order to evaluate the performance of individual actors within the railway sector, rather than the performance of the sector as a whole, the data available tends to focus on things that individual actors can influence directly[27]: outputs and efficiency.

A substantial body of literature on performance management has developed since the late 1970s. The first attempts at performance evaluation and review were associated with the failed attempts at large scale strategic planning in the 1970s (Boland & Fowler, 2000)[28]. Performance measures can be used for monitoring trends in performances or for comparative analysis of companies' performances on key performance indicators (KPIs). The measures can be used to evaluate the companies' performances and to learn about and improve corporate policies and optimize management processes. Through effective communication, performance measures can also be used as a marketing tool to enhance corporate reputation (Gelders, Galetzka, Verckens, & Seydel, 2008).

Cole and Cooper (2005) argue that PIs are fraught with problems. For instance, taking the case of railways, they criticize the narrow scope of PIs (strongly centred on punctuality and reliability whilst focusing only slightly on one aspect of safety[29]). They argue that the use of PIs reflects a wider political agenda (the maintenance and support of capitalism). For them, the use of railway PIs is an example of "*how there is an increasing tendency on the part of Government to quantify what cannot be quantified or 'make the invisible visible'*" (Cole & Cooper, 2005, p. 199). Whereas the British may have the most sophisticated and transparent system of PIs, they argue that the PIs used by Government to render the railways accountable are narrow. Di Francesco (1999) identifies various problems relating to performance measurement in the public sector (output specification, quality and effectiveness measurement, client identification) and suggests some possible ways of coping with them. Notwithstanding the criticism voiced, the question remains as to whether the information that these PIs transmit to the public gives a realistic impression of the quality of service provided to rail users.

Bouckaert (1995) identified four main performance measurement criteria: validity, reliability, functionality and legitimacy. In this analysis, validity and reliability are defined as they normally are, while functionality refers to the indicator's ability to contribute to performance improvement and legitimacy refers to the extent to which the indicator is accepted by stakeholders.

In their broad literature review of performance measurements, Micheli and Kennerley (2005) point to the differences between private and public sector (for instance in the public sector PIs are always subject to political and social choices). Policy makers and managers of rail organizations have different interests and require different information. Managers are typically interested in performance at an operational level, seeking to improve the technical

[27] This is in line with the literature in principal agency theory, cf. Holmström (1979).
[28] Boland and Fowler also point to the difference between public and private sector performance. The former has to account to several stakeholders while the latter has to respond solely, at least in theory, to its shareholders.
[29] For instance track maintenance or crime levels.

efficiency of their operation(s) while policy makers are primarily interested in performance at an aggregate level, seeking to improve the performance of the industry as a whole (Productivity Commission, 1999).

Rodriguez et al. (2007) identify a number of performance measures for utilities, including commercial efficiency, technical efficiency, financial performance, capital expenditures and cost of capital. In many cases, the Government and Regulator seem to address all these objectives at the same time with no particular priority. This is not particularly surprising since different stakeholders, private and public, with different scope of action (e.g., Competition Authority or National Safety Authority) are in charge of a given task which influences performance. An additional difficulty comes from the fact that in the past a Ministry of Department of Transport would have been in charge of optimizing all these performances. Nowadays, the remit of the Ministry has in many ways shrunk: their scope of action and authority has been reduced. New Agencies have been created, e.g., slot allocators, independent Regulatory Authorities, some as a result of EU-mandated Directives, and some as the result of domestic reforms. All these organizations have their own PIs with the risk of creating local optima at the cost of a global sub-optimum.

4.2 Performance indicators in the rail sector

With these considerations in mind, the next step is to consider PIs in the railway sector specifically. In this section, we will discuss some railway-specific literature on performance, followed by an overview of the performance frameworks that have been developed for practical use.

One of the major difficulties in evaluating the performance of the railways is that one element of the value chain, the infrastructure, is often a natural monopoly, while the rest of the sector is also highly concentrated at times. Comparison between different firms operating in the same country is therefore essentially impossible. While the use of international benchmarking can potentially bring a solution, there are problems of comparability between countries, in part because not all countries use the same measures or simply because of access to data (either because there are no measure or because they are not public). International comparisons are rendered even more difficult given the different network topologies, demographics or historical developments of the national sectors. The technical (e.g., ratio of high speed/conventional lines) and political (e.g., public policy objectives carried out by the Government, timing and mode of liberalization) environment create large asymmetries[30]. PIs allow us to empirically assess the technical performance of different transport modes' capacity to "move people around". Basic technical performance calculations can be useful for network's global performance analysis and for modal comparison, analysis and evaluation by bridging both physical attributes (length, distance, configuration, etc.) and time-based attributes (punctuality, regularity, reliance, etc.) of networks (Rodriguez et al., 2006). While these indicators provide useful information, they suffer from a number of limitations. First, achieving consistency of measurement over time can present a challenge. For instance, in the case of punctuality, changes in what is considered a delay and how it is measured varies over time within countries. This may be the caused by an operator's attempt to "smooth" degradation of service but it may also be the result of a change in legislation or a change in

[30] For this reason, the present study focuses on changes in performance within a single country rather than comparisons between countries at the same time.

the market's demands. Second, the aggregate nature of PIs often masks large differences by type of activity. To take the case of punctuality again, it is much harder to run trains on time in a dense network than in the countryside. One also has to question how to weight punctuality across services offerings. For instance, should punctuality of a rural train with few passengers be considered identical to a long-distance train running at peak hours? If not, how to determine the weighing of both services?

Some of the most commonly used indicators are provided in Table 58 below.

Table 58. Common performance indicators in rail transport

Indicator	Measure	Description
Passenger density	Passenger-km/km	Standard measure of transport efficiency
Mean distance travelled	Passenger-km/passenger	Measure of ground-covering capacity
Mean number of trips per capita	Passengers/population	Relative performance of transport modes
Mean occupation coefficient	Number of passengers aboard/total carrying capacity (%)	

Source: Adapted from (Rodriguez et al., 2006)

Most indicators tend to focus on straightforward efficiency, i.e. single input-output relationships (Wolff, 2011). There are, however, authors who have considered both efficiency and effectiveness. For instance, Martin (2008) proposes to combine technological and economical effectiveness with economic and ecological efficiency. Unfortunately those KPIs only indirectly capture customer satisfaction (itself a result of punctuality, level of service, accessibility, prices, etc.). Lan and Lin (2006) propose similar KPIs in the form of technical efficiency (ratio of inputs to outputs), technical effectiveness (ratio of inputs to outcomes) and service effectiveness (ratio of outputs to outcomes). While rather crude, these KPIs do nonetheless provide some quantifiable indicators.

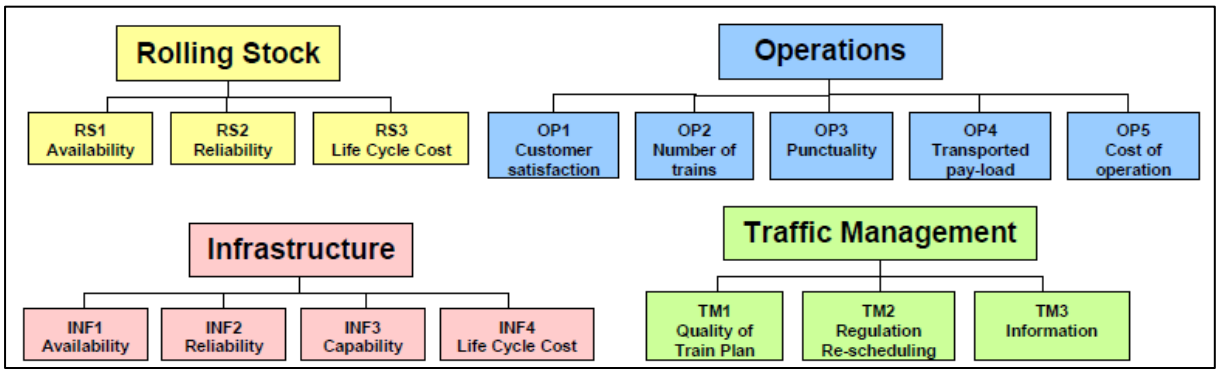
While there is abundant literature on "individual" performance (e.g., technical efficiency or economic efficiency), few authors have addressed the issue of multiple regulatory objectives. For instance, Campos & Cantos (2000) identify a number of regulatory scenarios based on different modes of unbundling and match them with multiple performance objectives: fiscal, internal efficiency, dynamic efficiency, risk minimizing, capacity allocation and equity. Not surprisingly, the resulting matrix shows that no single scenario is able to fulfil all objectives at the national level, let alone at the EU level. For the OECD (2006) "the general objective of Governments with respect to the rail sector is to force the end-user prices to be at an efficient level (taking into account the price of substitute services) with an optimal level of service quality and variety, a high level of productive efficiency (and therefore a minimum level of subsidy), and an on-going efficient level of investment and innovation in the rail sector". As we will see in the following sub-sections, regulation can be linked specifically to operational performance, for example via measures to incentivize operators to improve punctuality (Gibson, 2005; Vromans, Dekker, & Kroon, 2006). In many countries punctuality is the main PI[31]. It can also be aimed at social performance (Héritier & Schmidt, 2000). In fact, railways tend to be under constant surveillance from their stakeholders (Gelders, et al., 2008). Finally,

[31] Cf. below. Other important measures are information supply in trains and stations and cleanliness of trains and stations (Gelders, et al., 2008).

one can regulate for technical performance (Janic, 2008; Yu, 2008). While regulation can be geared towards improving all these forms of performance, most of it seems to aim for economic efficiency[32]. This emphasis on financial regulation can be attributed to the history of financial distress that plagued the railway sector during the past decades.

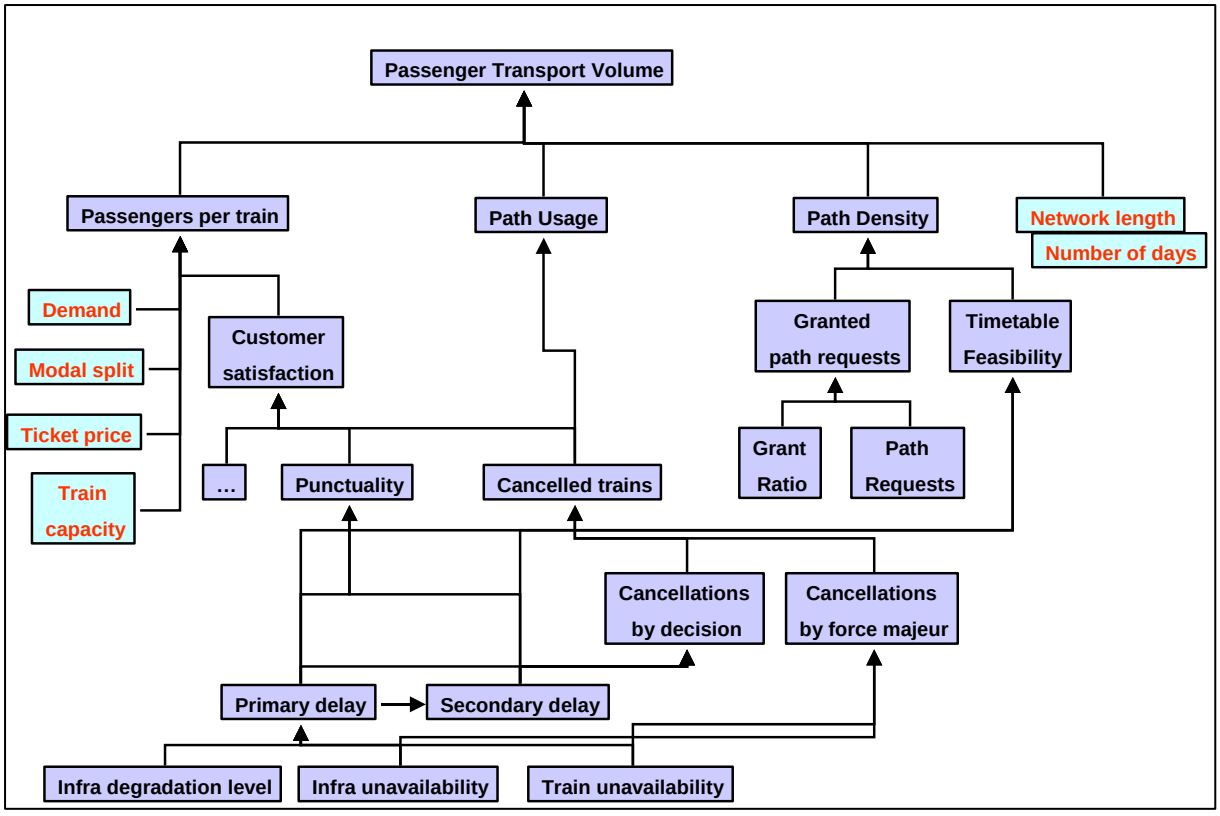
Generic models and data sources

Figure 21. InteGRail KPI



Source: InterGRail (2010)

Figure 22. The Ding et al. model



Source: Ding et al. (2008)

[32] Regulation is defined here as a specific form of governance, a set of authoritative rules, often accompanied by some administrative Agency, for monitoring and enforcing compliance (Jordana & Levi-Faur, 2004).

In order to move beyond these limitations, academics have worked with industry practitioners to develop more advanced models of performance. Throughout, the purpose of these models is to exploit the interrelationships between the different relevant aspects of performance. Among them, the InteGRail (2010) consortium provides a standard railway high-level KPI structure encompassing rolling stock, operations, infrastructure and traffic management along a number of criteria. A second, more complex model has been developed by Ding et al. (2008).

The most important source of railway data at a global level is the UIC, which publishes a number of statistics related to KPIs. They include staff, train-km, gross train-ton km (for both passenger and freight), passenger-km and ton-km (for freight).

The European Commission (DG MOVE) understands the performance of RUs as falling in the following categories[33]:

- Employment;
- Financial health;
- Rolling stock;
- The quality of service and comparison with regard to ticket prices; and
- Safety.

For Europe, Eurostat publishes similar data to the UIC[34]. In particular, the data on transport include the series about modal split and about the ratio of pkm or tkm to GDP. Moreover, the data tables on rail transport are clustered in seven groups:

- Railway transport infrastructure;
- Railway transport equipment;
- Railway transport – enterprises, economic performances and employment;
- Railway traffic measurement – passengers;
- Railway transport measurement – goods (detailed data based on Directive 80/1177/EC or Regulation (EC) 91/2003);
- Railway transport – accidents.

The first three groups refer to general statistics and input (notwithstanding the "economic performances" qualification of part of the third category) while the latter three refer to output.

Additional data, geographically more refined and referring to equipment or origin or destination of goods and passengers are available as part of the regional statistic on transport.

Country level

In contrast to the "holistic" models, National Regulatory Authorities and RUs tend to provide only scarce information regarding performance, except maybe for the United Kingdom's elaborated performance regime monitoring by *ORR*. In recent years, a few more European countries have introduced performance contracts for their railway industries. In considering the choices made by these Authorities, it is important to remember that the optimal choice of PIs for a performance contract is not the same problem as the optimal choice of PIs. After all,

[33] Cf. Jost (2011).
[34] The lack of consistency between the two data sets for certain years or indicators is troublesome.

only the former focuses on the incentives created by this choice for industry actors, which in turn depends on the areas where sufficient incentives are lacking absent Government intervention.

In the UK, the *Office of Rail Regulation* gathers data on myriad PIs in order to inform their decision making. Of particular importance, however, are the indicators singled out in the *High-Level Output Specification* (*HLOS*), the statement from the Secretary of State for Transport outlining the performance he expects from the railway industry. The current *HLOS*, which concerns the period of 2008-2012, contains the following PIs:

- Safety of passengers and employees[35];
- Reliability, which is measured primarily by the so-called "Public Performance Measure", the percentage of trains arriving within 5 minutes of their scheduled arrival time (10 minutes for long-distance trains)
  - A secondary measure adopted by the *HLOS* is the number of trains that arrive at their final destination with a delay of 30 minutes or more, or are cancelled;
  - The *HLOS* also refers to the gap between the poorest performing lines and the best.
- Capacity is measured primarily in terms of the number of passenger-km offered on a given line
  - Load factor, i.e. the ratio of forecast passenger demand to train capacity, is a secondary measure of capacity. It is explicitly based on the total capacity of the train, sitting or standing[36];
  - Capacity is also measured in terms of the demand that has to be accommodated for a given city or London terminus[37].

In the Netherlands, the concessions of both the main passenger transport company *NS* and the IM *ProRail* contain a number of performance goals, which are to be operationalized by the companies themselves after extensive consultation with other industry actors in annual transport and track management plans. The current concessions identify the following performance goals for *NS*:

- Security;
- Punctuality;
- Availability of Seats;
- Information provision;
- Cleanliness.

And for *ProRail*:

- The availability and reliability of the rail infrastructure;
- The cleanliness, accessibility and security of the railway stations;
- The quality of *ProRail*'s intervention in case of disruptions;
- The quality of the capacity allocation;
- The quality of information supply.

[35] Cf. Department for Transport (2007), White Paper on Delivering a Sustainable Railway, Schedule to Appendix A, p. 148.
[36] Cf. Department for Transport (2007), op cit, Schedule to Appendix A, p. 153.
[37] Cf. Department for Transport (2007), op cit, Schedule to Appendix A, p. 151-152.

For each of these goals, the purpose is to identify measurable and achievable performance targets, which can then be used to judge the company's performance *ex post*.

In Germany, there is a *Leistungs- und Finanzierungsverereinbarung*, a performance and financing agreement, but it applies only to the infrastructure companies, i.e. to *DB Netz*, to *DB Station & Service* and to *DB Energie*. The current agreement, covering the period of 2009-2013, is the first of its kind. For the infrastructure companies, it gives seven main PIs (art. 13.2):

- *DB Netz*: Theoretic loss in travel time[38];
- *DB Netz*: Number of "infrastructure shortcomings";
- *DB Netz*: Functionality of Platforms (*DB RegioNetz*);
- *DB Netz*: Assessment of Station Quality (*DB RegioNetz*);
- *DB Station & Service*: Functionality of Platform;
- *DB Station & Service*: Assessment of Station Quality;
- *DB Energy*: Reliability of Supply.

Switzerland, finally, has the longest history of performance contracts, with the earliest *Leistungsauftrag* being decided in 1979. However, these "performance instructions" focused mostly on financial goals. The same was true for the first performance agreement concluded between the Federal Government and *SBB* under the reformed regime in 1999. From 2003 onwards, however, measurable indicators were defined in the agreement, according to the following four categories:

- Safety;
- Usability of the network;
- Optimal use of the network;
- Productivity.

The exact indicators used vary significantly from contract to contract. For the current *Leistungsvereinbarung*, which covers the period of 2011-2012, there are nineteen, although not all of them have a specific target defined[39].

In other European countries, data on performance are generally collected by Transport Ministries or official statistics Agencies, as well as by Eurostat and the UIC. However, in those countries this data is not used for railway governance purposes.

On the whole, it is clear from this overview that most of the PIs available are not systemic, but focus on the performance of individual actors, be it operators or IMs. In the next section, we will explore the available data in further detail so as to select the indicators we will use for our study.

[38] Cf. Annex 13.2.1 par. 1of the 2009-2013 agreement. This indicator is calculated as the additional travel time caused by an "infrastructure shortcoming" that lasts for more than 180 days, added over the entire network. This indicator does not depend on the number of trains or the number of passengers on the affected part of the network.

[39] Fifteen do. The current performance agreement between the Government and *SBB* also lists eight goals where SBB is to report its performance in a qualitative manner.

Performance indicators in this study: availability and quality

In order to evaluate the performance of the railway industry in different countries and under different institutional arrangements, it is necessary to select a number of indicators that satisfy as much as possible three requirements. Firstly, and most importantly, there need to be data available for the indicator for the entire period covered by the study, and the data for that period need to be based on a consistent definition of the indicator. Secondly, there need to be data available for the indicator for as many of the countries considered in this study as possible, so as to facilitate also cross-country comparisons as well as comparisons over time. Again, the definition of the indicator needs to be as similar as possible between different countries. Thirdly, the indicators chosen need to measure as many different kinds of performance as possible. A narrow focus on economic and operational indicators is undesirable.

A good starting point are the five categories of performance proposed by Finger et al. (2010) for network industries generally:

- Technical performance (e.g., resilience, robustness, geographical accessibility);
- Operational performance (e.g., accidents, incidents, punctuality);
- Social performance (e.g., consumer satisfaction, accessibility for the mobility impaired);
- Environmental performance (e.g., GHG emissions, noise production);
- Economic performance (e.g., number of passenger-km and ton-km produced, revenue).

These five types of indicators will be used as a framework when describing below the performance of the railway sectors of the selected countries. First, however, we will examine in further detail in Table 59 and Table 60 which basic indicators are available.

Table 59. Input indicators and general statistics available, along with source and description

Indicator	Source	Description
Length of line [km]	Transport in Figures 2011 (EC, 2011)	Line of communication made up by rail exclusively for the use of railway vehicles. (Eurostat UNECE, ITF, 2010)
Length of high speed lines [km]	Transport in Figures 2011 (EC, 2011)	A high speed line is a line specially built to allow traffic at speeds generally equal to or greater than 250 km/h for the main segments. (Eurostat, UNECE, ITF, 2010)
Expenditure in rolling stock in principal railway enterprises (in million euros from 01.01.1999)	Eurostat	Expenditure by the principal railway enterprises on railway vehicles. (Eurostat, UNECE, ITF, 2010)
Expenditure in infrastructure in principal railway enterprises (in million euros from 01.01.1999)	Eurostat	Expenditure by the principal railway enterprises on new construction and extension of existing infrastructure, including reconstruction, renewal and major repairs of infrastructure. Infrastructure includes land, permanent way constructions, buildings, bridges and tunnels, as well as immovable fixtures, fittings and installations connected with them (signalisation, telecommunications, catenaries, electricity sub-stations, etc.) as opposed to rolling stock. (Eurostat, UNECE, ITF, 2010)
Rail infrastructure gross investment spending (in million euros at current prices)	OECD ITF	Expenditure on new construction and extension of existing infrastructure, including reconstruction, renewal and major repairs of infrastructure. Infrastructure includes land, permanent way

		constructions, buildings, bridges and tunnels, as well as immovable fixtures, fittings and installations connected with them (signalisation, telecommunications, catenaries, electricity sub-stations, etc.) as opposed to rolling stock. (Eurostat, UNECE, ITF, 2010)
Maintenance expenditures in rail infrastructure (in million euros at current prices)	OECD ITF	Expenditure for keeping infrastructure in working order. Expressed in million euros at current prices. (Eurostat, UNECD, ITF, 2010)
Employment (number of employees)	Eurostat	Average number of persons working during a given period in a railway enterprise, as well as persons working outside the enterprise but who belong to it and are directly paid by it. Statistics should include all full-time equivalent employees performing all principal and ancillary activities of the railway (operation, renewal, new construction, road and shipping services, electricity generation, hotels and restaurants, etc.). (Eurostat, UNECE, ITF, 2010)
No of enterprises [no.]	Eurostat	Any private or public enterprise acting mainly as a railway transport operator, an IM or as an integrated company. An enterprise whose main business is not related to railways should be included if it has a railway market share that is not marginal. Only the activities related to railways should be reported. (Eurostat, UNECE, ITF, 2010)

Source: Compiled by the authors based on the sources listed in the table

Table 60. Table of performance indicators considered, along with their source and description

Performance indicator	Source	Description
Total train km	Eurostat	Unit of measurement representing the movement of a train over one kilometre. The distance to be considered is the distance actually travelled. (Eurostat, UNECE, ITF, 2010)
Passengers train km	Eurostat	Unit of measurement representing the movement of a passenger train over one kilometre. The distance to be considered is the distance actually travelled. (Eurostat, UNECE, ITF, 2010)
Rail modal split (passengers) [%]	Eurostat	This indicator is defined as the percentage of trains in total inland passenger transport performance measured in passenger-km. (Eurostat, UNECE, ITF, 2010)
Rail passenger-km [pkm]	Transport in Figures 2011 (EC, 2011)	Unit of measurement representing the transport of one rail passenger by rail over a distance of one kilometre. The distance to be taken into consideration should be the distance actually travelled by the passenger on the network. To avoid double counting each country should count only the pkm performed on its territory. If this is not available, then the distance charged or estimated should be used. (Eurostat, UNECE, ITF, 2010)
High speed rail passenger-km [pkm]	Transport in Figures 2011 (EC, 2011)	Unit of measurement representing the transport of one high speed rail passenger by high speed rail over a distance of one kilometre. (Eurostat, UNECE, ITF, 2010)
Share of high speed rail on total pkm [%]	Authors' calculations based on Transport in Figures 2011 (EC, 2011)	Proportion [%] of high speed rail passenger-km from the total rail passenger-km.

Volume of passenger transport relative to GDP	Eurostat	This indicator is defined as the ratio between passenger-km (by passenger cars, buses, coaches and trains) and GDP (chain-linked volumes, at 2000 exchange rates). It is indexed on 2000. (Eurostat, UNECE, ITF, 2010)
Rail modal split (freight) [%]	Eurostat	This indicator is defined as the percentage of rail in total inland freight transport performance measured in tonne-km. (Eurostat, UNECE, ITF, 2010)
Freight on rail (inland and international) [tkm]	Transport in Figures 2011 (EC, 2011)	Tonne-km means the unit of measure of goods transport which represents the transport of one tonne (1,000 kilograms) of goods by rail over a distance of one kilometre. Eurostat rounds the figure to million tkm. (Eurostat, UNECE, ITF, 2010)
Volume of freight transport relative to GDP	Eurostat	This indicator is defined as the ratio between tonne-km (by road, rail and inland waterways) and GDP (chain-linked volumes, at 2000 exchange rates). It is indexed on 2000. (Eurostat, UNECE, ITF, 2010)
Number of railway passengers killed in accidents involving railways [no.]	Transport in Figures 2011 (EC, 2011)	Any person killed immediately or dying within 30 days as a result of an accident. It includes passengers, employees and other specified or unspecified persons involved in a rail injury accident. (Eurostat, UNECE, ITF, 2010)
Annual number of victims, total [no.]	Eurostat	Railway accidents are accidents in which at least one moving rail vehicle is involved. The number of total victims includes killed and injured people. (Eurostat, UNECE, ITF, 2010)
Annual number of accidents, total [no.]	Eurostat	Railway accidents are accidents in which at least one moving rail vehicle is involved. Total number of accidents, including collision (excluding level-crossing accidents), derailments, accidents involving level-crossing, accidents to persons caused by rolling stock in motion, fire in rolling stock and others. (Eurostat, UNECE, ITF, 2010)
Annual number of accidents involving the transport of dangerous goods, total [no.]	Eurostat	Numbers of accidents in which dangerous goods are released and number of accidents in which dangerous goods are not released. (Eurostat, UNECE, ITF, 2010)
CO_2 from fuel combustion [Mt]	OECD ITF	Data on carbon dioxide (CO_2) emissions from fossil fuel combustion in the railway sector. Measured in Megatonne. (OECD ITF)
CO_2 emissions [Mt]	European Environment Agency	Annual emissions of CO_2 in the railway sector of the case countries.
NO_2 emissions [Mt]	European Environment Agency	Annual emissions of NO_2 in the railway sector of the case countries.
CH_4 emissions [Mt]	European Environment Agency	Annual emissions of CH_4 in the railway sector of the case countries.
Annual average indices for transport prices: passenger transport by railway	Eurostat	Data represents the Harmonised Indices of Consumer Prices, which give comparable measures of inflation for the case countries. In this case they measure the change over time of the prices of railway transport services acquired by households. The indices are normed with the year 2005 as a base year. (Eurostat)

Source: Compiled by the authors based on the sources listed in the table

Having the above mentioned categories of performance and indicators in mind, we have chosen the following indicators as the main focus of the remainder of this chapter. The goal was not only to select indicators for which high-quality data were available, but also to select at least one indicator for every category of performance distinguished by Finger at al. (2010). The indicators can be classified as follows: technical, operational, social, economic and environmental performance (more details in the following table).

Table 61. Classification of the available performance indicators according to the framework by Finger et al. (2010)

Criteria	Performance indicators
Technical performance	Rail km per km^2
Operational performance	Train km Passenger train-km Number of railway passengers killed in accidents involving railways [no.] Annual number of victims, total [no.] Annual number of accidents, total [no.] Annual number of accidents involving the transport of dangerous goods, total [no.]
Social performance	Customer Satisfaction harmonised index of consumer prices: passenger transport
Economic performance	Rail passenger-km [pkm] High speed rail passenger-km [pkm] Share of high speed rail on total pkm [%] Volume of passenger transport relative to GDP Freight on rail (inland and international) [tkm] Volume of freight transport relative to GDP
Environmental performance	Rail modal split (passengers) [%] Rail modal split (freight) [%] CO_2 from fuel combustion [Mt] NO_2 from fuel combustion [Mt] CH_4 from fuel combustion [Mt]

Source: Compiled by the authors

In the next section, we will examine the data for each of these measures of performance.

4.3 Trends in performance

The trends of the available indicators listed in Table 61 are plotted in the following figures. The plots are first given without looking at the data to offer a first idea of the extent or limitations of the data series available.

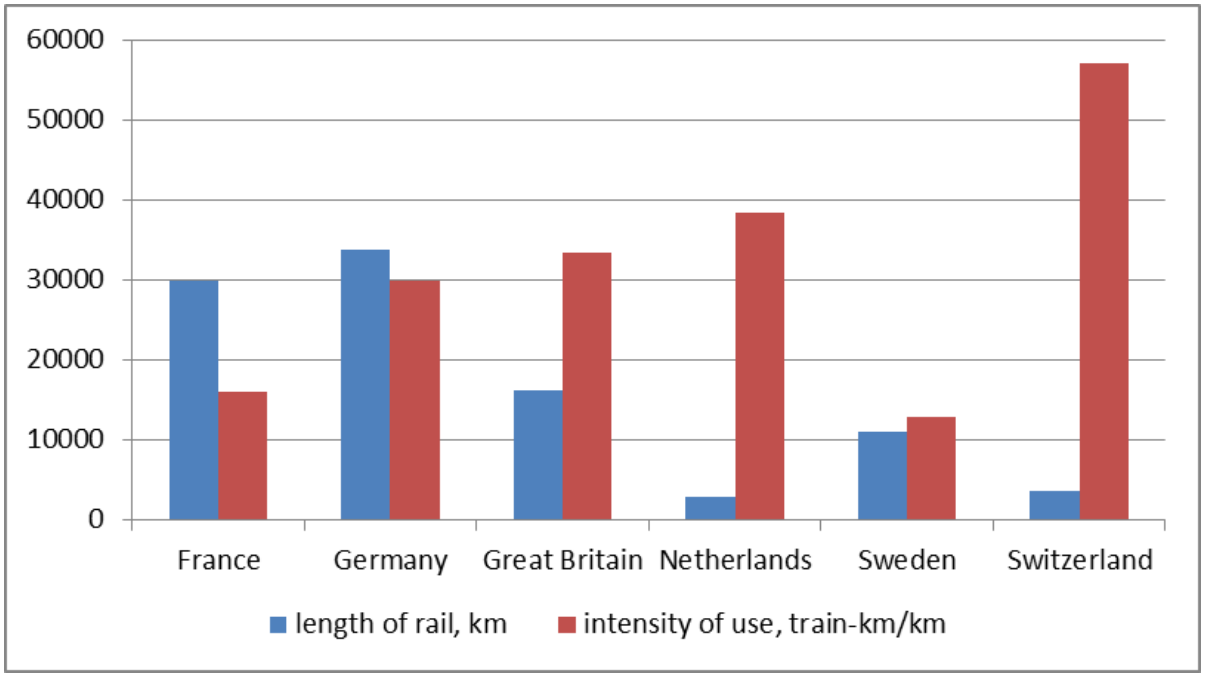
However, before we will get to those we will present some data on the differences between the countries under consideration and on the inputs deployed to obtain performance in each country. In the remainder of the section indicators are again clustered according to the classification of what is measured discussed by Finger et al. (2010).

Background statistics

Before looking at the trends it is worth noting the differences among the countries shown by some key indicators. Only with that information in mind can we make sense of the performance data that will be presented subsequently.

Figure 23 shows the important differences in network length among the countries and most notably the differences in intensity of use calculated as the ratio of reported total train-km and the length of the lines. The two countries with the smallest networks, Switzerland and the Netherlands, have the highest intensity of use with Switzerland showing the highest and a very large value. France has a very large network, consistently with its geographical extension, but shows the second lowest intensity of use. Sweden is seen to have the mildest intensity of use among the networks surveyed.

Figure 23. Length of rail lines in km and intensity of use in train-km/km of lines

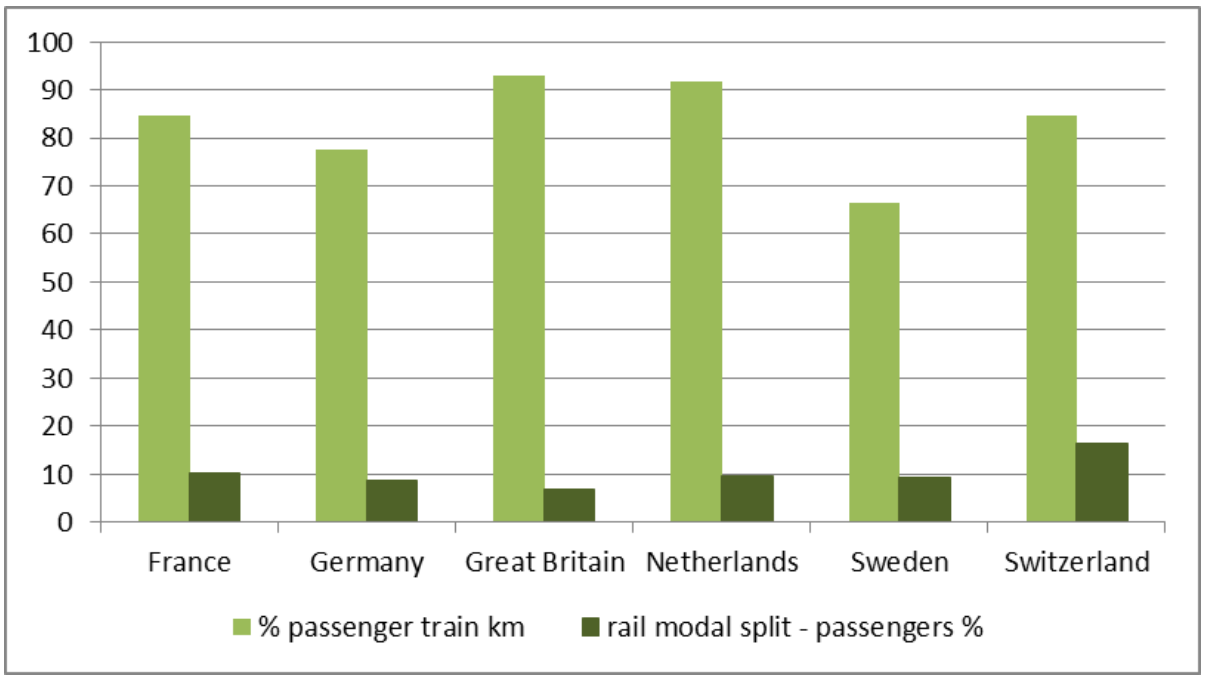


Source: Eurostat and own calculations based on Eurostat data. Data for 2008 except for intensity of use in France and Germany which refers to 2009 due to data availability

The data in Figure 24 show how all network are mostly used by passenger trains, however the share of the network in the overall mobility of each country is somewhat limited: only in Switzerland the modal split reaches 16.5%, more than twice the corresponding value of Great Britain.

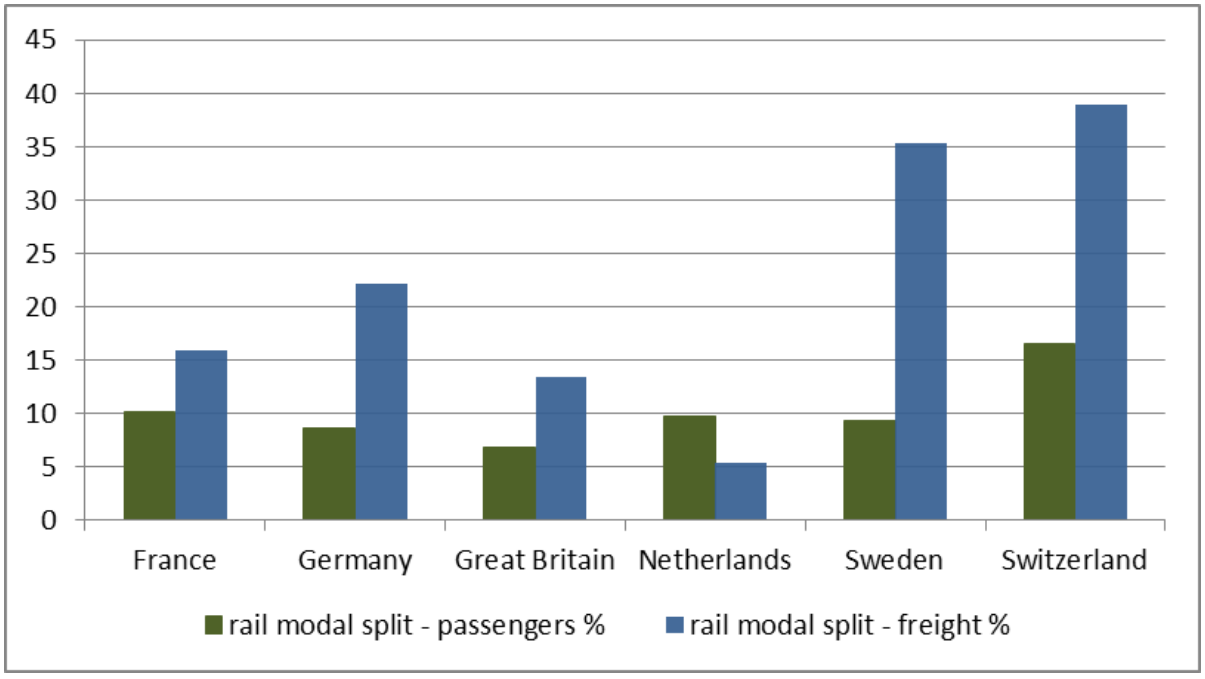
Contrasting freight and passenger modal split in
Figure 25, it is interesting to note the high percentage of freight on rail in Switzerland (a transit country) despite the high level of passenger traffic usage of the network seen before. Also Sweden has a very high percentage of freight traffic on rail, while the Netherlands is the only country with a rail freight modal split lower than then corresponding passenger value.

Figure 24. Percentage of passenger train-km on the total and modal split



Source: Eurostat and own calculations based on Eurostat data. Data for 2008 except for % of passenger train-km in France and Germany which refers to 2009 due to data availability

Figure 25. Modal split for passenger and freight on rail

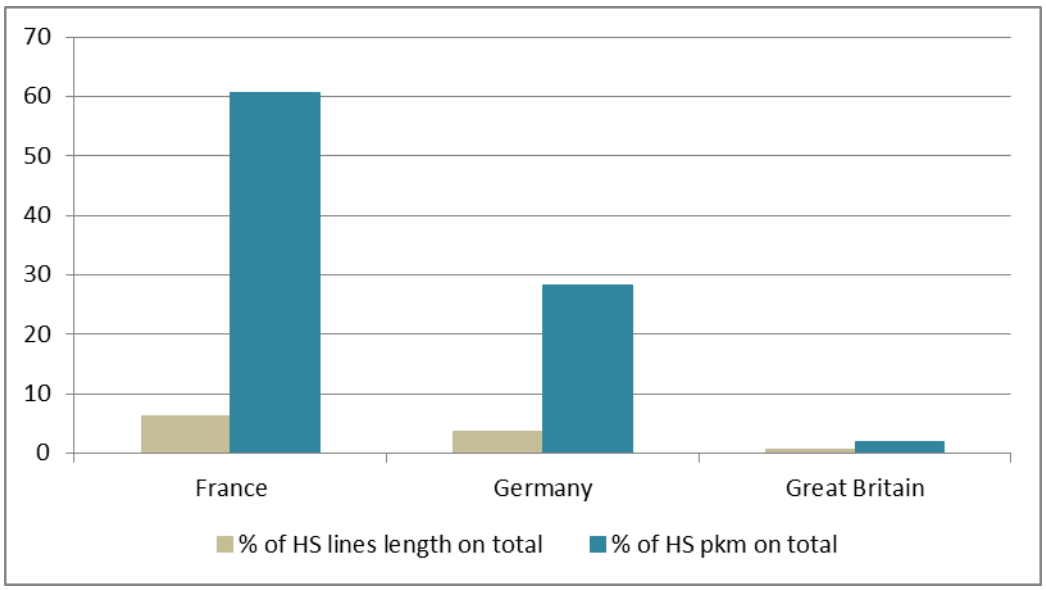


Source: Eurostat. Data for 2008

Finally, by looking at
Figure 26, it is interesting to note the different relative importance of the extension of the high speed networks in France, Germany and Great Britain, and observe the large differences in the percentage relevance of the passenger-km recorded. In France about 60% of the passenger-km is on high speed rail, which is just over 6% of the network. Germany has high speed lines for 3.8% of the network and the relative value of passenger-km amounts to 28.3%

of the total. In Great Britain, the limited extension of high speed lines corresponds to less than 2% of passenger-km.

Figure 26. Relevance of high speed lines with respect to whole network length and importance of high speed passenger transport over the data for the whole network



Source: Eurostat. Data for 2008

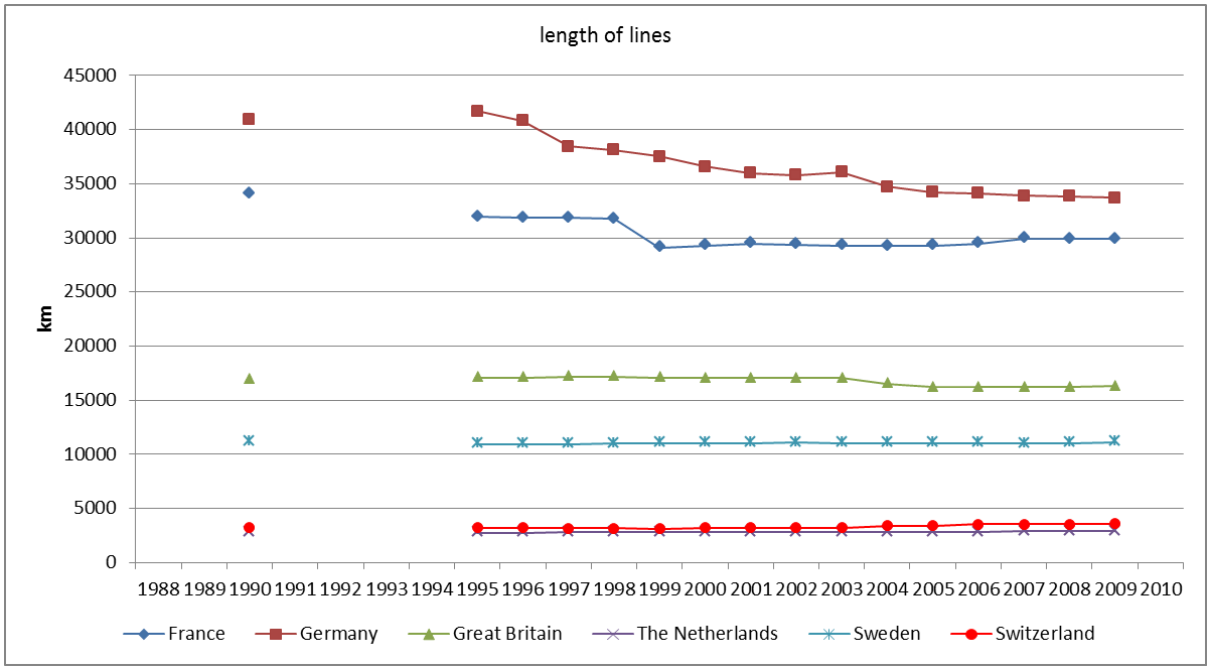
These comparisons demonstrate the differences in both technical characteristics and traffic patterns in the different countries surveyed, underlining the importance of country specific situations. A longitudinal analysis for each country obviously accounts for such specificities. Comparisons across countries need keep into account differences and therefore likely difficulties with generalising local experiences.

Inputs

To recall, and as detailed in Table 59, input indicators available from Eurostat and considered here are:

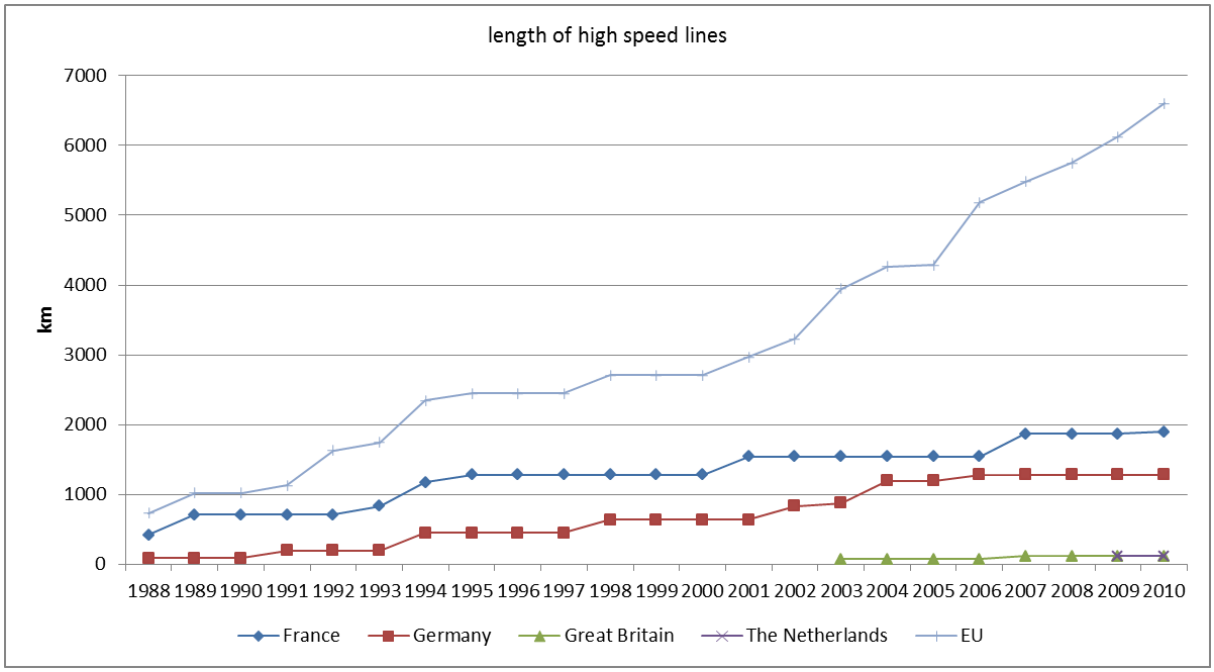
- Length of line [km]: trends reported in Figure 27;
- Length of high speed lines [km]: trends reported in Figure 28;
- Expenditure in rolling stock in principal railway enterprises (in million euros from 01.01.1999): trends reported in Figure 29;
- Expenditure in infrastructure in principal railway enterprises (in million euros from 01.01.1999): trends reported in Figure 30;
- Rail infrastructure gross investment spending (in million euros at current prices): trends reported in Figure 31;
- Maintenance expenditures in rail infrastructure (in million euros at current prices): trends reported in Figure 32;
- Employment [number of employees]: trends reported in Figure 33;
- No of enterprises [no.]: trends reported in Figure 34.

Figure 27. Length of railway lines



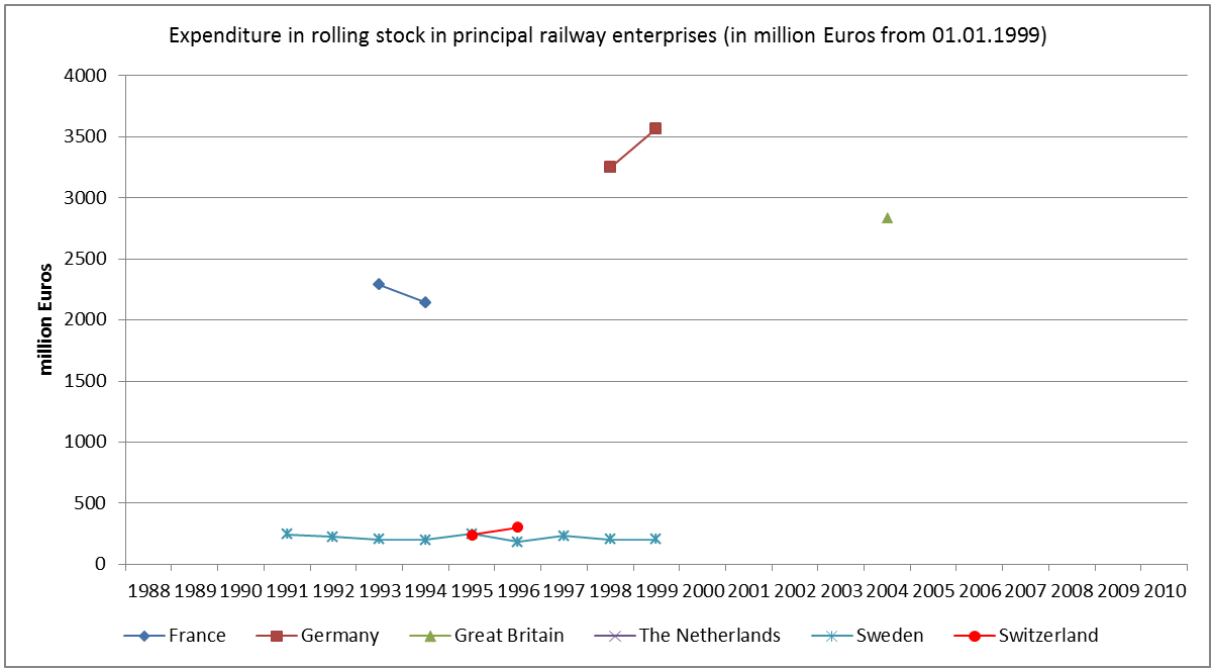
Note: plots based on Eurostat data

Figure 28. Length of high speed lines



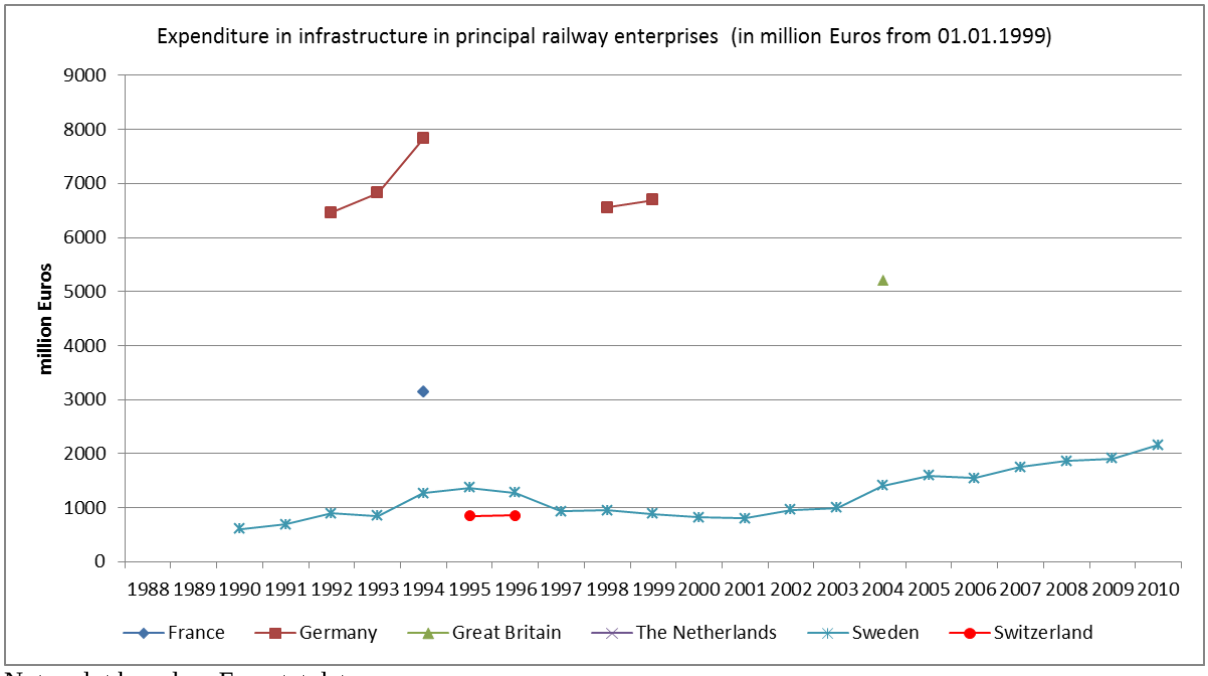
Note: plot based on Eurostat data; Sweden and Switzerland are not present on this plot since they have no high speed lines

Figure 29. Expenditure of principal railway enterprises in rolling stock, in euros at 1999 price level



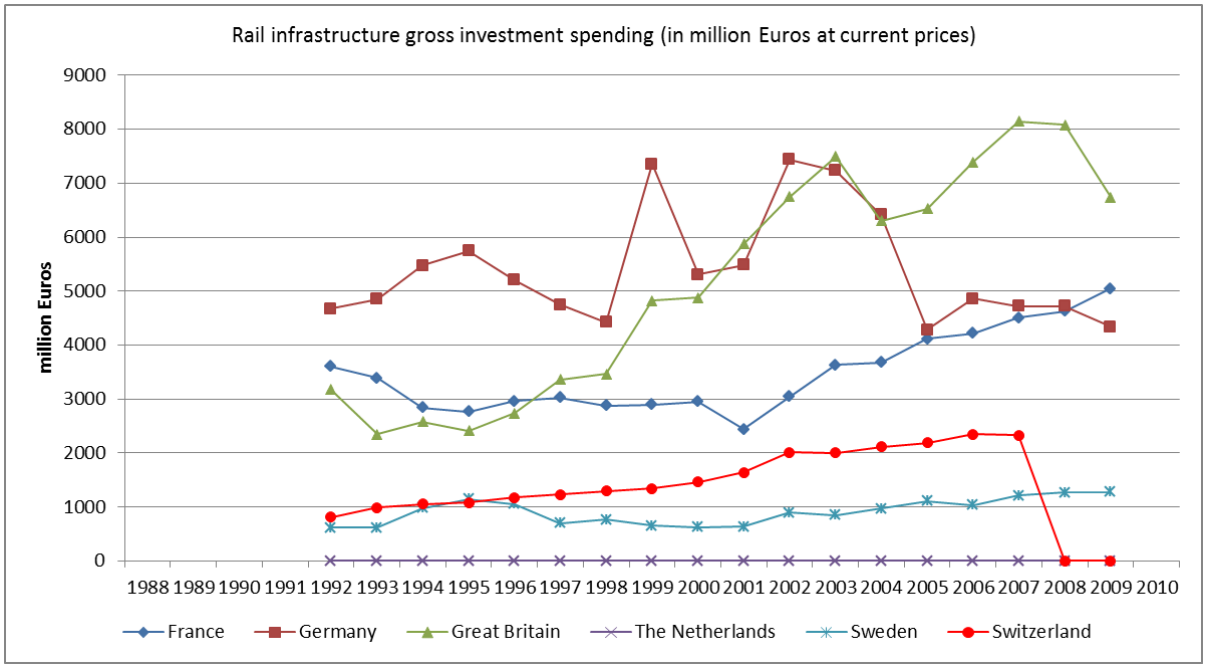
Note: plot based on Eurostat data

Figure 30. Expenditure of principal railway enterprises in infrasturcture, in euros at 1999 price level



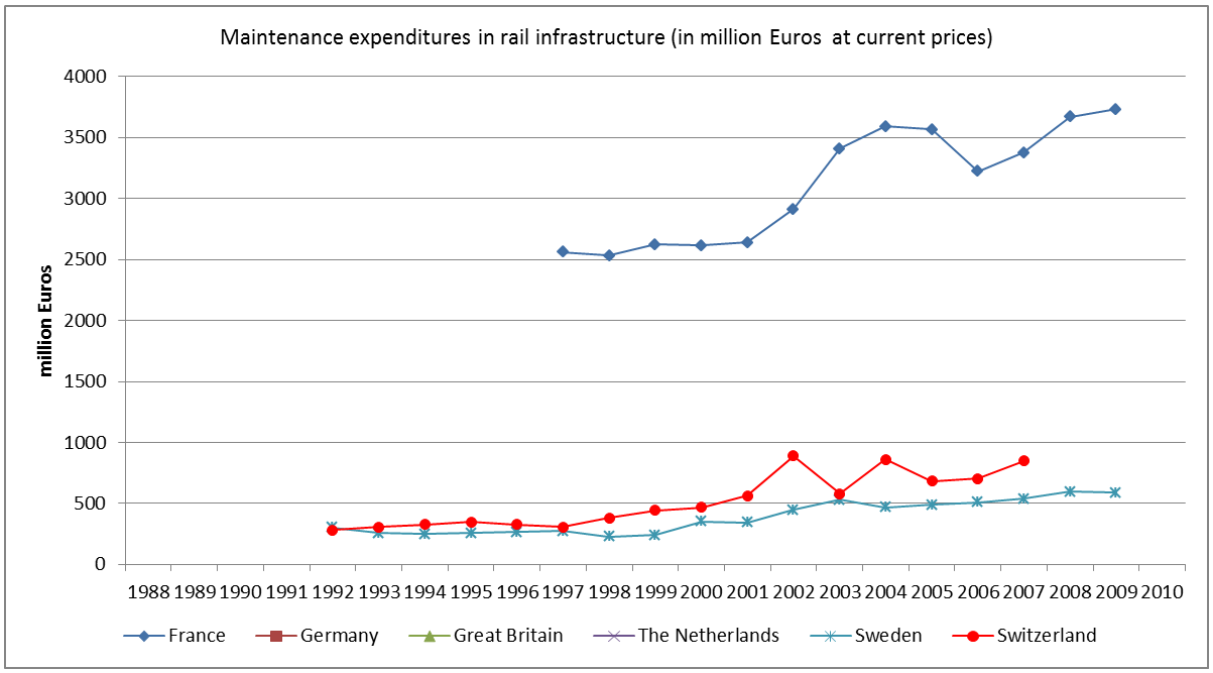
Note: plot based on Eurostat data

Figure 31. Gross investment spending in rail infrastructure, in euros at current prices



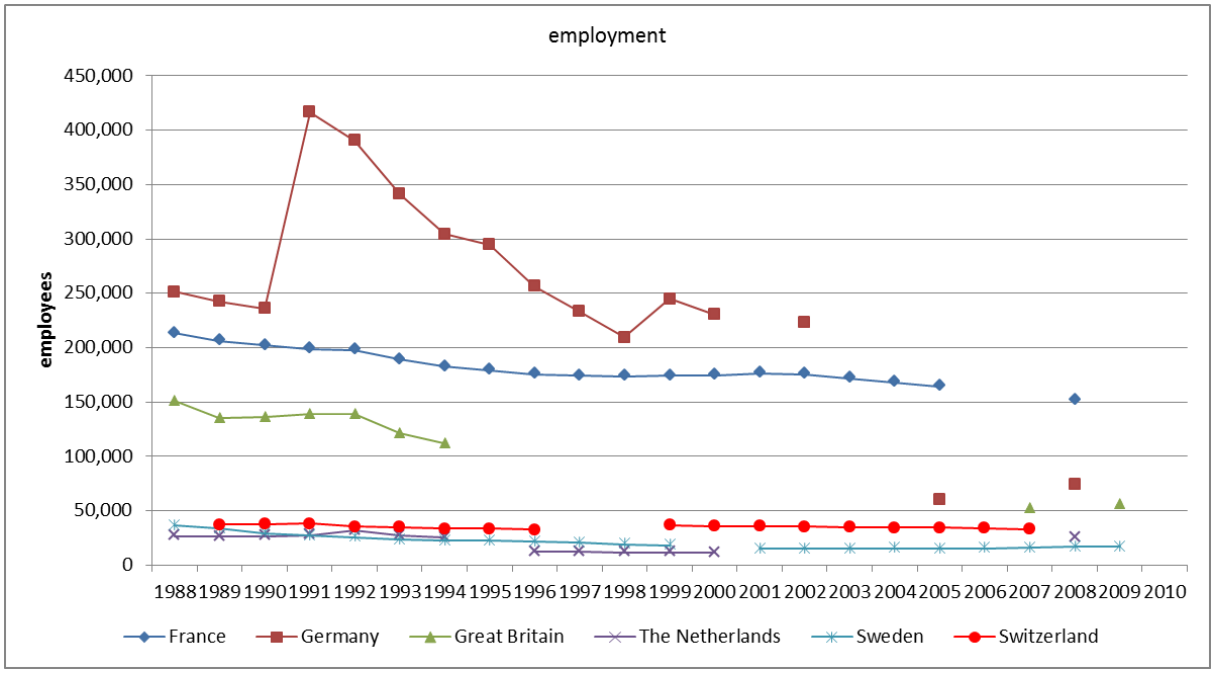
Note: plot based on OECD, ITF data

Figure 32. Maintenance expenditures spending in rail infrastructure, in euros at current prices



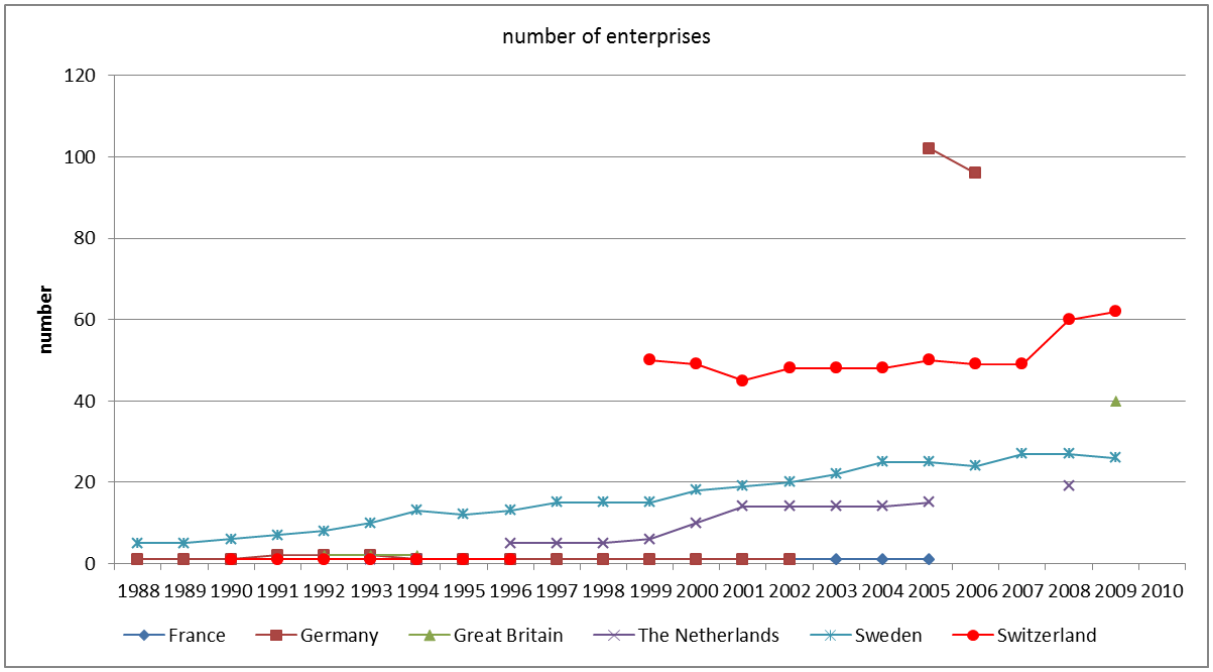
Note: plot based on OECD, ITF data

Figure 33. Number of employed people in the railway sector



Note: plot based on Eurostat data

Figure 34. Number of enterprises in the railway sector

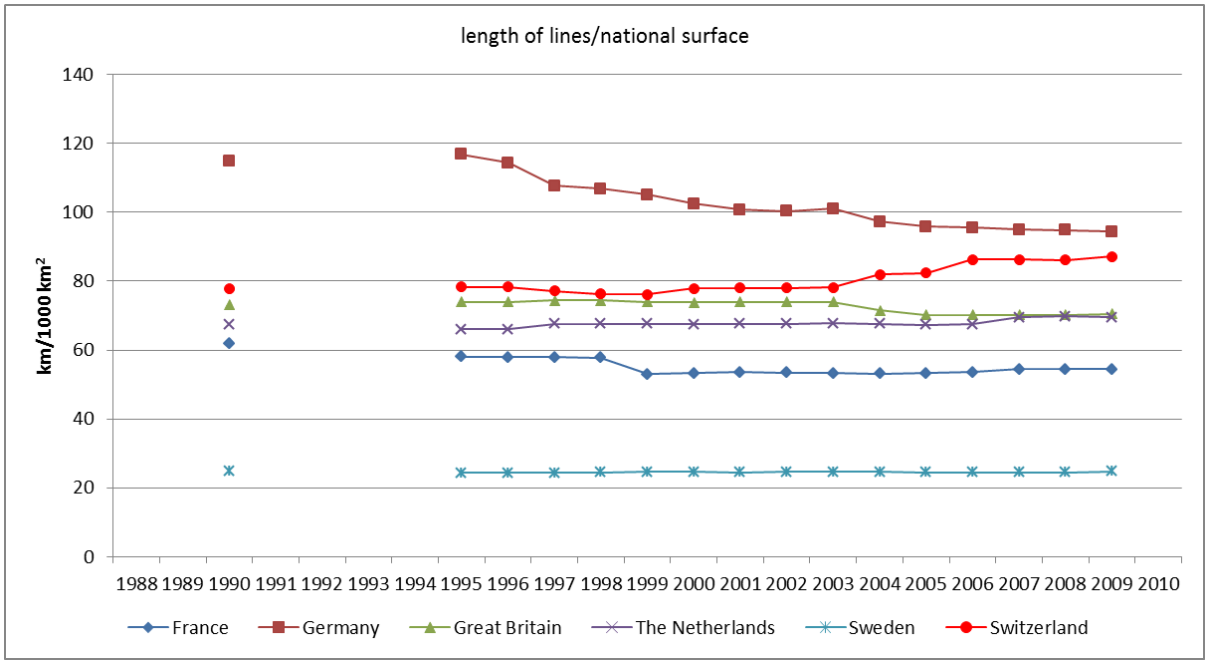


Note: plot based on Eurostat data

Technical performance indicators

The only technical PI considered here is rail km per km^2, obtained by dividing the length of rail lines by the surface area of each State. The trends are plotted in figure 35.

Figure 35. Length of railway lines relative to national surface area



Note: based on Eurostat data

Operational performance indicators

As detailed in Table 61operational PIs available from Eurostat and UIC and considered here are:

- Train km: trends reported in Figure 36;
- Passenger train-km reported in Figure 37;
- Annual number of victims, total [no.]: trends reported in Figure 38;
- Annual number of accidents, total [no.]: trends reported in Figure 39;
- Annual number of accidents involving the transport of dangerous goods, total [no.]: trends reported in Figure 40.

In order to include data on accidents in the analysis, they would need to be related to exposure (i.e., train-km), which they are not. Therefore it was not possible to include these PI in the analysis.

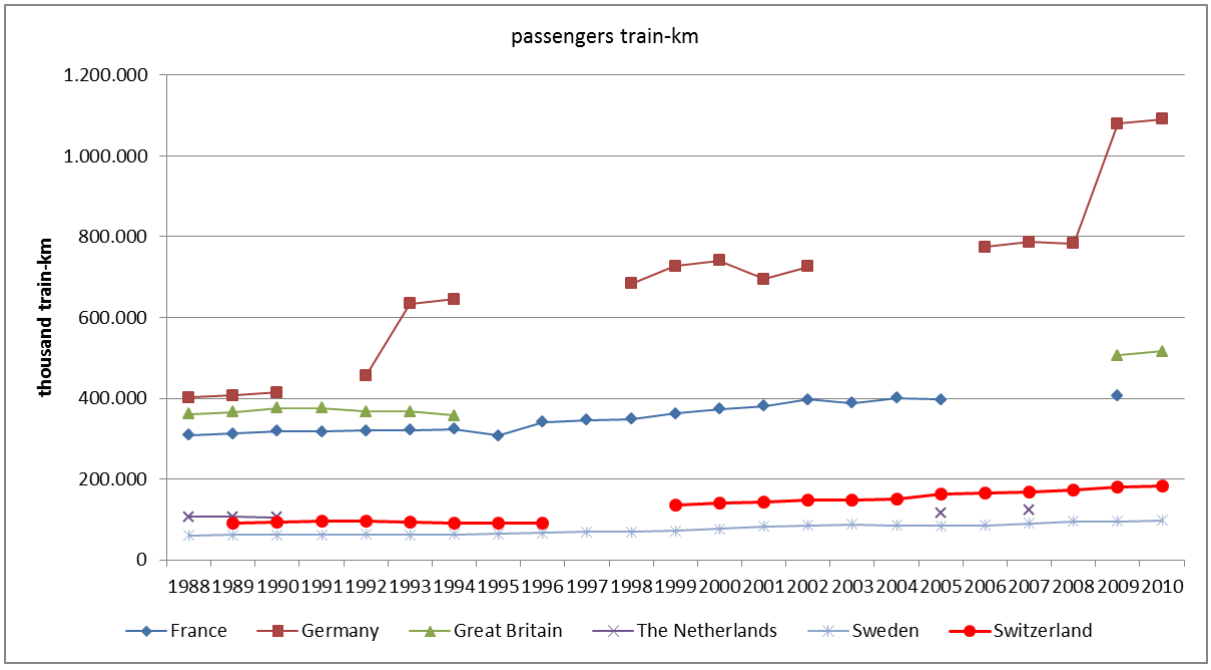
Data on punctuality would have fallen into this category and would have been interesting to analyse, but they were not available during the development of the study.

Figure 36. Total train kilometers, including passengers, goods and other trains

Note: plot based on Eurostat data

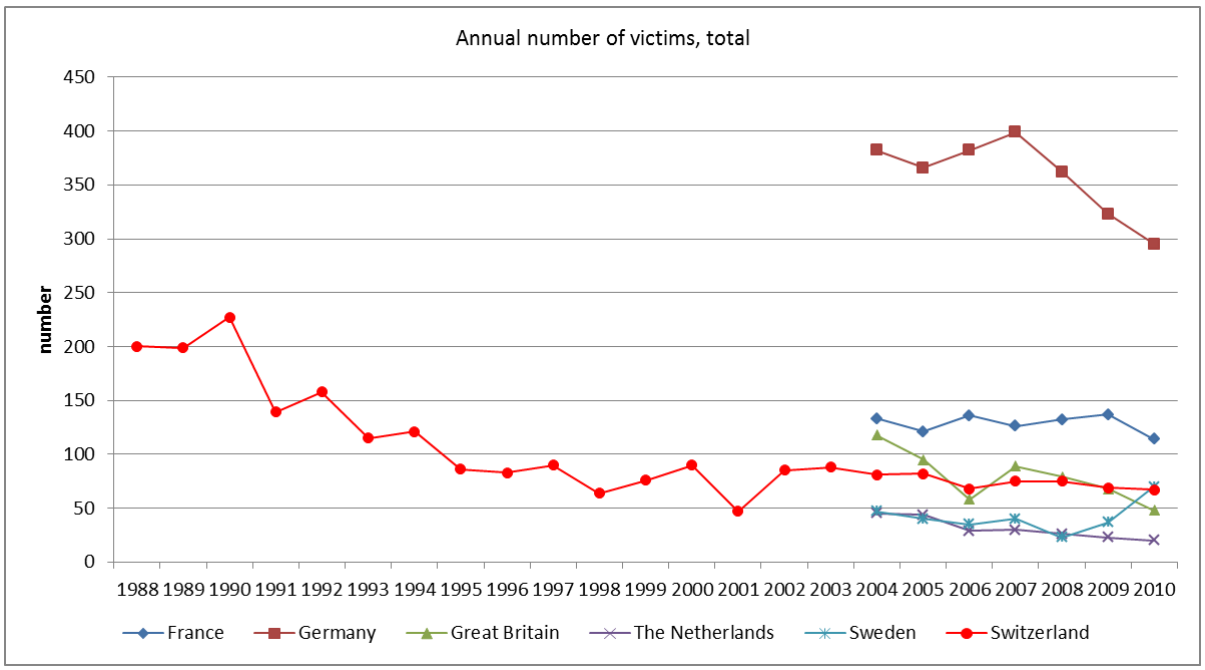
UIC and Eurostat offer different figures for train kilometres, and within Eurostat there are different specifications. This report is based on the Eurostat data for reasons of reliability and length of the observation period.

Figure 37. Passengers train kilometers



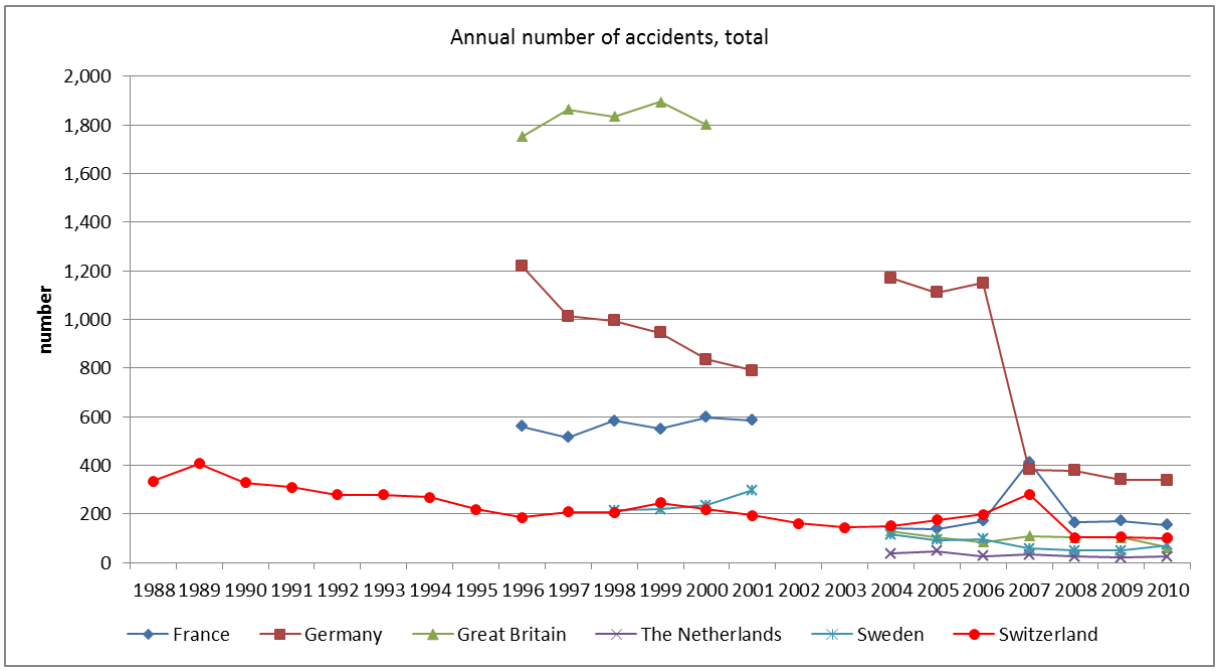
Note: plot based on Eurostat data

Figure 38. Annual number of victims in an accident involving railways



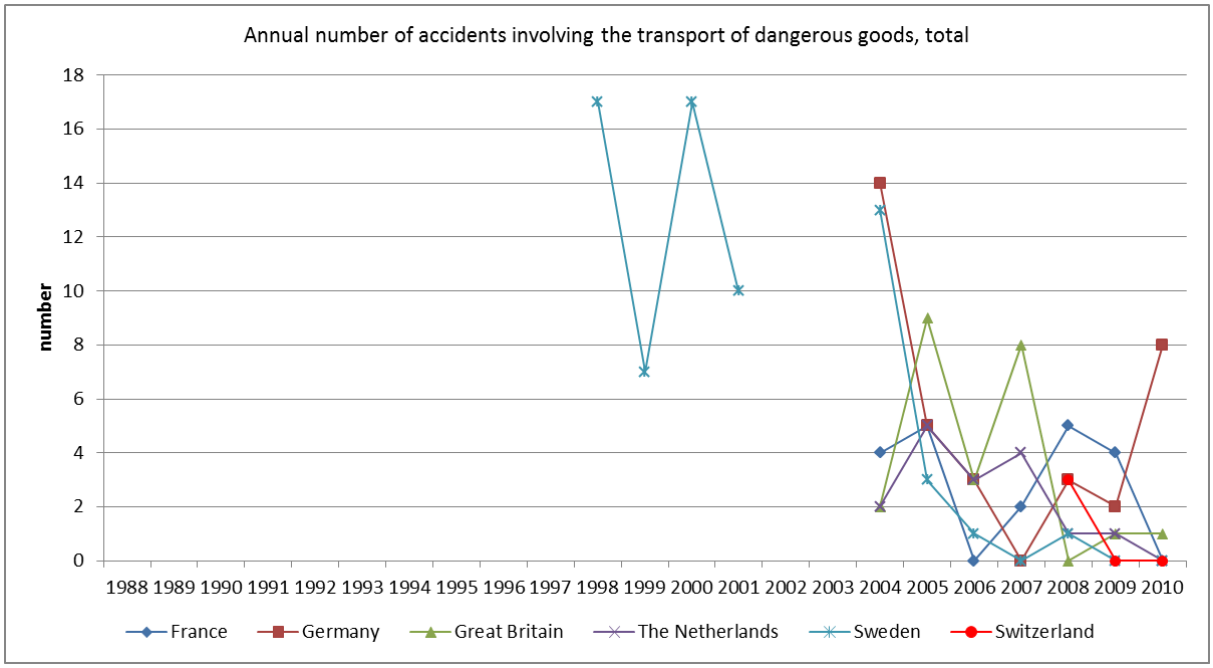
Note: plot based on Eurostat data

Figure 39. Annual number of accident involving railways



Note: plot based on Eurostat data

Figure 40. Number of accidents involving the transport of dangerous goods



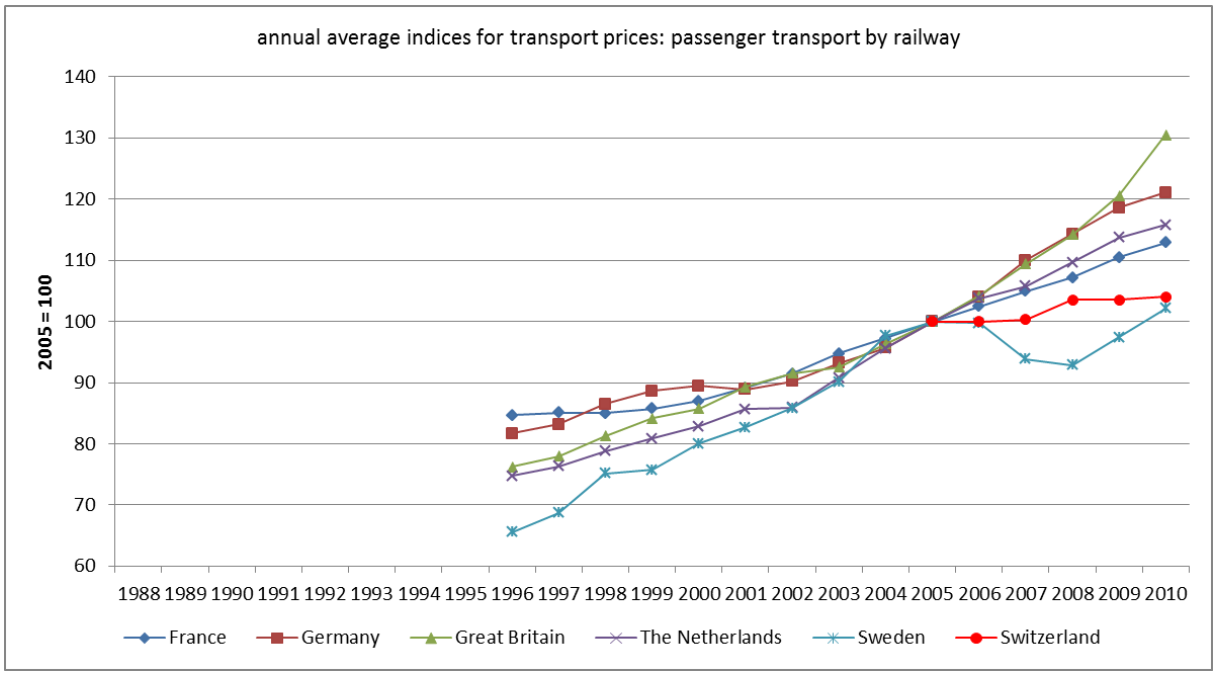
Note: plot based on Eurostat data

Social performance indicators

As detailed in Table 61, social PIs available from Eurostat and considered here are:

- Customer Satisfaction (available only for certain countries and not plotted here);
- Harmonised index of consumer prices: passenger transport, charted in Figure 41.

Figure 41. Annual average indices for transport prices: passenger transport by railway in Case States and Switzerland. The base year is 2005



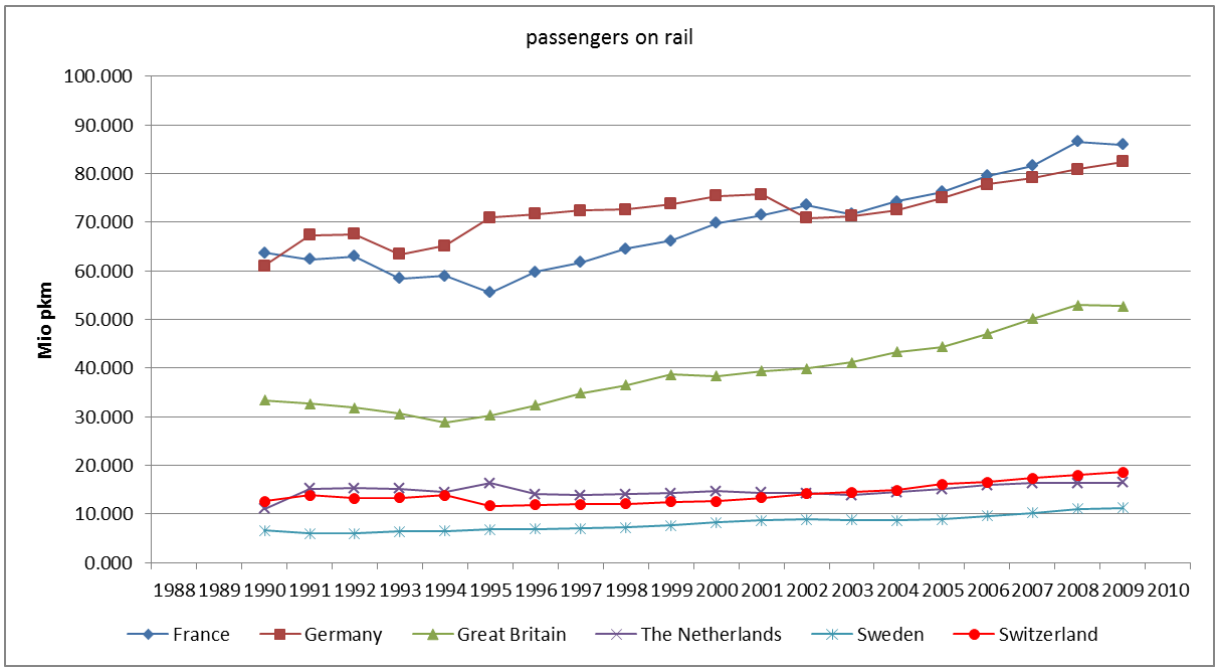
Note: Plot based on Eurostat data

Economic performance indicators

As detailed in Table 61, environmental PIs available from Eurostat and considered here are:

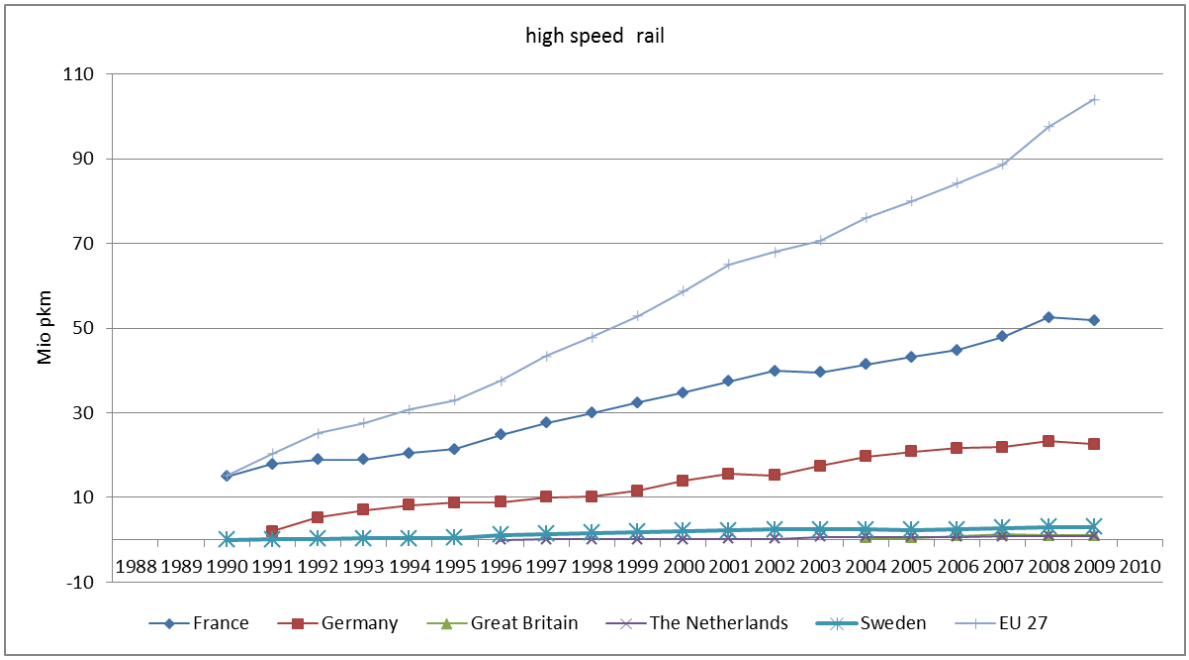
- Rail passenger-km [pkm]: trends reported in Figure 42;
- High speed rail passenger-km [pkm]: trends reported in Figure 43;
- Share of high speed rail on total pkm [%]: trends reported in Figure 44;
- Volume of passenger transport relative to GDP: trends reported in Figure 45;
- Freight on rail [tkm] : trends reported in Figure 46 and Figure 47;
- Volume of freight transport relative to GDP: trends reported in Figure 48.

Figure 42. Passengers on rail, measured in million passenger-km



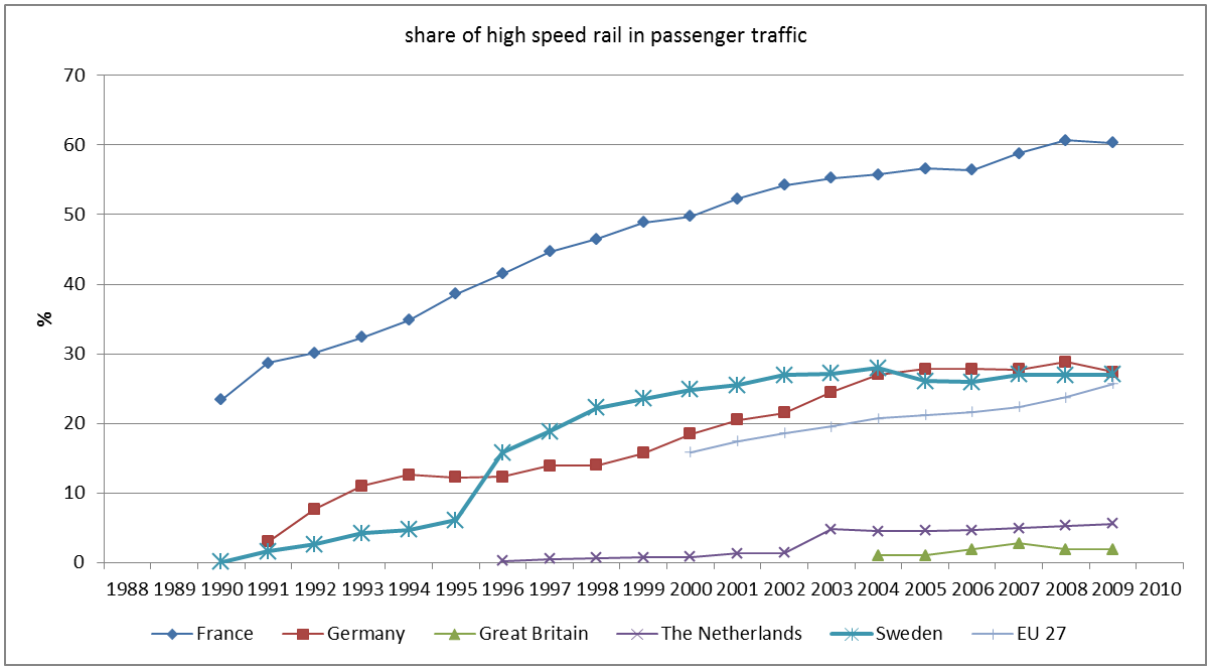
Source: Eurostat

Figure 43. Passenger traffic on high speed rail



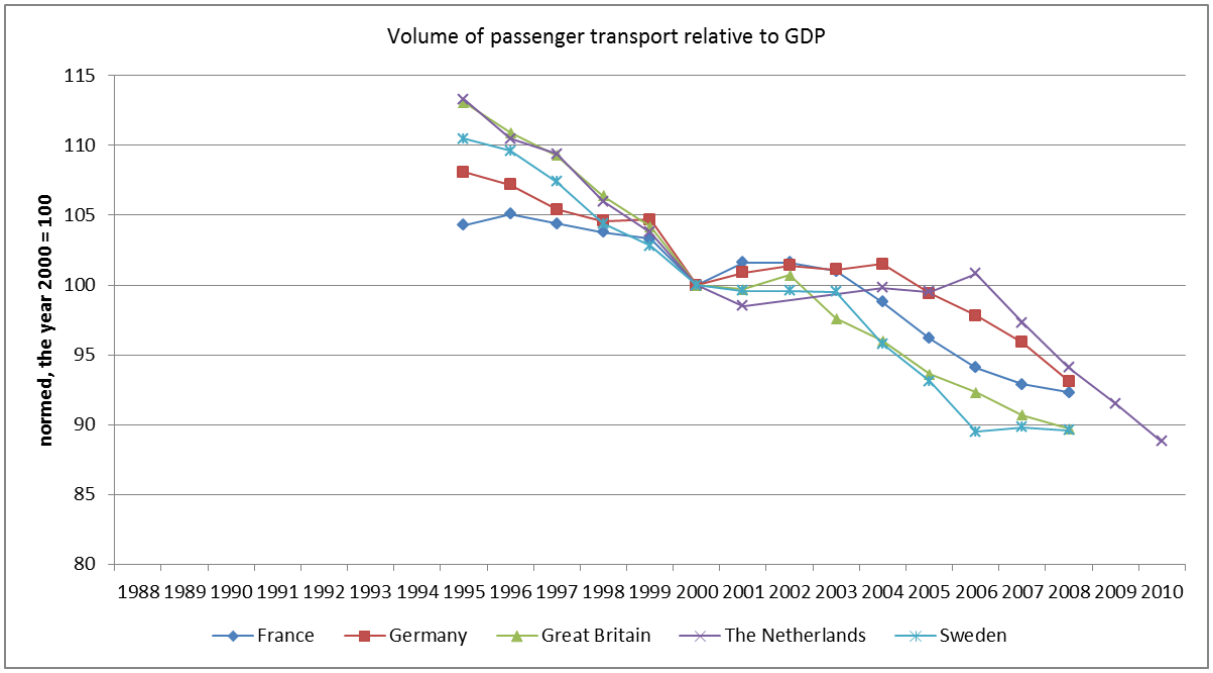
Note: UIC data; according to Eurostat's definition Sweden has no high speed railway lines.
However, the report "Transport in Figures" (EC, 2011) relies on UIC data to measure passenger kilometres. This UIC data includes figures for Swedish high speed rail passenger kilometres, without any further explanations

Figure 44. Share of high speed rail in passenger traffic



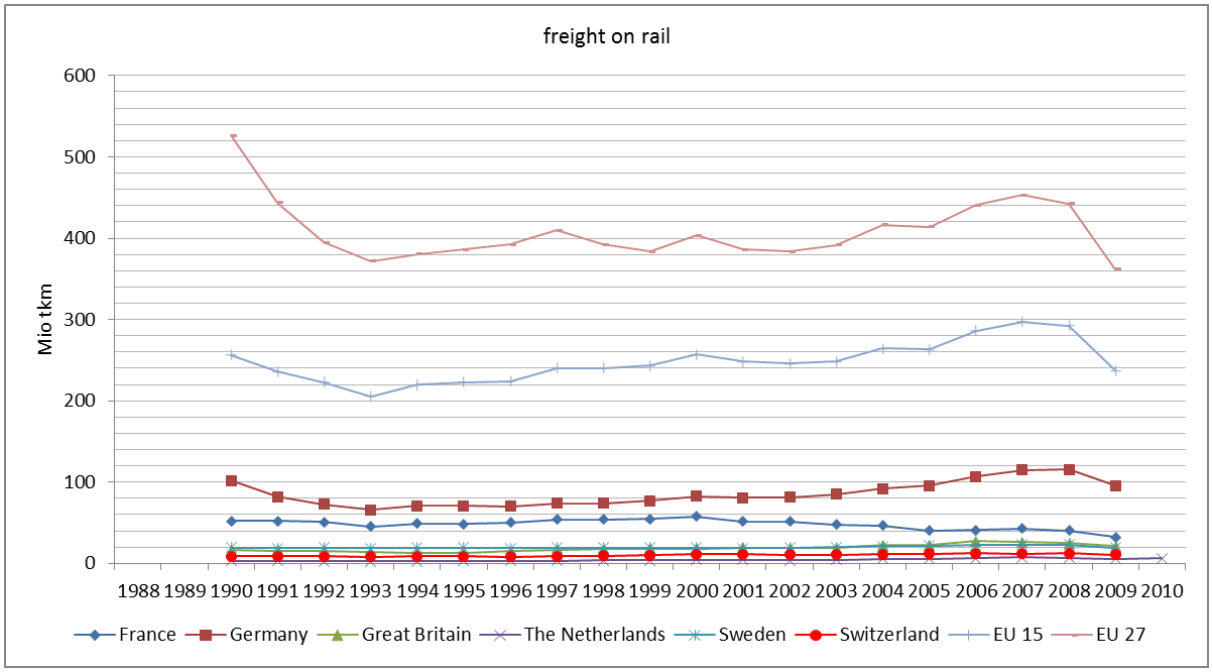
Source: authors' calculations based on Transport in Figures (EC, 2011)
Note: according to Eurostat's definition Sweden has no high speed railway lines. However, these calculations are based on data from the report "Transport in Figures" (EC, 2011), which relies on UIC data to measure passenger kilometres

Figure 45. Normed ratio passenger transport (passenger-km) to GDP, with 2000 as base year



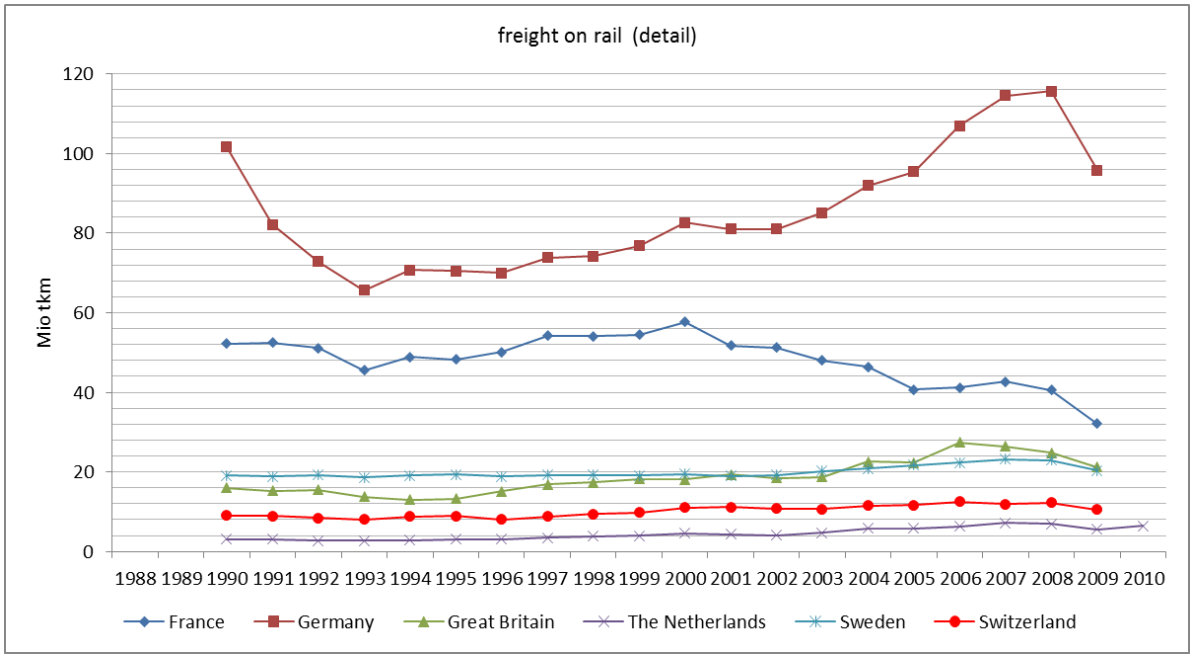
Note: Eurostat data: the data set starts in 1995 and does not include information for Switzerland

Figure 46. Freight rail traffic. Plot including data for EU15 and EU27



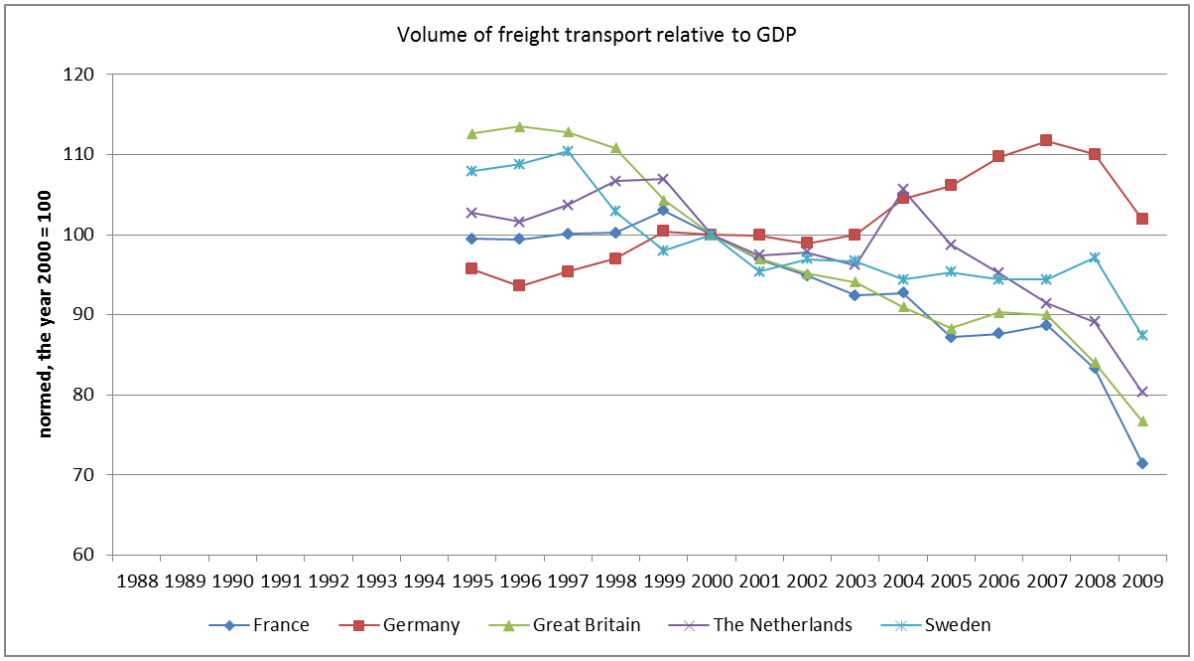
Source: Eurostat data

Figure 47. Freight rail traffic. Focus on the Case States



Source: Eurostat data

Figure 48. Normed ratio freigth transport (tonne-km) to GDP, with 2000 as base year



Note: plot based on Eurostat data; data set starts in 1995 and does not include information for Switzerland

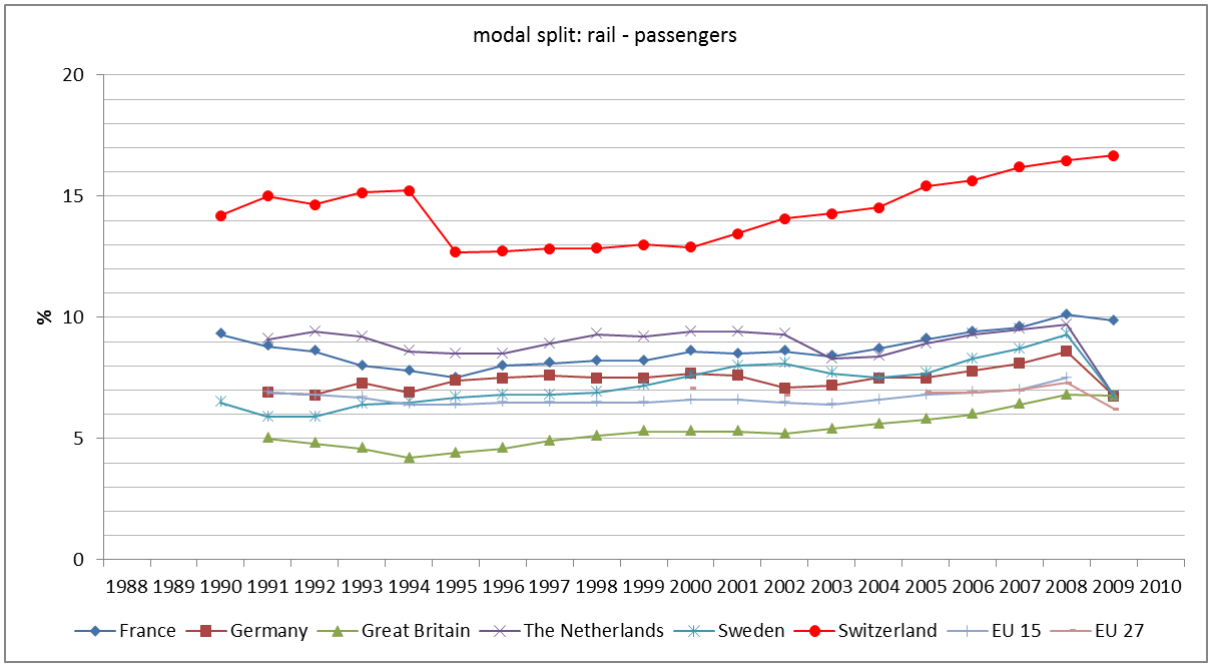
Environmental performance indicators

As detailed in Table 61, economic PIs available from Eurostat and considered here are:

- Rail modal split (passengers) [%]: trends reported in Figure 49;
- Rail modal split (freight) [%]:trends reported in Figure 50;

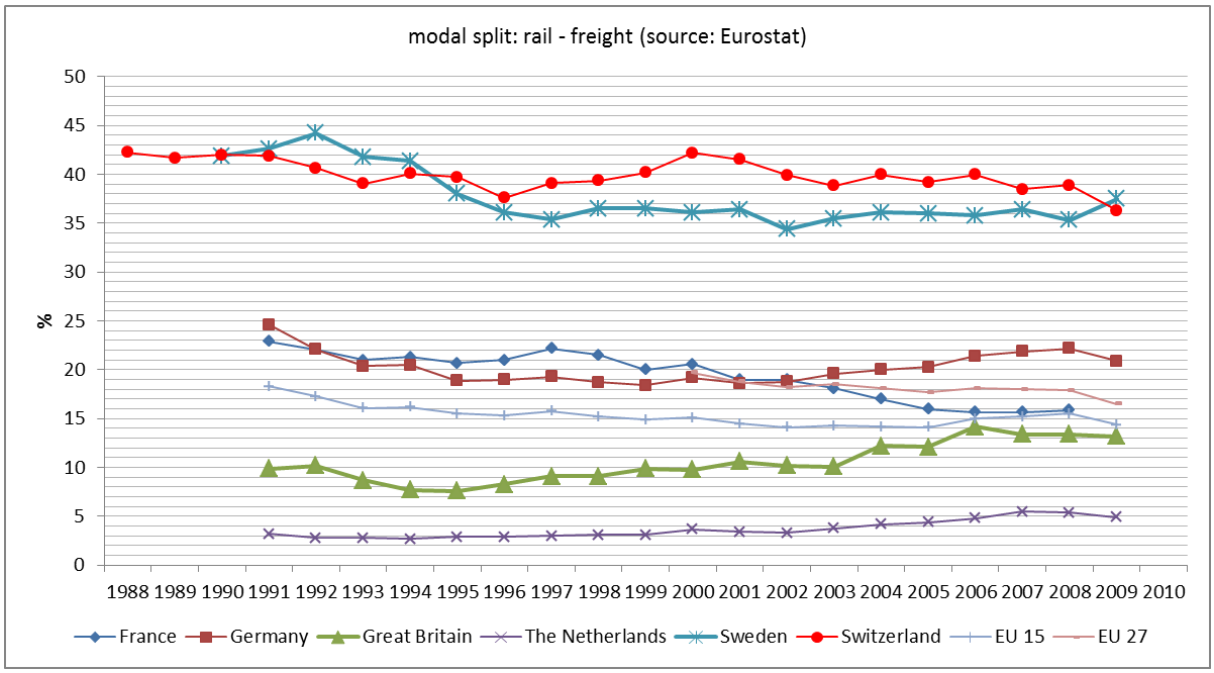
- Figure 50CO_2 emissions from fuel combustion in rail transport [Mt]: trends reported in Figure 51;
- NO_2 emissions [Mt]: trends reported in Figure 52;
- CH_4 emissions [Mt]: trends reported in Figure 53.

Figure 49. Rail modal split – passengers. Case States, EU15, EU27



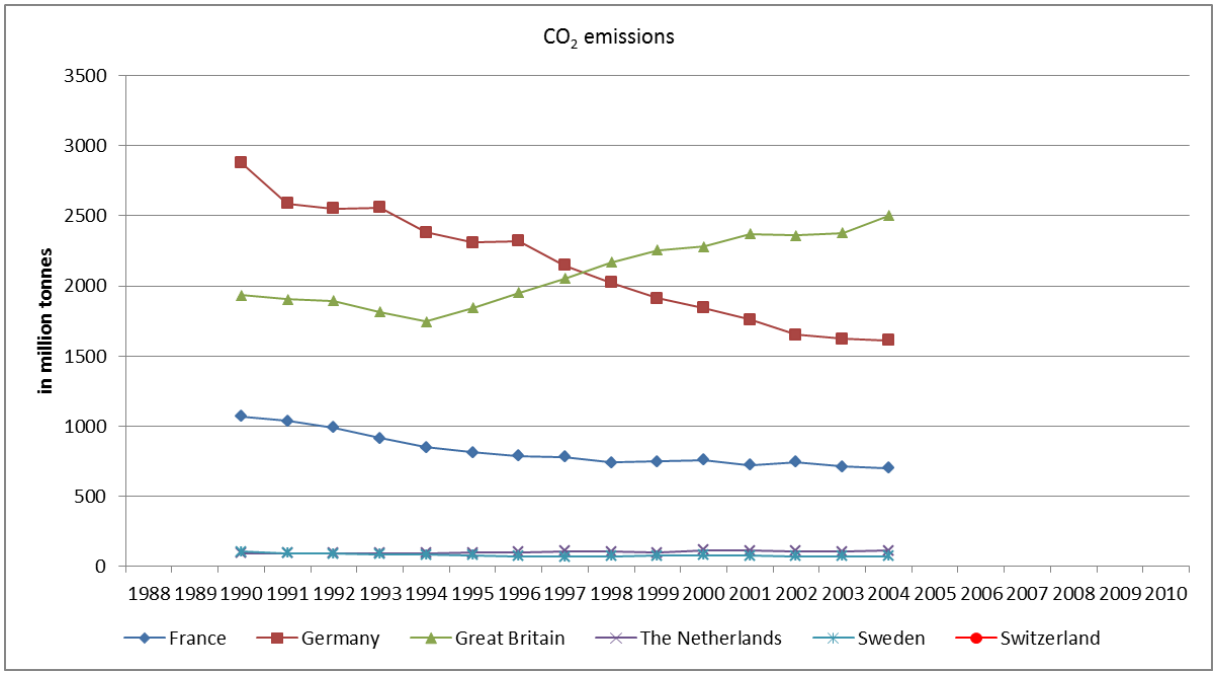
Source: Eurostat

Figure 50. Rail modal split – freight. Case States, EU15, EU27



Source: Eurostat

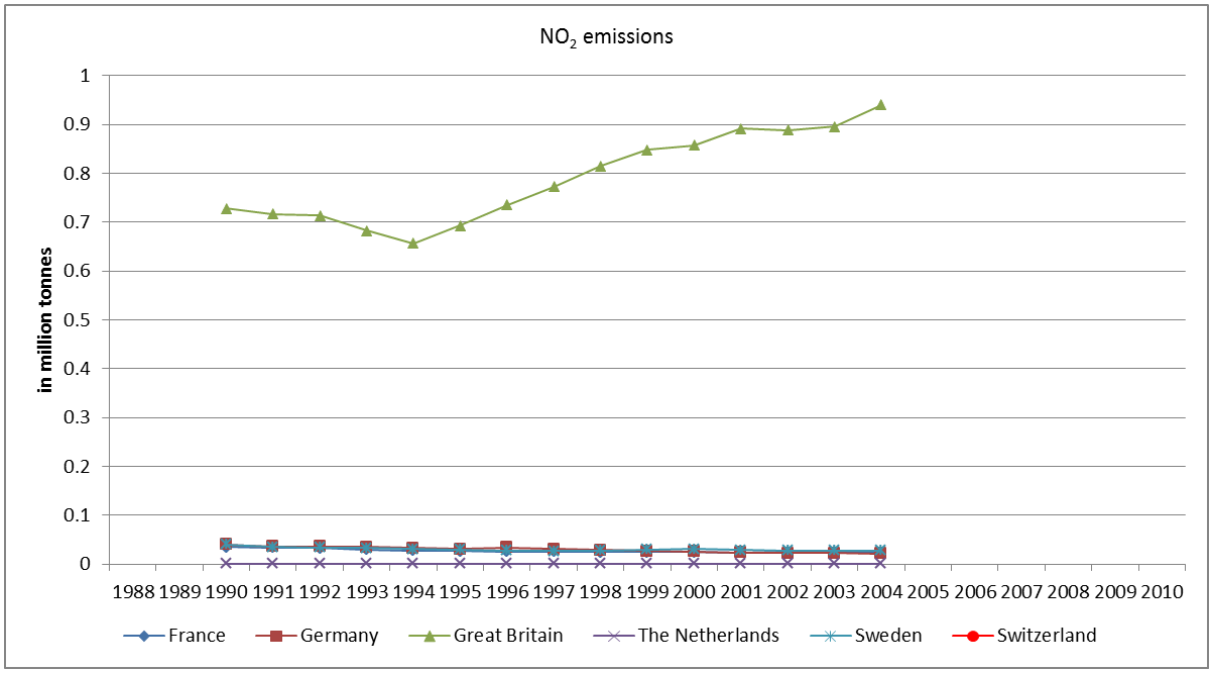
Figure 51. CO_2 emissions from fuel combustion in rail transport [million t]



Source: European Environment Agency

Note: The Swiss Statistic Office offers aggregated emission data for all transport modes, though not for the individual subgroups, like rail transport.

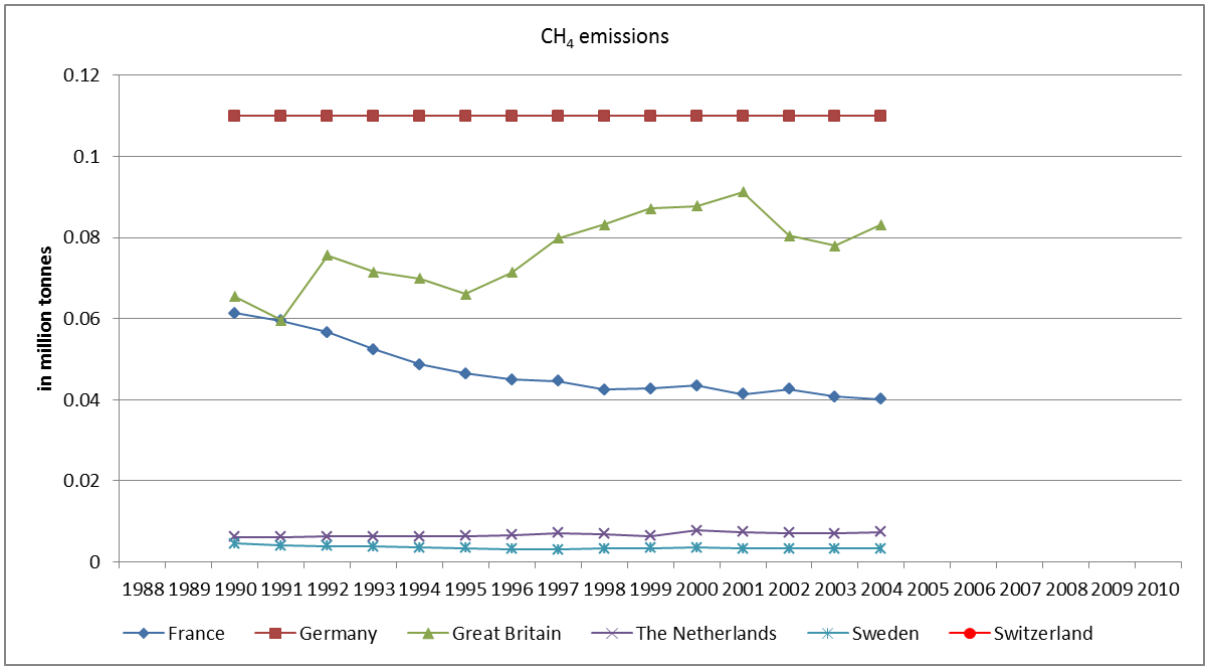
Figure 52. NO_2 emissions from fuel combustion in rail transport [million t]



Source: European Environment Agency

Note: The Swiss Statistic Office offers aggregated emission data for all transport modes, though not for the individual subgroups, like rail transport

Figure 53. CH_4 emissions from fuel combustion in rail transport [million t]



Source: European Environment Agency
Note: The Swiss Statistic Office offers aggregated emission data for all transport modes, though not for the individual subgroups, like rail transport

4.4 Trends per country

Following this graphical presentation of the data, we will now look at the evolutions of the indicators in each country comprised in this study separately, but for all categories of performance together. The goal is particularly to observe the overall trend, and to check whether there are discontinuities in that trend that indicate a possible successful or unsuccessful reform.

For plots and to contrast pairs of data series the reader is referred to the spread sheets attached to this report.

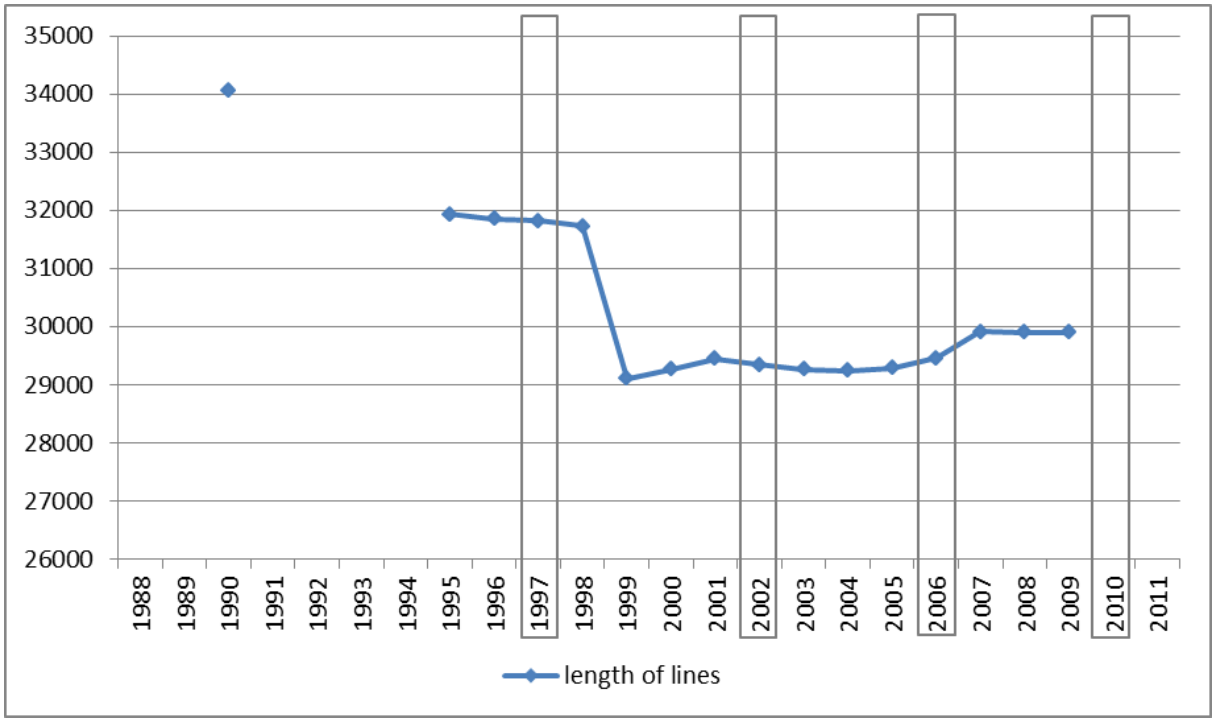
On the spread sheets, above the chart depicting the institutional evolution in each country, there is an interactive graph to plot together two indicators among those collected and contrast them directly. The indicators may be chosen from two drop-drown menus above the chart. Each indicator refers to a different axis and scale which are automatically updated. The drop-down menus, the axis and the trend of each indicator are coded with the same colour as are the entries in the legend. These are automatically updated as well and report which are the indicators plotted, their source, and the unit of measure.

France

France had a reduction in the total length of lines in 1999, two years after *RFF* was set up as IM, from 31,735 km to 29,113 km, while the length of high speed lines was constant. The

total length of line has slightly increased since, while the length of conventional lines has remained substantially constant. The openings of the high speed lines marks their increase from 419 km in 1988 when the observation period started to 1996 km in 2010 (6.3% of the total), the last year for which Eurostat supplies data. French high speed lines were almost 70% of those existing in Europe in 1990 while, with the following developments in other countries; they are now about 29% of the total in Europe.

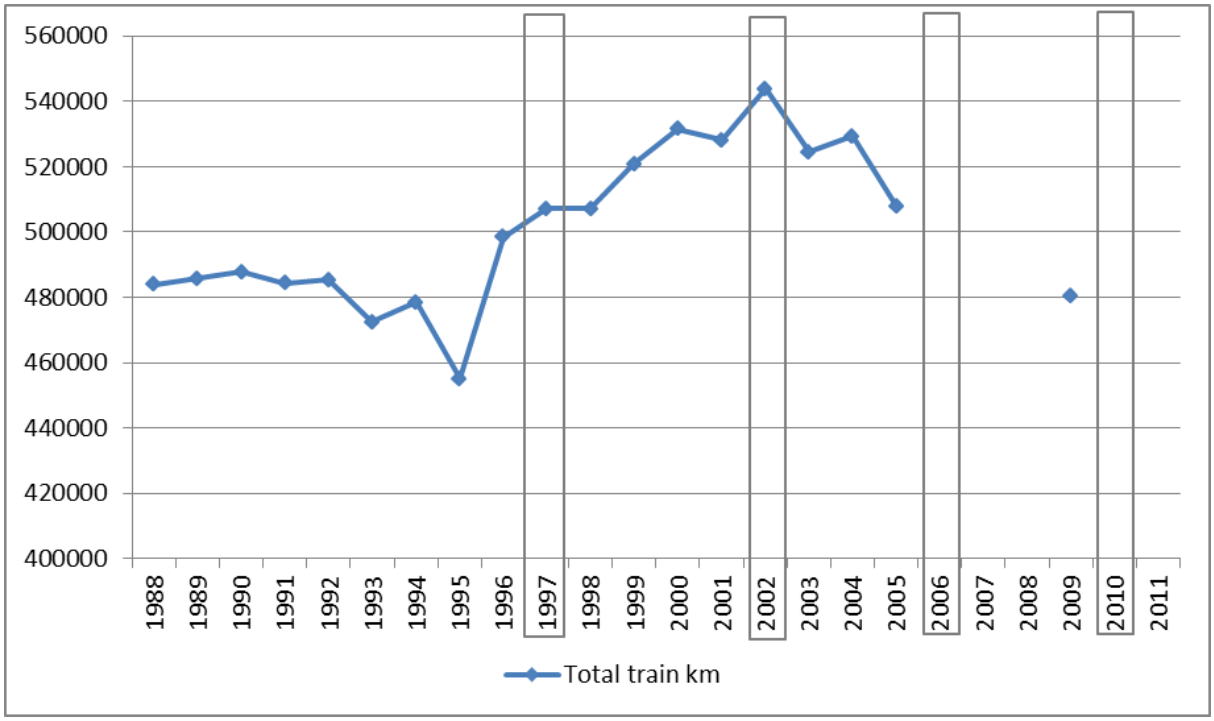
Figure 54. France: length of lines (km). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

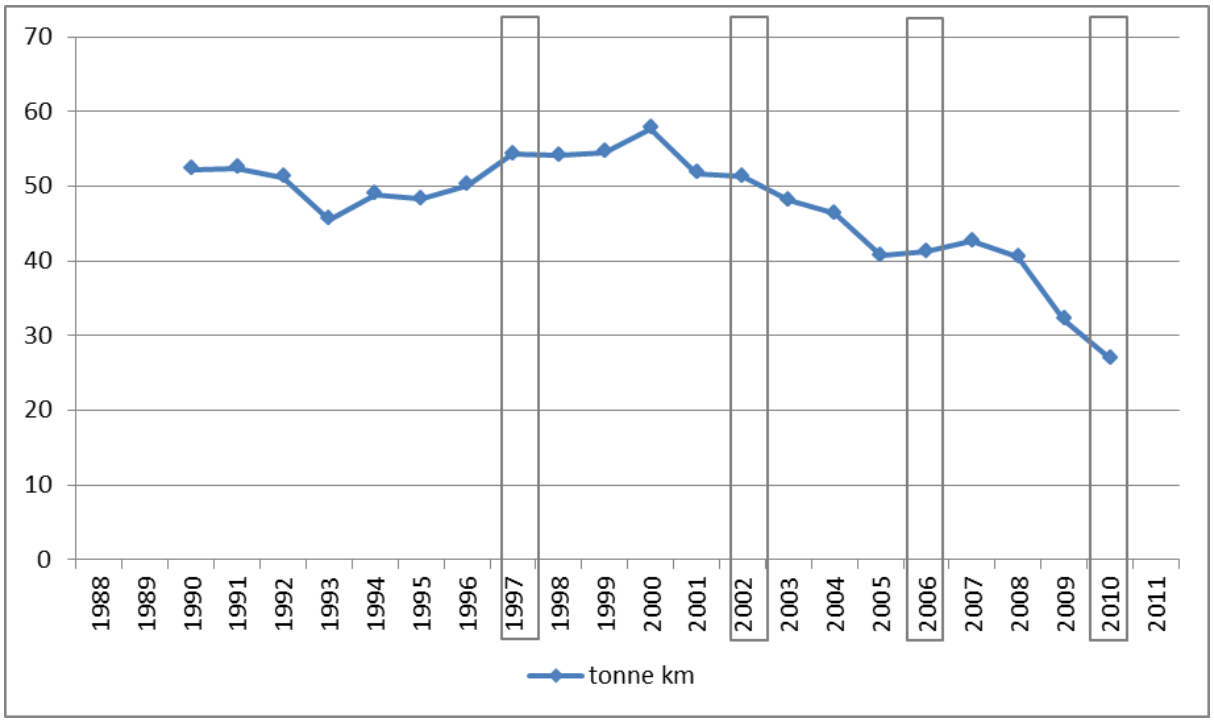
While total train-km has been slightly on the increase in the period 1996-2002, they generally decreased later (but there is a gap in the data we have: 2006-2008). The limited time span covered by the analogous UIC data we could inspect shows a similar trend. The share of passenger train-km is constantly on the rise (the same as their value) in the period observed while the value of freight train-km is constantly diminishing, also after the opening of the freight market. In fact rail tkm have dropped from 57,700 mio in the year 2000 to 29,600 mio in the year 2010. The total freight data available seem to contain an inconsistency, while the modal split for rail, although in a decreasing trend was 15.9% in 2009.

Figure 55. France: total train km (1000 train km). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

Figure 56. France: tonne kilometres (100 mio tkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter

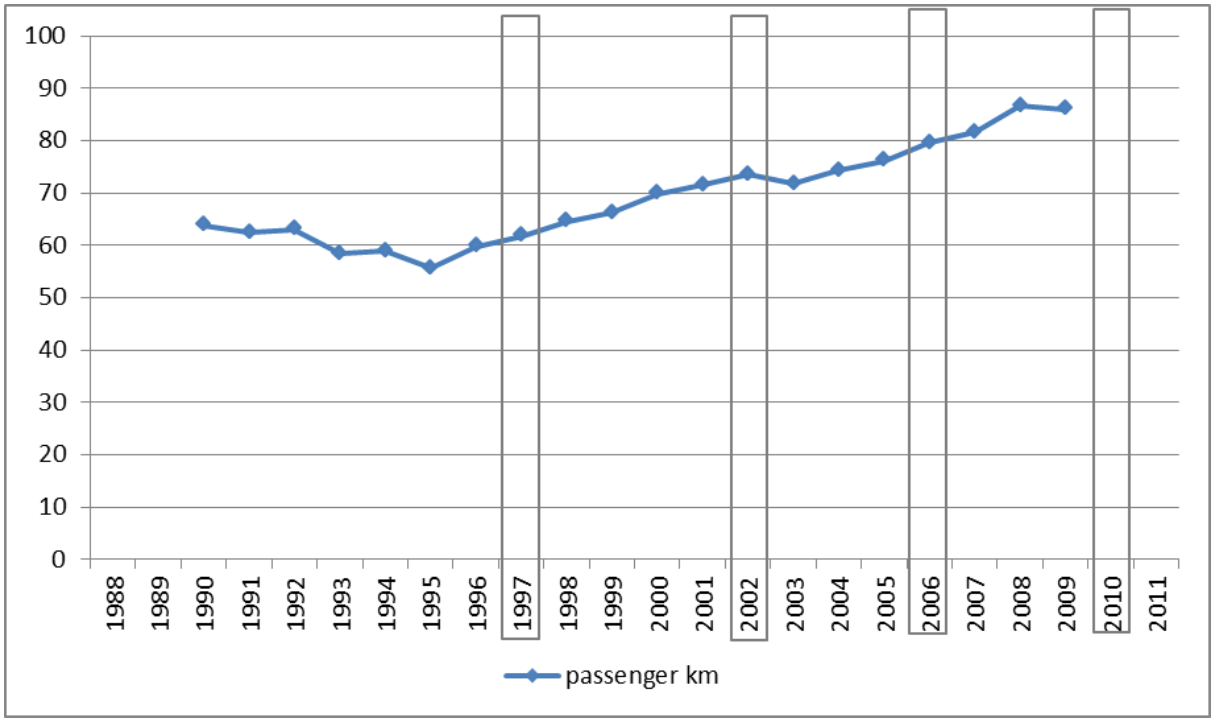


Source: Eurostat

The ratio of the volume of freight transport with respect to the GDP (normalized to the year 2000) is seen to decrease after 1999 and was 71.4 in 1999, while analogous decrease has been less pronounced for passenger transport, at 92.3 in 2008. Contrasted with the concurrent modest increases in GDP, the data for passenger transport may be interpreted as a lower availability of resources to travel. It should also be noted that the average index for transport prices referred to rail has been increasing constantly, similarly to the corresponding index for EU15 and EU27.

The aggregate data from Eurostat do not allow appreciating the increase in production on regional lines that was noted by other observers, as recalled in the previous chapter. The trends of pkm, instead allow us to note the stable increase throughout the period of observation of the traffic of passengers on high speed trains, which was about 60% of the national total in 2010. The total had a decrease until 2005 and is on the rise since, amounting to 86,000 pkm in 2009 (of which 60% on the 1996 km of high speed lines, 6% of the network). The constant increase in the share of pkm on high speed is consistent with the overall trend observed for the EU27 over the same time period. Also passenger modal split has been rising almost constantly since 1995, when it was 7.5%; in 2009 the rail modal split for passengers is 9.9%. The road modal split is substantially constant, with a marginal decrease observed recently coupled with a marginal increase of public rad transport.

Figure 56. France: passenger kilometres (1000 mio pkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

The usage of the network (train-km/km of lines) has been increasing slightly until 2002 and marginally decreasing afterwards, which is consistent with a substantially constant length of the network and the reduction in train-km observed.

Eurostat data on annual number of accidents show a negative leap in correspondence with a discontinuity in data availability in 2002-2003, indicating very likely a change in data collection procedures. Otherwise the number of accidents (and its ratio to train-km) is largely constant, with the exception of a peak in 2007. The annual number of victims is largely constant over the period 2004-2010 for which we have data. Along the same time period the number of accidents involving dangerous goods never exceeds 5.

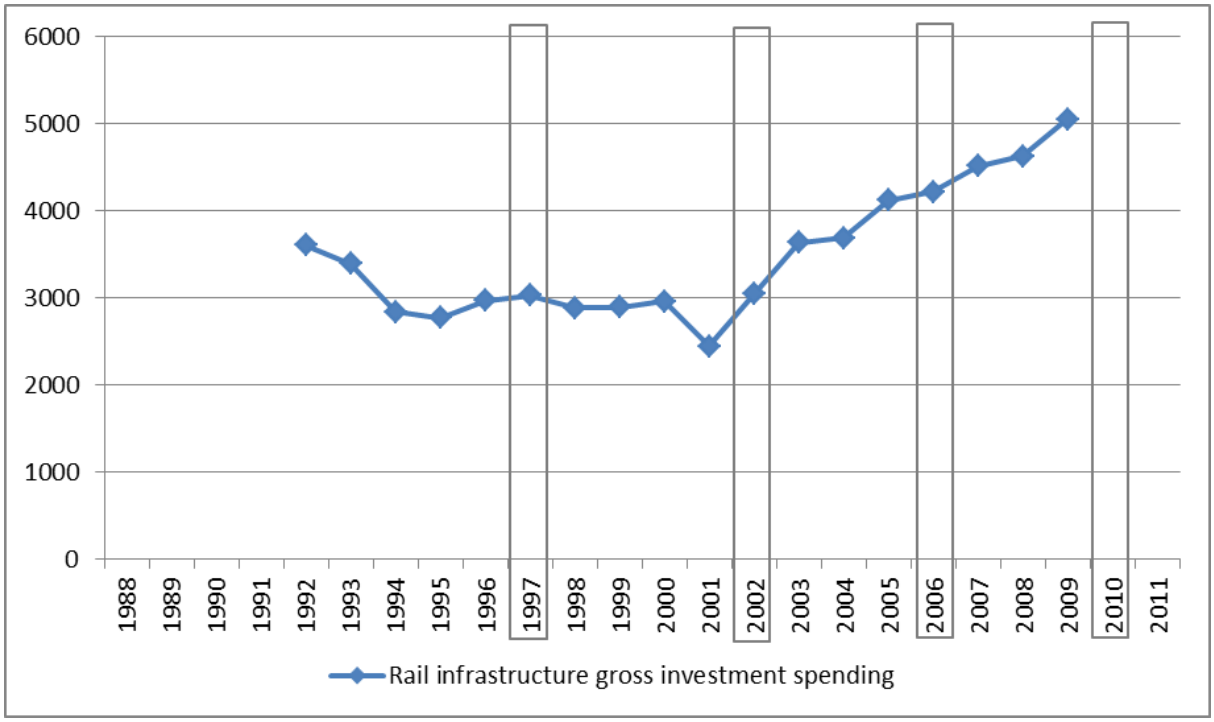
Data on emission of gases show generally decreasing trends, also when contrasted with the train-km data.

There is an almost constant decrease in the number of people employed in the sector. The number of enterprises is constant and equal to one until 2005. The only following data point reflects the opening of the freight sector and indicates the presence of 26 railway enterprises.

Eurostat data on expenditure in rolling stock and infrastructure has too few data points to infer trends.

OECD data on rail infrastructure gross-investment spending has seen an increase year after year after 2002 and until 2009 (the last year for which we have data) and so has maintenance expenditure in rail infrastructure (with a reduction in 2006-2007). Data from COM (2008) 54 final show that financial contributions provided by Government for infrastructure have almost doubled from 1996 to 2006.

Figure 57. Rail Infrastructure Gross Investment Spending (million euro, current prices). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



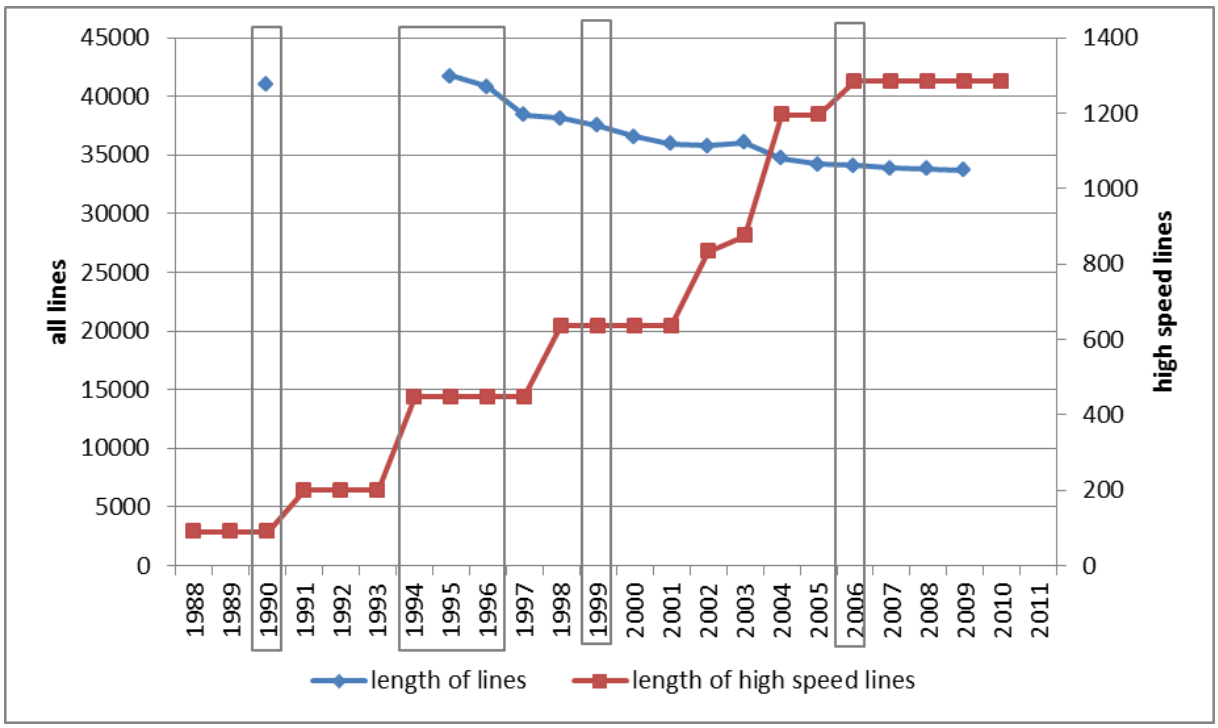
Source: OECD

Germany

In Germany, on the other hand, performance seems to have improved significantly on a number of metrics in the last 20 years. However, in order to ascertain to what extent this improvement is linked to institutional changes in the railway sector, as opposed to the one-time effect of reunification, we have to look at the trends more closely.

In the second half of the 1990s, the German railway network was reduced by almost 20%. A review of the full list of sections that were shut down indicates that this reduction was by no means limited to the territory of the former East Germany; some of the biggest shutdowns were in Lower Saxony and North-Rhine Westphalia. At the same time Germany embarked on a process of high speed rail construction, with the number of km of high speed infrastructure available steadily increasing throughout the relevant period. Finally, looking at inputs, we see that railway employment was reduced by about half between 1991 and 1998, while spending on maintenance and infrastructure increased significantly.

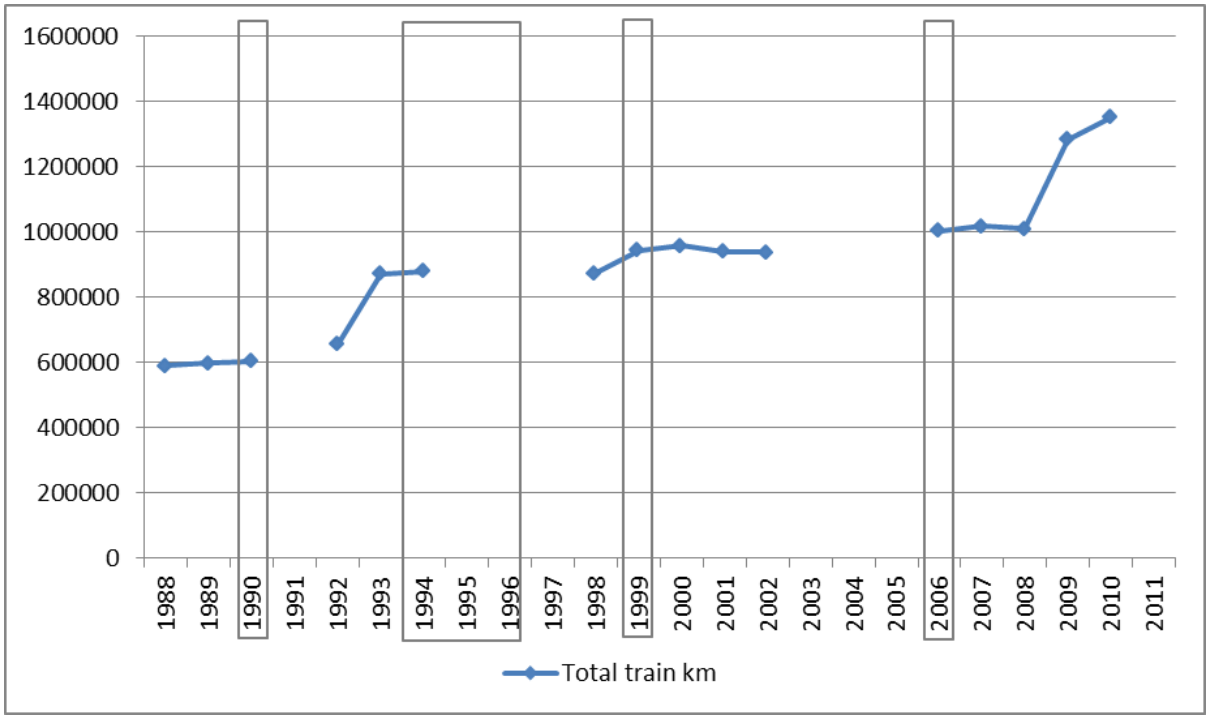
Figure 58. Germany: total length of lines (km) and length of high speed lines (km). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

Moving on to outputs, we have to note that these line closures do imply a reduction in technical performance. When it comes to operational performance, the German railway system has improved a lot on all variables: the number of train-kms and train-km in passenger transport has more than doubled, while the number of victims involved in railway accidents has been reduced by 23% since 2004, the earliest year for which we have data. At the same time, however, there has been a steady increase in passenger ticket prices, with an average annual price increase of 3.7%. We do not observe any major discontinuities in any of these trends.

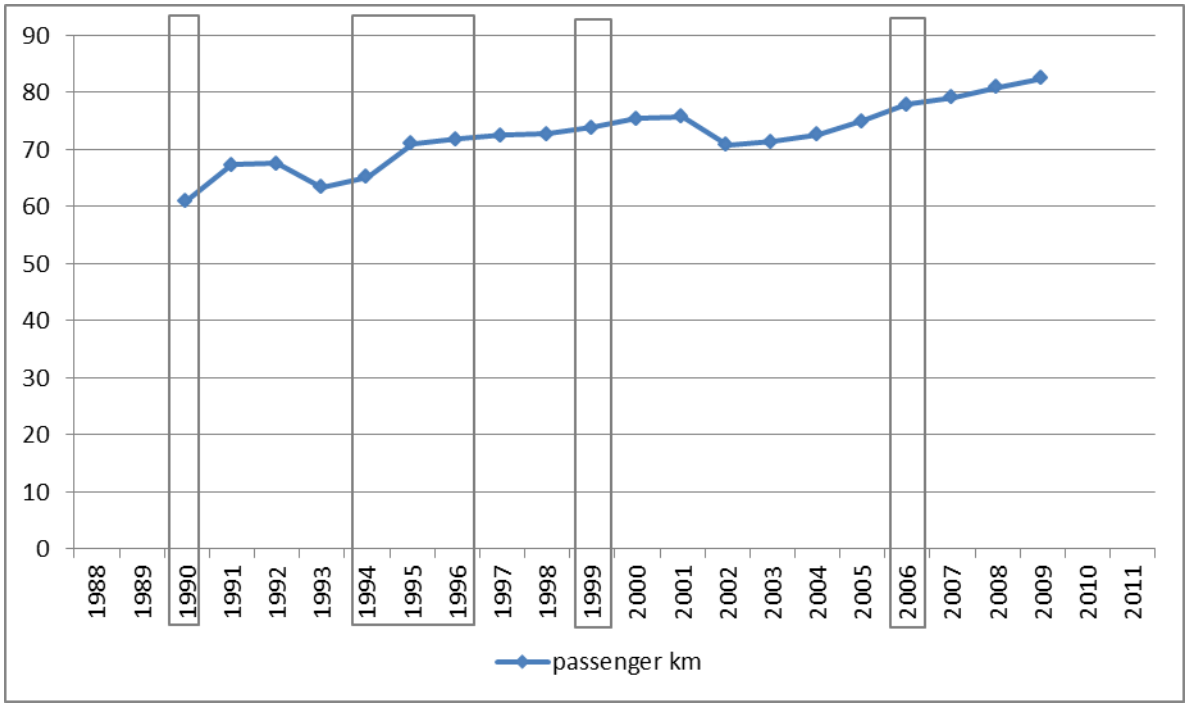
Figure 59. Germany: total train kilometres (1000 train km). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

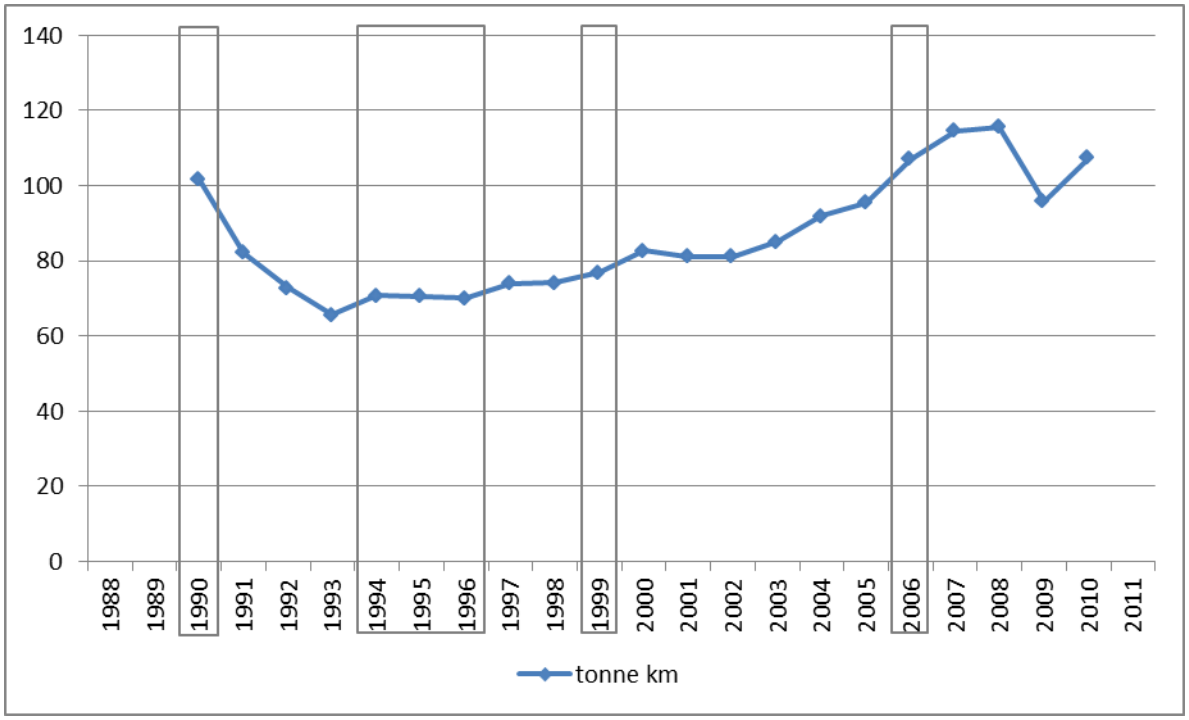
The economic performance of the German railway system has overall been excellent. Its output in terms of passenger-km generally increased, except in 2000-2001, while high speed has managed to win a share of 28% of total passenger-km. In the freight market, too, traffic has generally increased, at least until the onset of the current economic crisis. It is interesting to see how the volume of traffic is related to the growth of GDP; like in all other countries under consideration, passenger traffic decreased when GDP grew, but Germany is the only country that displays a pronounced increase of freight traffic relative to GDP, at least between 1995 and 2008. We might speculate that this is because so much of German GDP growth was the result of the export of goods.

Figure 60. Germany: passenger kilometres (1000 mio pkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

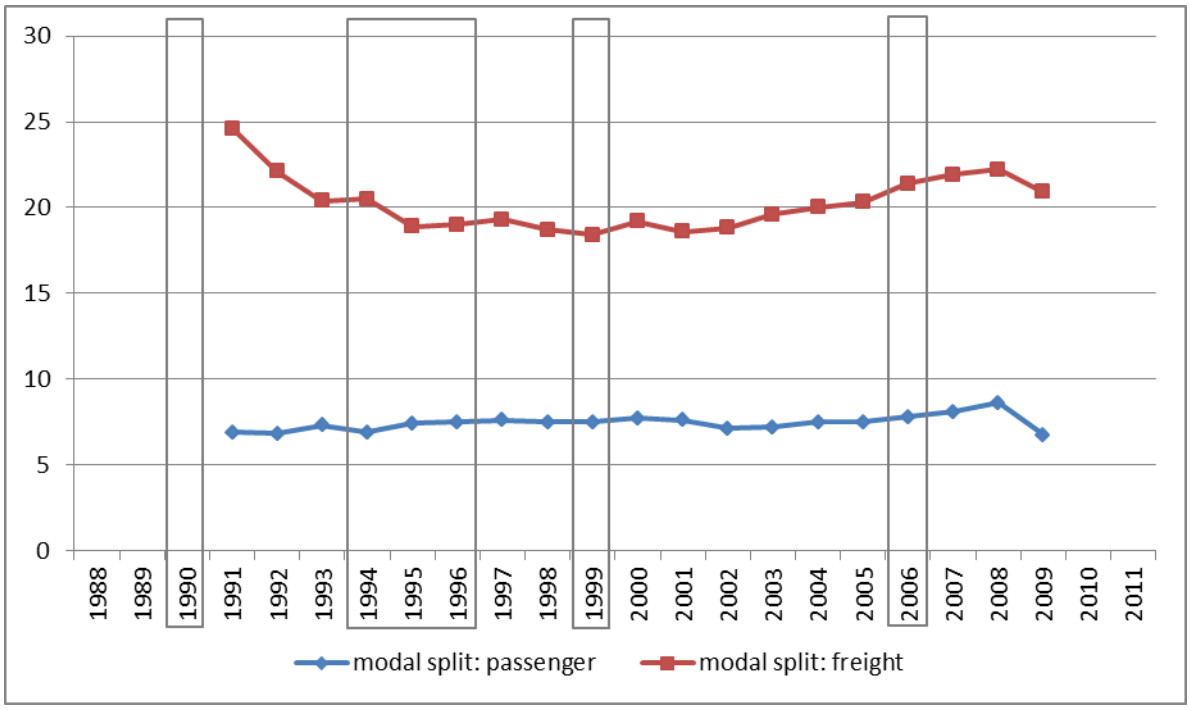
Figure 61. Germany: tonne kilometres (1000 mio tkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

The share of rail transport in the overall passenger transport market improved steadily in Germany, albeit with temporary declines in 1994 and 2002, while the modal split in freight declined in the early 1990s, was around 19% in the rest of the decade before increasing to 22.2% between 2002 and 2008. When it comes to greenhouse gas emissions, the most noteworthy trend is the steady decline in CO_2-emissions, an overall reduction of 57%.

Figure 62. Germany: % of passenger and freight traffic on rail. The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

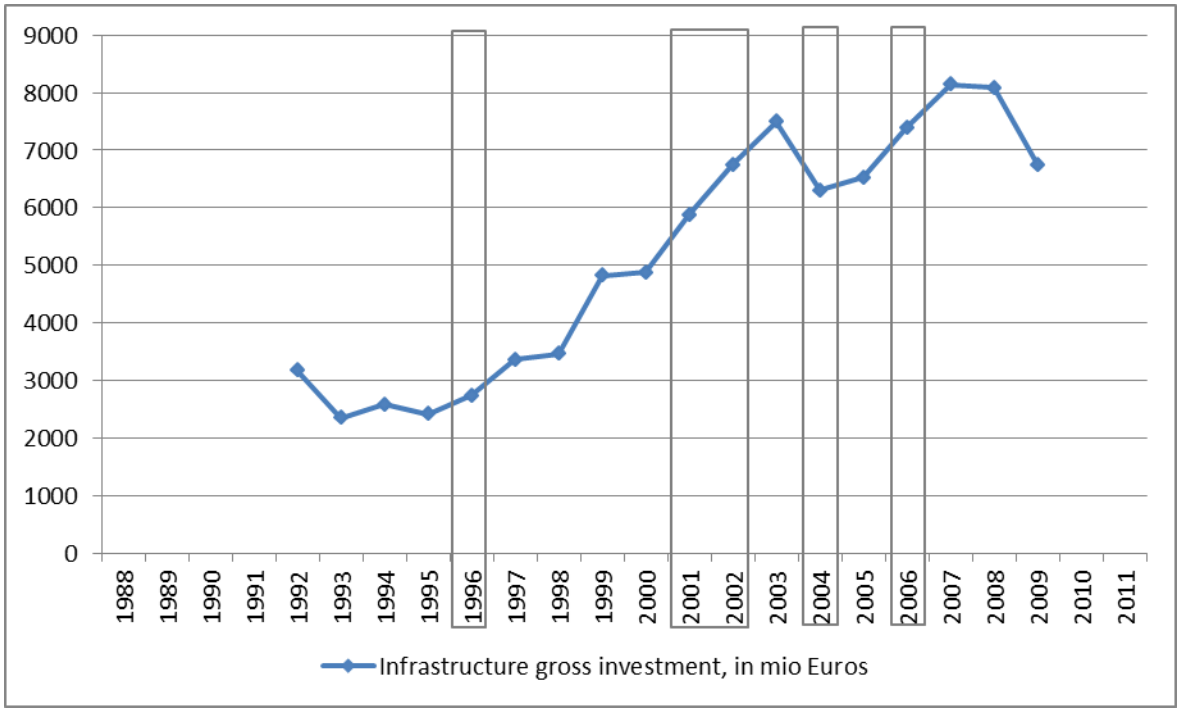
Great Britain

The most remarkable thing about the British railway sector is that it has surprisingly little high speed rail, when compared with countries like France or Germany. The only section of high speed in the UK is the London-Channel Tunnel link. Otherwise, high speed is essentially not a factor in Great Britain.

When it comes to railway spending, it is useful to note that spending was increasing even before the famous Hatfield accident in 2000. Infrastructure gross investment, for example, was at its lowest in 1993. From that year until 2000, it increased by 11% per year, on average. After 2000, it continued to increase until a peak in 2008, implying an average annual growth rate of 7.6%.

Due to missing data, it is difficult to identify any clear trends in operational performance. It is clear, though, that fare prices increased every year since 2000, by an average of 5.4% per year.

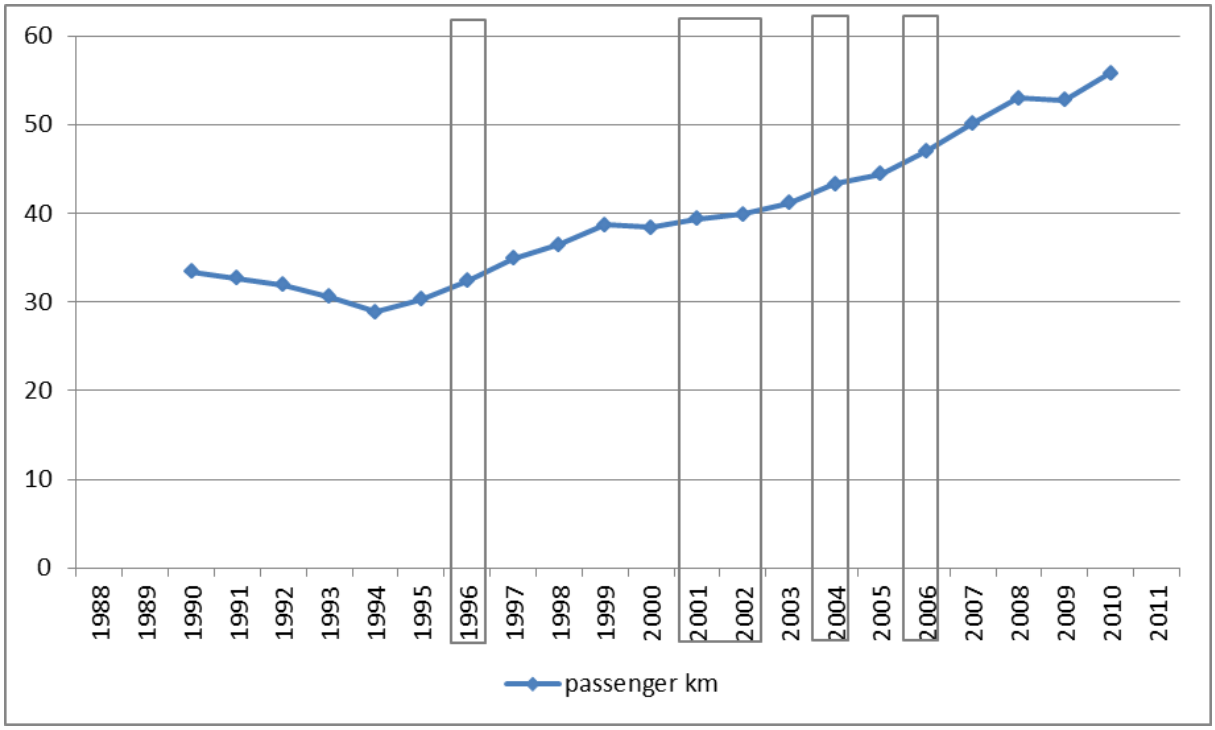
Figure 63. Great Britain: Rail Infrastructure Gross Investment Spending (million euro, current prices). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: OECD

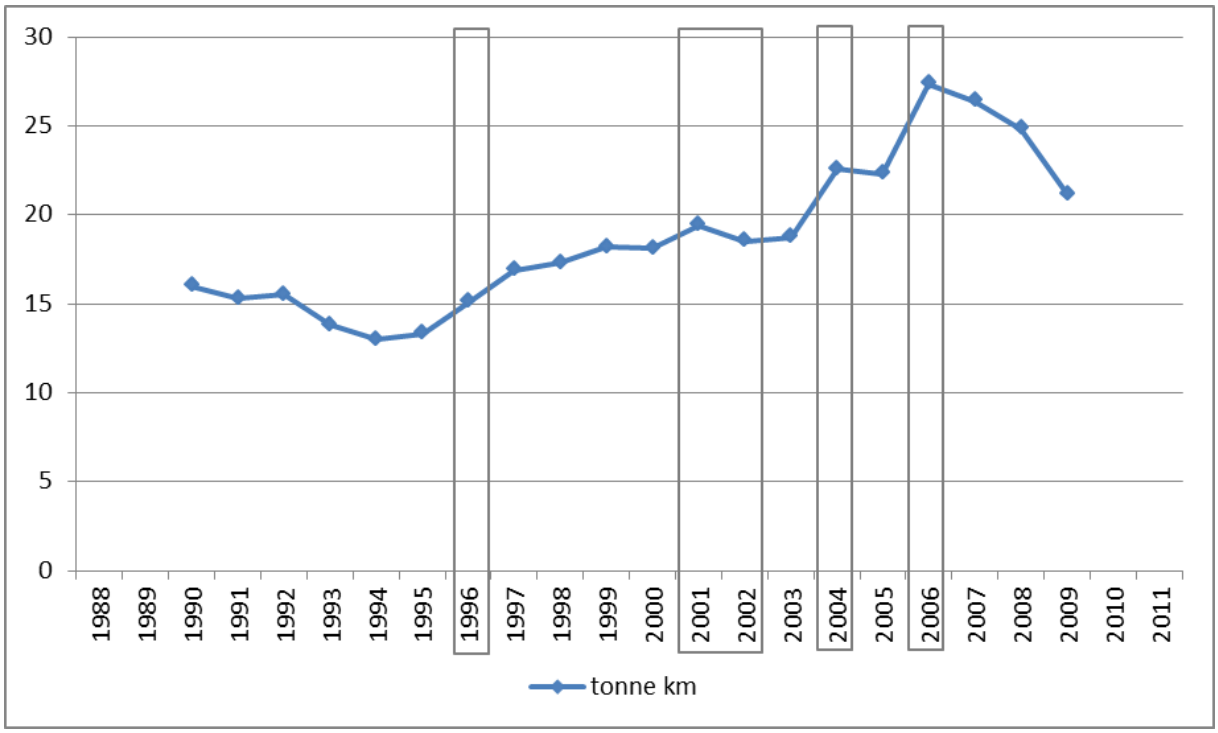
Turning to economic performance, there was a clear change in trend in 1993-1994, which is when passenger volumes started to increase. Since then, the number of passenger-km is up by 82.5%. For freight, the increase between 1994 and 2006 was 110.5%, but since then volume has dropped again by 23%. For both passengers and freight, transport volume growth was significantly slower than GDP growth.

Figure 64. Great Britain: passenger kilometres (1000 mio pkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

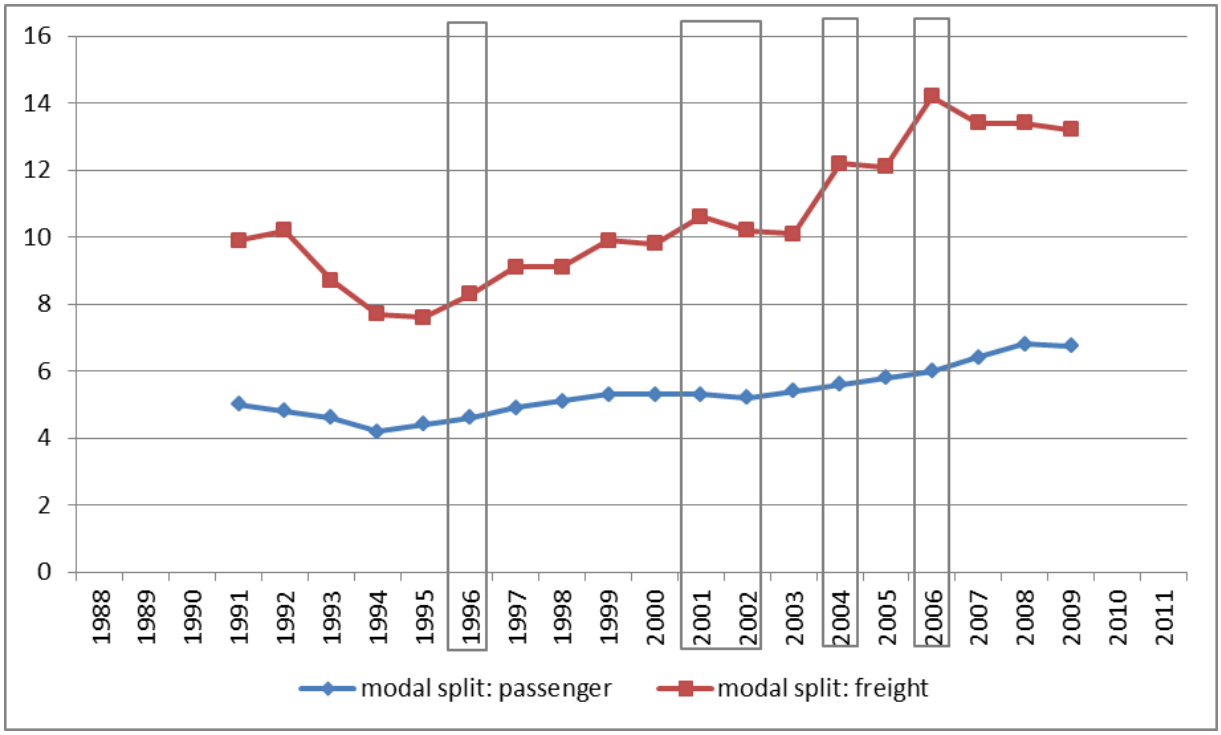
Figure 65. Great Britain: tonne kilometres (1000 mio tkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

For environmental performance, finally, we note a steady increase in the modal split of rail for both passengers and freight since the low point in 1994. These gains have, however, come at the expense of a significant increase in CO_2 and NO_2 emissions. This is due to the fact that large parts of the British network are still not electrified[40].

Figure 66. Great Britain: % of passenger and freight traffic on rail. The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

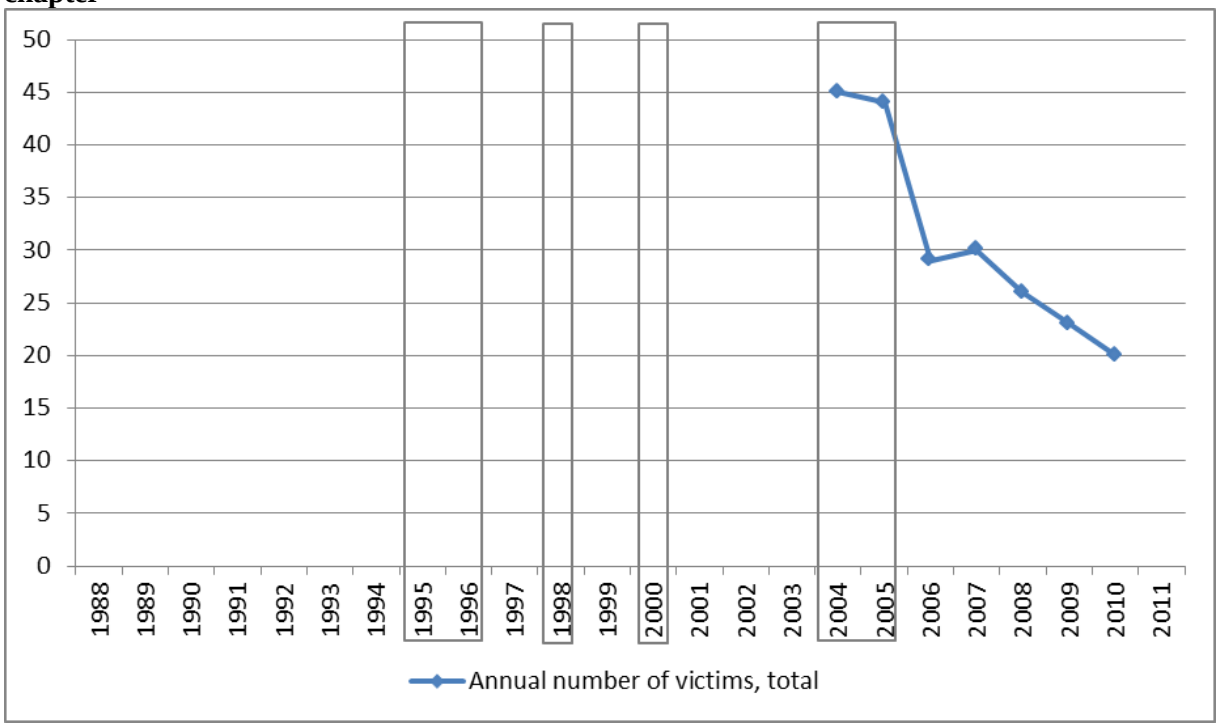
The Netherlands

As noted, what make the Netherlands stand out among the case study countries are the fact that its railway network is so intensely used and the fact that it is the only country that has a higher modal split for rail in passenger transport than in freight. As far as high speed rail is concerned, the only piece of track that has been finished so far is the connection Amsterdam-Rotterdam-Brussels-Paris (i.e. the HSL-South), which was opened in December 2009. Expenditure on rail appears to have trended steadily upward.

On operational performance, it is again difficult to identify clear trends, although we can tentatively say that not a lot has changed over the last 20 years. One exception is the railways' safety record. The number of victims of railway accidents has more than halved since 2000, for example.

[40] Cf. Department for Transport White Paper CM 7176, "Delivering a Sustainable Railway", dated 1st August 2007.

Figure 67. The Netherlands: Annual number of victims. The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



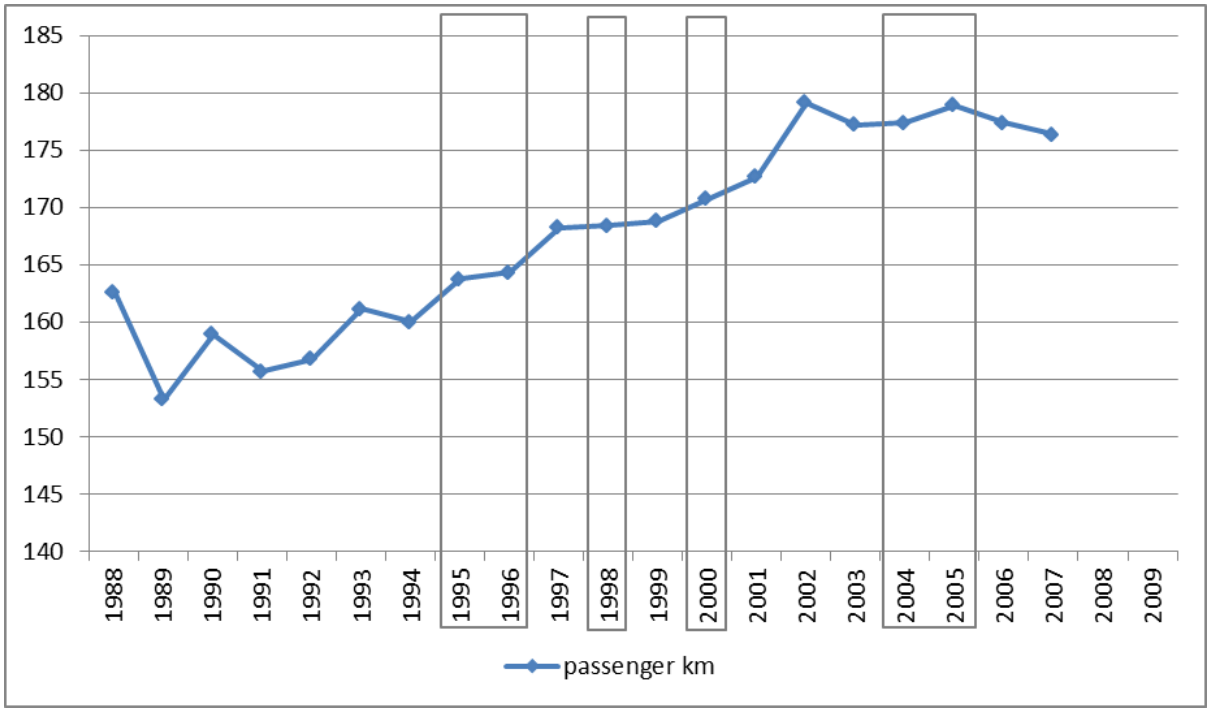
Source: Eurostat

As in every other country under consideration except Sweden ticket prices have increased steadily. For the Netherlands the average increase amounts to about 3.7%.

During the relevant period, passenger volumes measured in passenger-km has been fairly constant, with the 1993 level of 15.25 bn pkm not matched again until 2006. For freight, there has been some steady growth: from a low of 2.68 bn tkm in 1993 freight volume grew to 7.22 bn tkm in 2007, an increase of 169%[41].

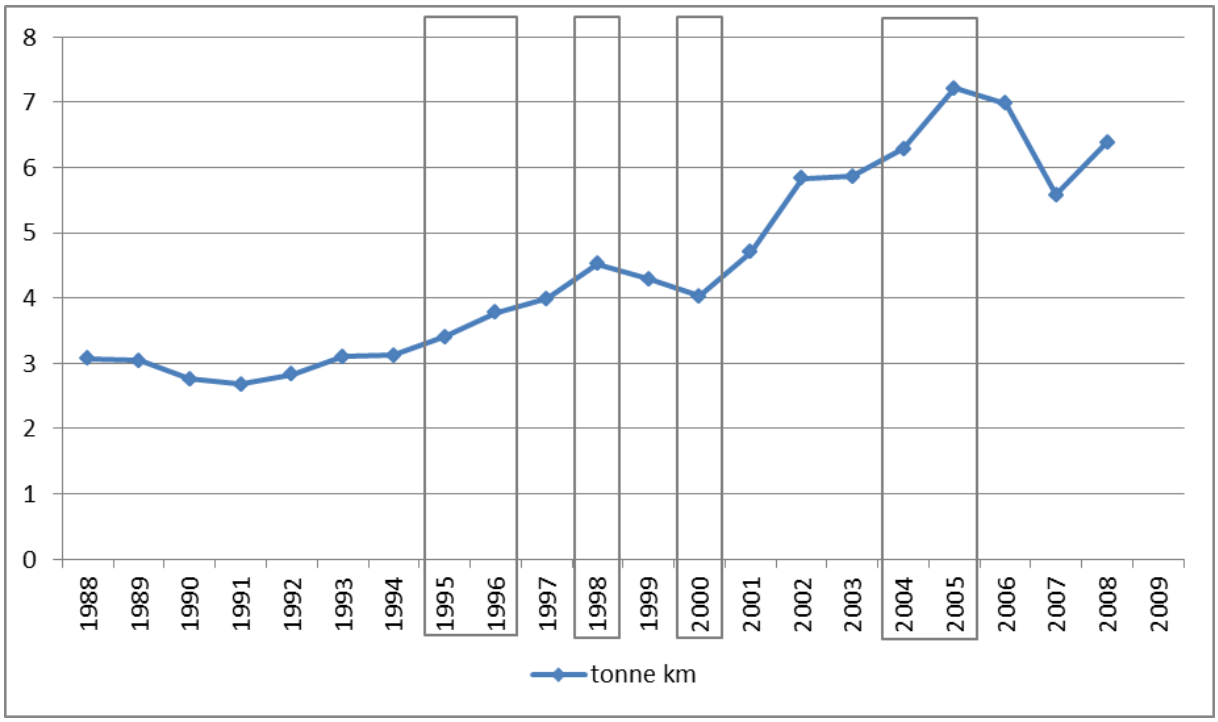
[41] Note that the Betuweroute dedicated freight rail line between Rotterdam and the German Ruhe Area was not opened until 2007, and therefore did not contribute to this growth.

Figure 68. The Netherlands: passenger kilometres (1000 mio pkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

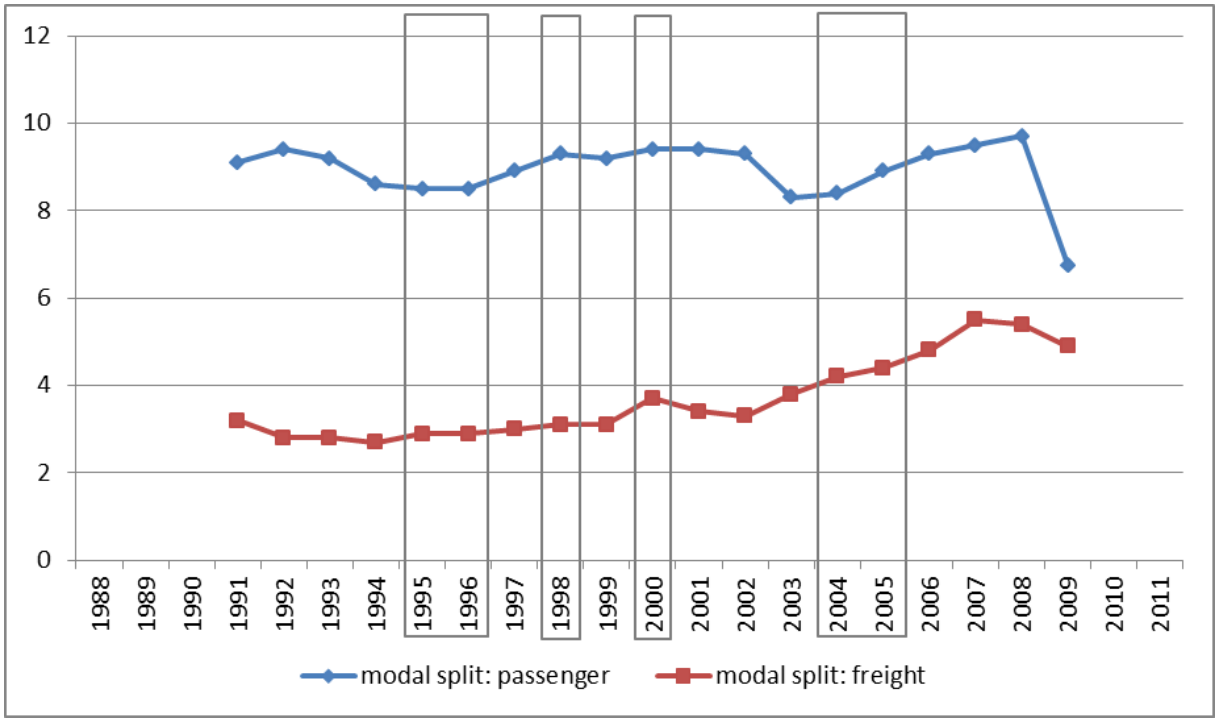
Figure 69. The Netherlands: tonne kilometres (1000 mio tkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

The modal share of rail in passenger transport has been fairly constant at about 9%, while the share in freight increased from a low of 2.7% in 1994 to a maximum 5.5% in 2007. Given the high and increasing degree of electrification of the Dutch network, greenhouse gas emissions were low and falling throughout the last 20 years.

Figure 70. The Netherlands: % of passenger and freight traffic on rail. The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

Sweden

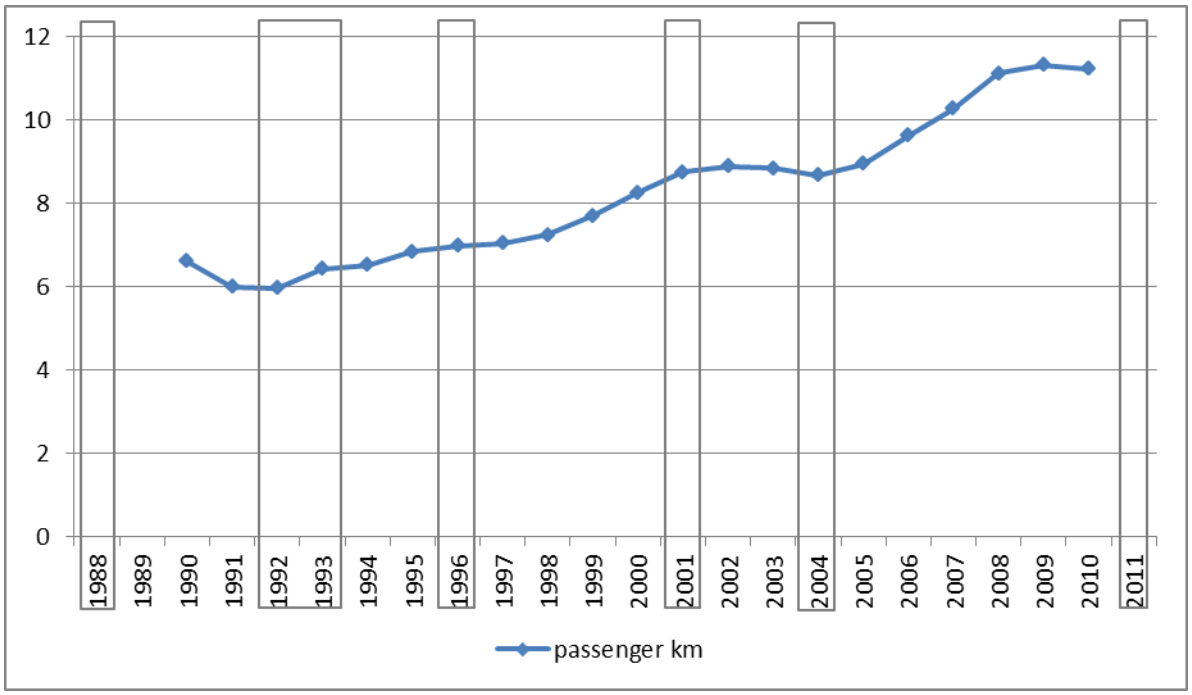
The length of the lines over the period of observation has varied very little. No high speed lines have been built in Sweden, though Eurostat records some recent passenger operations as under high speed regime.

Looking at the train-km series we may observe the difference in magnitude and trends between UIC and Eurostat data. Looking at the latter we note an overall increase, particularly after 1999. Considering the time covered by the data series (1998-2010), the increase in train-km is about 30%. The number of passenger train-km has followed a trend similar to that of the total train-km, and its percentage importance has been largely constant over time with minor fluctuation, showing an increase from about 6% to about 7% over the time of observation. Train-km for freight trains show a decrease in 2009, in correspondence with the international economic downturn, which contrasts with a previous increase over several years.

The overall intensity of use of the network has increased over time from about 9,000 train-km/km to almost 13,000 train-km/km in 2008 (with a reduction in 2009, the last year for which we have data).

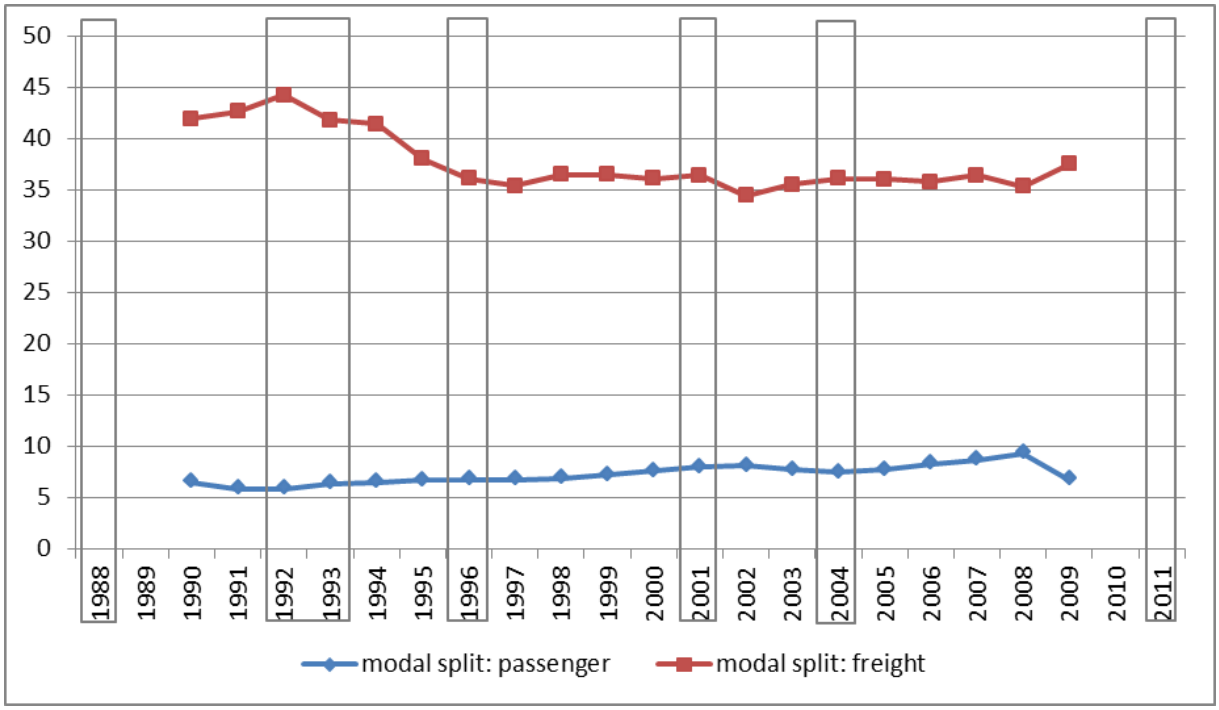
Total passenger transport pkm in Sweden has increased from 1990 to 2009 by about 17% overall and the amount of rail pkm has followed the trend but showed overall increase of about 70%. The increase in rail passenger transport in Sweden has continued also in 2009, when there was a reduction in EU27. Also the passenger modal split for railways has shown an increasing trend, reaching 9.3% in 2008, though data show it much lower the next year.

Figure 71. Sweden: passenger kilometres (1000 mio pkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

Figure 72. Sweden: % of passenger and freight traffic on rail. The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter

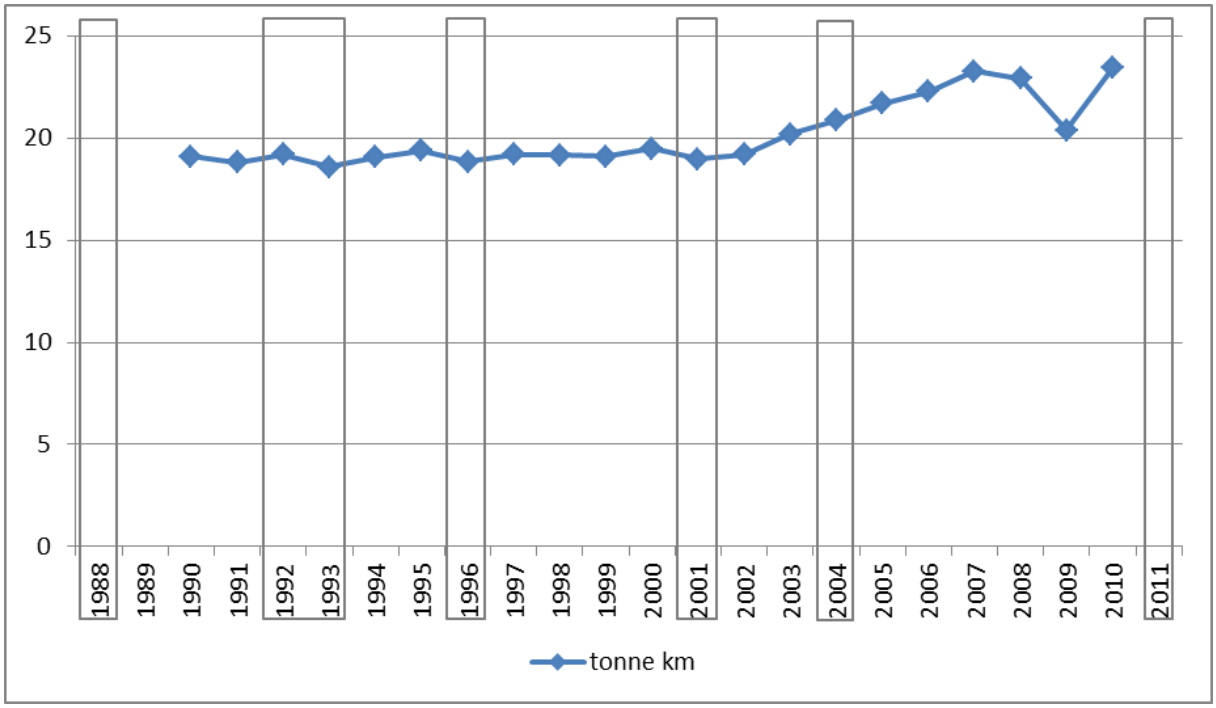


Source: Eurostat

The normalized ratio of passenger transport relative to GDP is decreasing for the whole extent of the data set 1995-2008, with the exception of the period 2000-2003 when it was constant. When looking at the normalized index for railway passenger prices, the trend is generally increasing over the years, albeit with a reduction in 2007-2008.

Freight on rail in Sweden has been increasing over the recent years, particularly after 2002, when it was 19.2 mio tkm, until reaching 23.5 mio tkm in 2006. After a reduction in 2009, which went along with a reduction in total freight transport in Sweden, in 2010 rail tkm had gone up beyond the previous 2006 peak. Total tkm for Sweden present a jump in value between 1994 and 1995, which should likely not be attributed to actual changes. Freight rail modal split has been decreasing from beyond 44% in 1992 to 37.5% in 2008, which is more than twice the corresponding EU27 value and indeed 2.6 times the EU15 one. The normalized ratio of freight transport to GDP shows a reduction in 2009, after several years during which such value was changing little.

Figure 73. Sweden: tonne kilometres (1000 mio tkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

Safety statistics, for the years available, show a limited number of passengers killed (2 in 1997 and 2004, with no other casualty during the years 1997-2009) and a peak in the total number of victims in 2010. The time 2004-2009 shows a reduction in the number of accidents, followed by an increase for the only next data point (when referred to the number of train-km we obtain a similar trend). The reduction happened after Jänvägstryrelsen became the Safety Regulator, but it is hard to make a connection.

The EEA data on CO_2 emissions show a decreasing trend, with the exception of the years 1998-1999, also when the data are referred to the train-km. Analogous trends may be observed for NO_2 and CH_4.

Employees in the railway sector are less than half than they were in 1998, although an increase of employees in the sector in recent years may be observed. We note an increasing trend in the number of railway enterprises reported by Eurostat.
The 1991-1999 expenditures in rolling stock refer to *SJ* only (since it is for principal railway enterprises) and for one year only is below 200 mio euro. The expenditure in infrastructure can be safely assumed to refer to the whole network and data show expenditures more than doubling in 1990-1995, just after the vertical separation of *SJ* and *Banverket*, which we know was intended to bring about State control of public funds in rail infrastructure. Expenditures have been reduced in the following years and until 2001, while the increase that followed has led the 2010 level of infrastructure expenditures to more than twice the 2002 value. The OECD data on maintenance show a trend generally increasing over the years and still OECD shows a steep increase in infrastructure investments after 2001. A previous important increase in infrastructure investments is shown by the data for 1994-1996.

Swedish data on Government support to services and infrastructure as well as on infrastructure renewals and enhancements show a trend similar to each other, with a reduction in 1998-2001 and an important increase afterwards. While we have characterized 2001 as a milestone due to the separation of *SJ* into passenger and transport operators, the milestone can hardly be linked to the trend change. For the overlapping years, the Eurostat trend on expenditure infrastructure and the Swedish trend on infrastructure renewals and enhancements are generally in accordance.

The little data available show an increasing turnover for the railway sector.

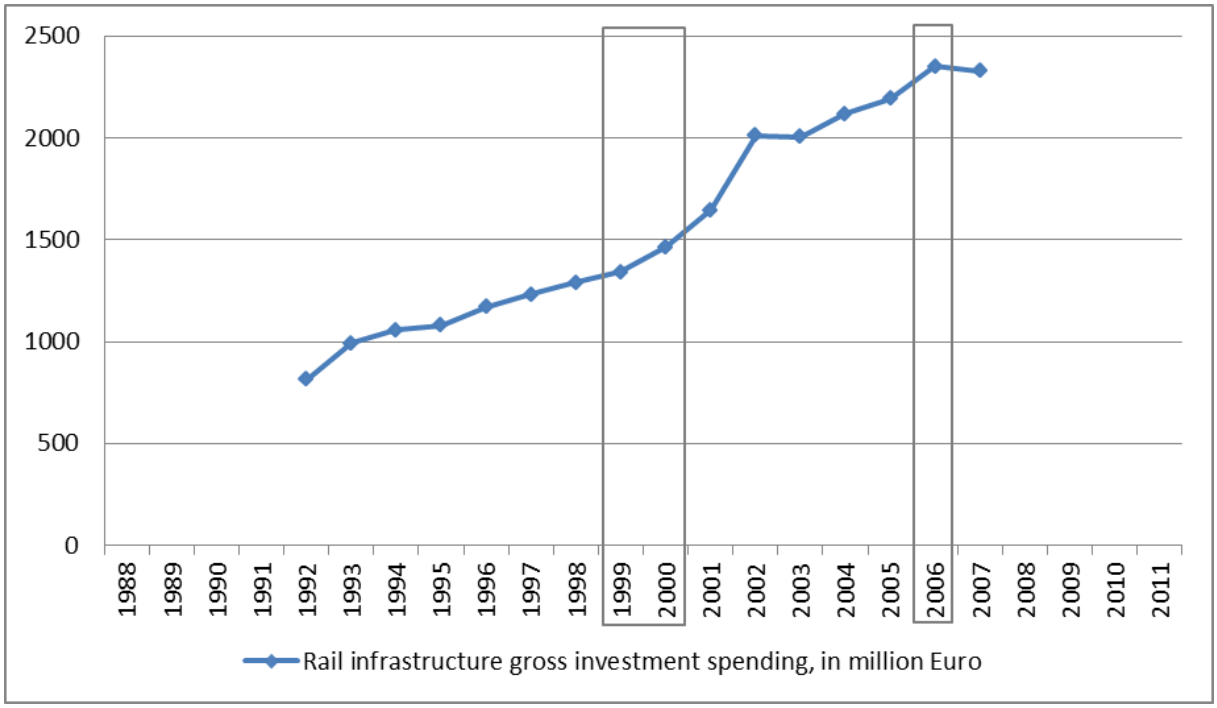
Switzerland

The characteristics of the Swiss railway network mostly have to do with its position as a hub for transalpine goods' transport. With the second shortest network of the countries under consideration, it has by far the highest intensity of use. As can be seen from Figures 24 and 25, this is not only due to cargo transport. For passenger transport too, the Swiss network is intensely used. As of yet[42], there is no high speed passenger transport in Switzerland. Finally, it is important to note that Switzerland has always had some 50 different railway companies, with the State owned *SBB* operating merely as the first among equals. This has not changed, even though some new companies have entered the market in recent years.

In the last 20 years, Switzerland has engaged in an intensive programme of railway investments. A detailed discussion of the various projects is outside the scope of this report, but it is clear that these investments show up in the data presented here. Expenditures were high and the length of the network increased.

[42] In 2005, the Swiss Government decided to build connections to the high speed networks of France and Germany. However, these links are not yet finished. Cf. Federal Statute SR 742.140.3, Bundesgesetz über den Anschluss der Ost- und der Westschweiz an das europäische Eisenbahn-Hochleistungsnetz.

Figure 74. Switzerland: Rail Infrastructure Gross Investment Spending (million euro, current prices). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter

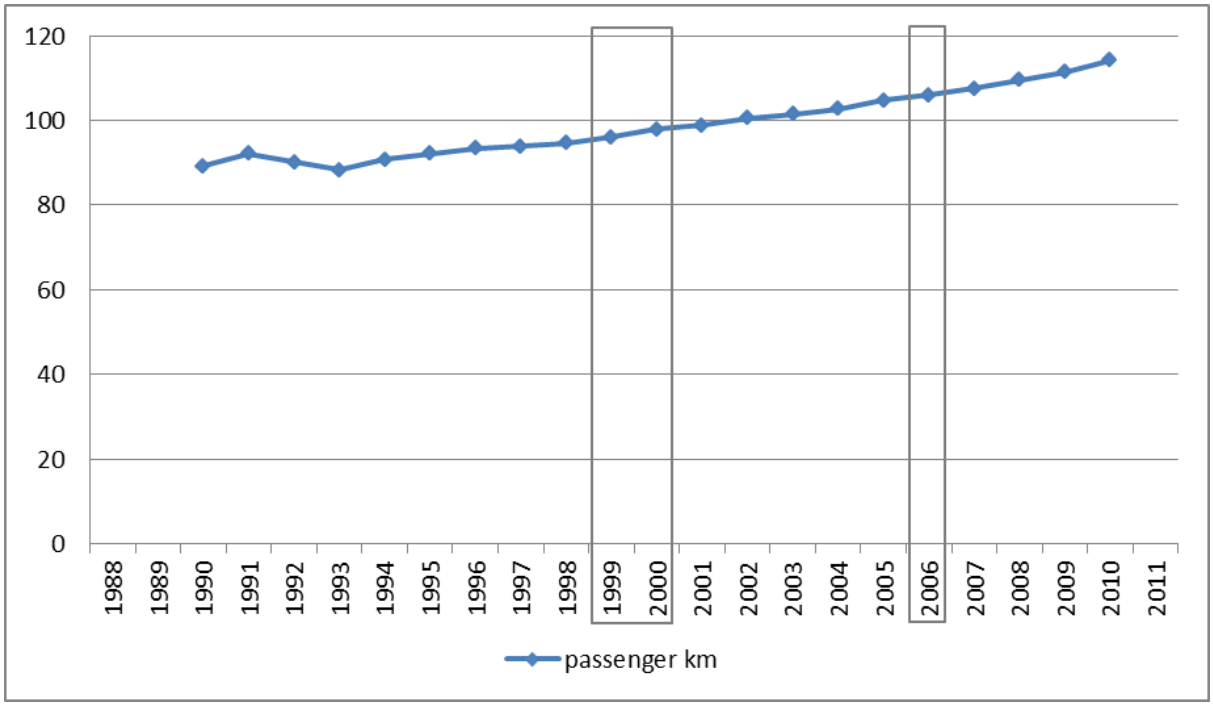


Source: OECD

Over the same time period, operational performance improved. The number of train-km increased while the number of accidents dropped steadily. As for social performance, since 2000 prices increased every year.

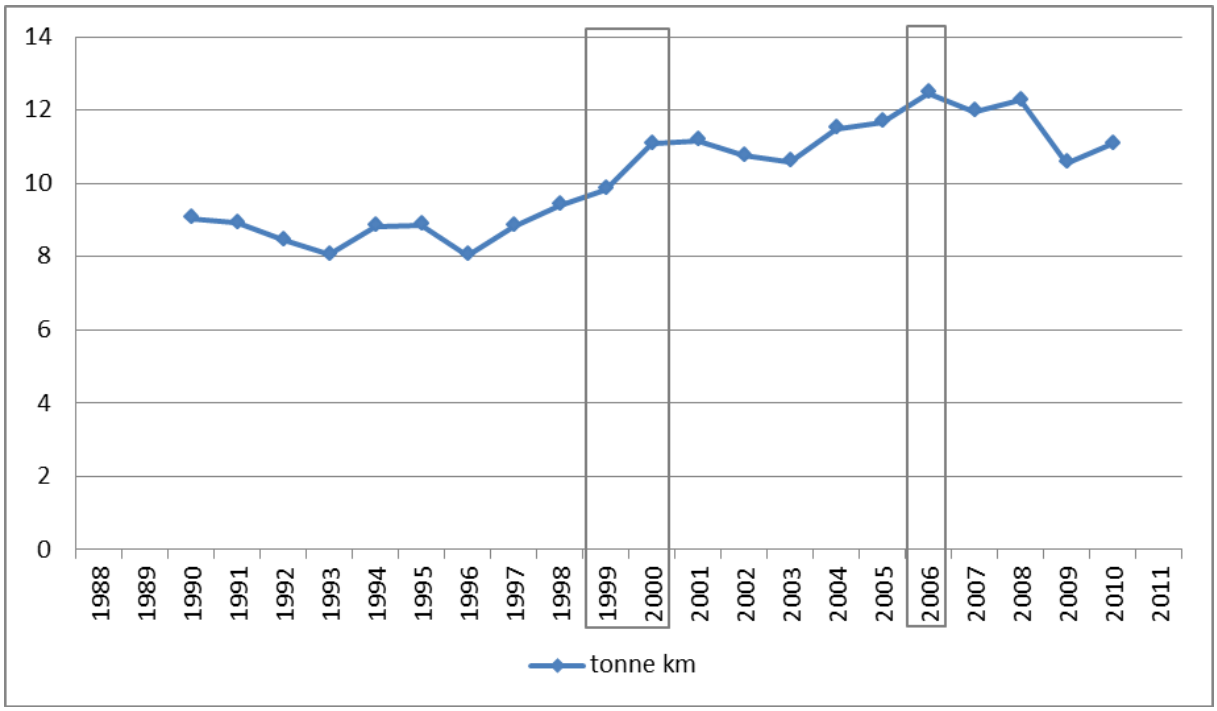
Passenger volumes dropped in 1995, but otherwise steadily rose. From that year until 2009, the most recent year for which we have data, the total increase in passenger-km is 56%. For freight, there was a similar drop in the mid-1990s, as well as another decrease in volume in recent years, presumably due to the economic crisis. Between 1996 and 2006, however, the total increase in freight tkm was 55%.

Figure 75. Switzerland: passenger kilometres (1000 million pkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

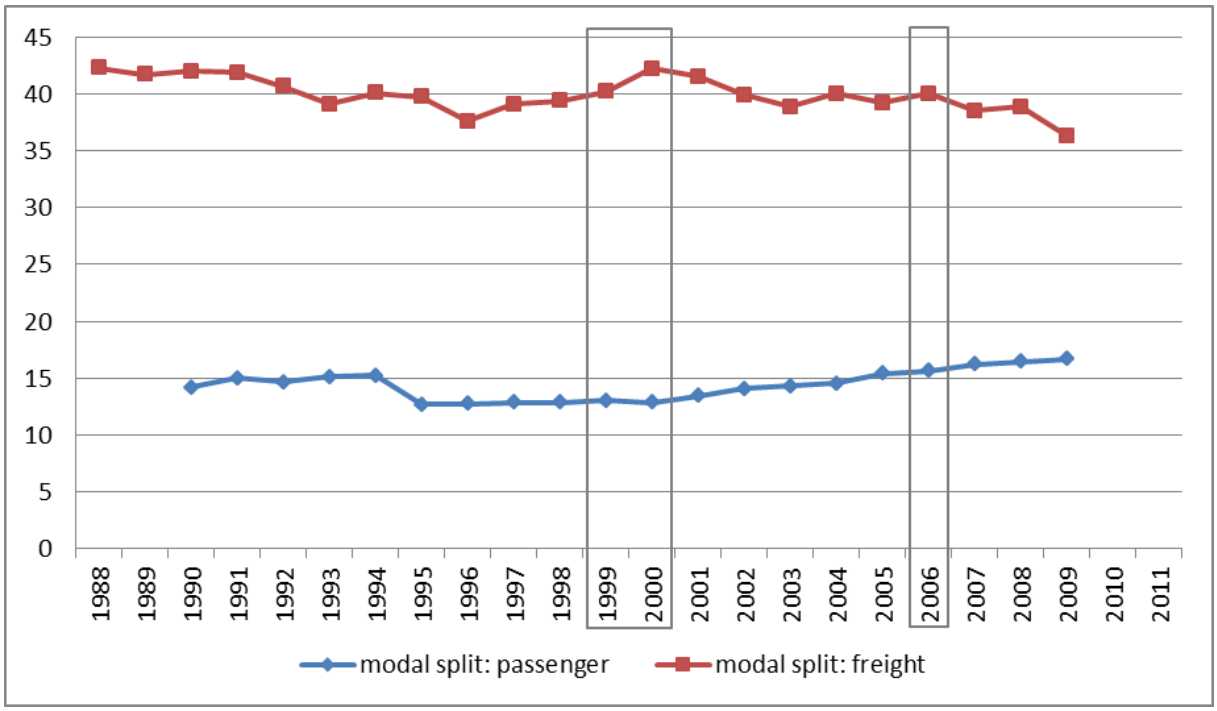
Figure 76. Switzerland: tonne kilometres (1000 million tkm). The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

When it comes to modal split, the Swiss railway sector appears to outperform every other country under consideration, at least when it comes to passengers. Moreover, the passenger modal split in Switzerland has been steadily increasing since 1995. Where the cargo transport market is concerned, the Swiss modal split has been fairly constant at about 40%, which is better than any other Case State except, in some years, Sweden.

Figure 77. Switzerland: % of passenger and freight traffic on rail. The rectangles placed vertically across the chart characterise the milestones of the institutional evolution indicated in the previous chapter



Source: Eurostat

4.5 Performance and institutional reform: interim conclusion

In the previous section we discussed the trends in performance in each of the six countries under consideration. While we noted the years in which trends started or ended, we did not yet link these trends to the institutional changes discussed in chapter 1. In order to do this, we need to proceed by phases. We will present here our interim conclusions, interim in that they are not yet based on our interviews with stakeholders, but only on our analysis of the data discussed so far. Chapter 5 will then be devoted to the completion of the analysis that we will be able to draw thanks to the interviews we have been taking.

In what follows, we will first briefly summarise some of the existing literature on the link between institutional reforms in the railway sector and the performance of the sector. As we have already seen in section 2.2 above, this literature usually focuses on a more narrow understanding of performance than what we have chosen, but it is still useful to take into account the results obtained.

Following that summary, we will consider each of our six countries once again to see whether the timing of institutional reforms and changes in performance trends is such that we can

draw conclusions about their correlation or even causation. On the whole, we will conclude that such a link can only rarely be deduced from the data presented so far.

Performance and institutional reform: some existing literature

Many empirical studies have looked at performance under de-regulation, most of them attempting to establish a link between reforms and efficiency in railways[43]. Among others, studies looked at the impact on firms' financial condition (i.e. revenue vs. cost control), productivity and cost efficiency. Studies were also conducted to analyse the impact on customers and shippers.

There seems to be relatively little consensus about the effect of reforms on efficiency. In an early paper aimed at studying the effect of Government ownership on efficiency, Caves & Christensen (1980) took advantage of the fact that Canada had both a large private and a public railway company at the time, companies that competed head-to-head offering many of the same connections. They concluded that the publicly owned company (*Canadian National Railroads*) was not less efficient than its privately held competitor. The authors speculated that in that case any inefficiency that might result from Government ownership had been prevented by the existence of competition.

Cowie (1999) did a similar study looking at private and public railway companies in Switzerland. Perhaps because there is no competition in the market there, he estimated that private railways had a significantly higher level of technical, managerial and organisational efficiency.

Friebel, Ivaldi and Vibes (2003) looked at unbundling and found that full separation of infrastructure from operations is not a necessary condition for improving railroad efficiency. Similarly, Wolff (2011) tested four hypotheses regarding unbundling: effectiveness of production and resources, efficiency of production, perceived customer satisfaction and overall performance, and accepted none of them. He concluded that "*altering the structure of a railway sector is clearly no guarantee for overall performance improvement* per se".

In a later paper, Friebel, Ivaldi and Vibes (2008) found efficiency increases when reforms such as third-party network access, introduction of an independent Regulator and vertical separation are implemented[44]. At the same time, reforms have been found to positively impact the railway's technical efficiency: higher reform intensity does not necessarily increase technical efficiency, which rather depends on the sequencing of reforms. In fact, railway is sensitive to changes in the regulatory framework, and one-size-fits-all may not be a fruitful way to enhance efficiency.

Driessen, Lijesen, & Mulder (2006) looked specifically at competitive tendering and concluded that it improves productive efficiency; they also estimated that free entry lowers productive efficiency. A possible explanation for this result could be that free entry may disable railway operators to reap economies of density. Finally they showed that more

[43] An increasing number of econometric studies are looking at railway efficiency and performance (Growitsch & Wetzel, 2009; Jupe & Crompton, 2006; Smith, 2005; Yu, 2008).

[44] While reforms seem to impact positively technical efficiency, higher reform intensity does not necessarily increase technical efficiency, which depends more on the sequencing of reforms. This last finding is similar to what Wallsten (2002) finds in the telecommunication sector.

autonomy of management lowers productive efficiency implying that increased independence without sufficient competition and adequate regulation may deteriorate incentives for productive efficiency[45].

In summing up the experience of 20 years of European railway reform, Nash (2012) concluded that there was still much uncertainty. While costs had gone down and traffic up, there is still a lot of uncertainty about the best approach to liberalisation for any given set of circumstances.

Performance and institutional reform: our data

Turning now to the data presented in the current chapter, as well as the information on railway reform discussed in chapter 1, the key question is one of timing. If these reforms were beneficial, they must have been followed by some noticeable improvement in performance. While correlation by no means proves causation, correlation is a necessary condition.

In France, we observe that both institutional reform and performance improvements have been slow. We notice that the earliest reforms, in 1997, were followed by a marked decline in the railways' modal share in passengers, but it is difficult to see how there could be a causal link, given the small difference between the price increases for rail and for transport generally and the lack of any evidence suggesting a deterioration in service quality.

Germany saw a significant improvement in operational and economic performance in the wake of the 1994 railway reform: more passengers and more freight being transported on more trains over longer distances with fewer accidents. A big question mark is, however, to what extent these improvements should be ascribed to the kinds of reforms we are interested in here: more autonomy for *DB*, competitive tendering for regional rail, a measure of unbundling within *DB*, etc. Instead, much of this improvement might be the result of the kinds of reforms that were already carried out in other countries much earlier, like the track closures carried out in Great Britain following the 1963 *Beeching report*[46]. We cannot answer this question based on our data alone.

In Britain we also observe a significant correlation between volume growth in both passengers and freight and the reforms of 1993-1994. It seems plausible to ascribe at least some of that improvement in economic performance, as well as the concomitant improvement in modal split, to the privatisation and liberalisation of *British Rail*. The flipside of that coin, however, is the growth in costs and the deterioration in safety. There is significant evidence that privatisation caused various actors to neglect or mismanage infrastructure maintenance leading to accidents and inefficiencies[47]. Whether the net effect of greater economic and operational performance but also higher costs has been worth is a question that we cannot answer.

[45] These results are consistent with those obtained earlier in a simpler study by (Oum & Yu, 1994), except that they found a positive relationship between managerial independence and efficiency. Also (Cantos, Pastor, & Serrano, 1999), on the other hand, obtained the same result as Driessen, Lijesen & Mulder (2006) on the question of the relationship between autonomy and efficiency.

[46] Note, however, that it is possible that reforms of this nature were impossible in Germany absent greater autonomy for *DB*.

[47] Cf. Wolmar, C. (2007).

The Dutch case is an interesting one for present purposes, since it combines some drastic institutional reforms (most importantly the full unbundling of *NS*) with somewhat disappointing performance trends. The only clear beneficiary of the reforms seems to be the freight sector, where performance started improving even before *NS* was privatised in 1995 and before the cargo market was opened up in 1998.

Sweden has seen impressive increases in rail traffic, in passenger and freight rail traffic (the latter is about 2.6 times the EU15 average), as well as large increases in infrastructure expenses, more than doubling over two time spans. While we may recognise that the first increase in infrastructure spending follows the vertical separation of the Swedish railways, inspection of the data series we have collected does not allow us to establish a connection with the evolution of the railway sector.

In Switzerland, finally, performance continues to improve according to many different metrics. However, there is no clear sign of any change in trends that might suggest the beneficial influence of institutional reform. The same goes for the inputs side of the equation, where the large spending programmes undertaken obscure any efficiency gains that might have been achieved through reform.

Performance and institutional reform: interim conclusion

It is clear from the previous section that at times it is certainly possible to recognise improvements in performance trends that coincide with institutional reforms. However, such instances are much less common than they would have to be in order to count as clear, unequivocal evidence of the beneficial effect of the reforms in question: for every reform that correlated with a performance improvement, there is another that had no obvious effect.

As long as we rely on quantitative performance data alone, we can do no better than speculate about the reasons why the correlation is so weak. Perhaps the indicators used were poorly chosen or simply too general to expose the underlying causal relationships. Or maybe the causal relationships exist only over a longer time horizon, meaning that we might not be able to observe them using only 20 years of data, or that we might not be able to detect them among the short-term effects of other developments. This is not something that can be corrected by gathering better quantitative data; the data we would need very likely do not exist, and even if they did there would be no way to tease the effects we are interested in out of the overall confusion.

Instead, the solution lies in a return to qualitative methods. Specifically, we decided to carry out interviews with various railway stakeholders in our case countries, in order to further investigate the connection between institutional reforms and system performance. The results of these interviews will be discussed in the next chapter.

5 Performance and the railway system

In chapter 3 we have identified the main institutional transformations for each of the six countries studied. We have concluded that, even though substantial institutional changes can be observed in each of the countries studied, each of them remains very much a type of its own. A certain convergence can be observed though when it comes to regionalisation and tendering of PSO obligations. The problem of the interfaces between the RUs and the infrastructure remains problematic and no country seems to have come to a satisfactory solution so far, thus raising the questions of the systemic nature and of the systemic approach to railways.

In chapter 4 we studied the various performance changes of the different national railways and at times railway systems. We regrettably had to conclude that it was difficult to establish a correlation, let alone a causal relationship, between the institutional changes in each country and the PIs that were measured. This is in part due to the fact that the indicators of performance are often not the relevant ones and this is especially true since these indicators do not measure the performance of a railway system as influenced by the institutional arrangements. It is also due to the fact that institutional changes produce long-term effects, owing to the complex interactions among the various actors affected by an institutional change. In any case, so far most of the institutional changes observed led to the institutional fragmentation of the national railway system (e.g., growing number of involved actors). In the absence of an overall system's perspective and corresponding actor, this, in turn, leads to the fact that each actor is incentivised to define and then pursue its own performance objectives without consideration of what such a pursuit does to the overall railway system.

In this chapter, we thus want to test some of these intermediary conclusions with the main actors in the selected countries. A series of questions were thus submitted to several key persons in: France, Germany, the Netherlands, Great Britain, and Sweden. Interviews have not been carried out in Switzerland as this report is mainly intended for the Swiss actors. After a presentation of the main questions asked, the results of the interviews are summarised in the following sections. Summaries are in alphabetical order by country.

5.1 Structure and purpose of the interviews

Semi-structured interviews have been conducted in person, by telephone and, in a limited number of cases, via email. Face to face interviews were scheduled to last up to 90 minutes, although this was not always possible. We interviewed the main stakeholders (operators, regulators and public administrators) in each of the five countries. The interviewees were encouraged, among other things, to reflect back on the evolution of the national institutional evolution and to link, if possible this institutional evolution to performance. However, the interviews were not fact-finding, in that we tried to check whether understanding of the institutional changes in a given country corresponded to the reality. Unfortunately, interviewees' knowledge did not always span as far back as the scope of this project.

Our questions were divided into three sections. In particular, we wanted to know about:

- The systemic approach to the railway sector, considering the growing fragmentation of actors in every country;
- The perspectives on performance for different stakeholders; and

- The various functions and drivers of performance including institutional ones, as perceived by the different stakeholders.

The first four questions of section 1 on "systemic approach to the railway sector" had been designed so as to obtain a solid understanding of whether railways were actually perceived as a system or not:

- Who "speaks for the system" in your country?
- In your opinion, who is the ideal person to have a "systemic view"?
- Who has the interest at heart for the entire system?
- Who understands and defends the system in its entirety?

Question 1 was designed to see how important the different actors in the system are and it enables us to have official and unofficial views. In some cases there is no single actor who is officially in the position of speaking for the system but some actors out of legacy factors or scope/importance of current role are actually in the position of speaking for the system. This question was intended also to have the respondents explicating this possible point.

Question 2, a normative question, explored the ideal view of the person interviewed.

The aim of question 3 was getting a description of the role and strength of different stakeholders in influencing the system, caring about the state of the system. It is telling to see whether operators, Governments or travellers are those who have the system at heart.

Question 4 may seem a somewhat slightly different nuance of question 2 but, besides re-approaching the subject, was intended to explore the item of how complex the system is.

The next question "In your view what are the 5 most important PIs for the railway sector seen from a system's perspective?" was intended to understand what different stakeholders in different countries consider as KPIs when they look at the entire railway system. This was a particularly important question, as we wanted to understand whether the different stakeholders were actually seeing the need for performance measure of the entire railway system.

From there, we tried to identify what performance actually meant for the different stakeholders, as evidenced by the following questions:

- How would you describe the mission of your organization?
- From the perspective of your organization, how would you describe the concept of performance?
- What are the drivers behind your definition of performance?
- Since when have PIs appeared in your organization? How have they evolved over time in terms of number of things to measure and targets to achieve?
- Who sets the PIs and targets?
- What room is there for negotiation in setting the type of PIs as well as the targets to reach?
- In your experience, what is their effect on the organization and its managers?

The change in viewpoint (from system to single stakeholder) was also intended to allow a cross comparison of replies with those to question 5, thus providing an understanding of

whether system performance's KPIs (an performance areas) and individual organization's objectives are aligned and to what extent. That is how consistent they are.

Finally, we wanted to know which functions and drivers in the railway system are required to obtain performance. And the last three questions were actually intended to obtain the current KPIs of each stakeholder interviewed, where relevant.

- In your opinion, what are the key functions needed to achieve performance?
- What are the drivers for performance?
- What are your KPIs?
- Who sets the KPIs?
- How often are they checked against targets or thresholds?

In the following sections we summarize the answers to these three types of questions for each country, highlighting also if other, unexpected information came up during the interviews.

5.2 France[48]

The system's perspective

In France, nobody seems to speak for the system. While *SNCF* does not have the legitimacy to speak for the system, its history and economic weight make it speak for the system by default ("*RFF is not competent, the Ministry is not capable and ARAF is too new*"). In fact, nobody is institutionally in the position to speak for the system. That said, *SNCF* claims this position, as it is the only actor with the knowledge, experience and history of the sector. The position is actually not contested by other operators: *SNCF* is the one (and only) being listened to as the speaker of the system. It is the historical monopoly in France.

Despite the dominance of *SNCF*, some view the organization and governance of the French rail industry as being fragmented: on the one hand, *SNCF* has a legal monopoly over the transportation of passengers by train as far as domestic travels are concerned (freight and international transport being open to competition). On the other hand, *RFF* owns the network, but it is legally bound to delegate the maintenance and renewal operations of the French rail network to the *SNCF Infra*. Besides, *RFF* is in charge of capacity allocation, but traffic management is performed by the *DCF*, which belongs to the *SNCF* but acts on behalf of *RFF*. Stations are owned by *SNCF*.

The State is in charge of defining the public transport policy. More precisely, it is in charge of the "Schéma National des Infrastructures de Transport", which gives orientations on what future investments should be. It also acts as a Transport Authority for long distance trains with PSOs (*TET*, i.e., not high speed trains). The 22 administrative Regions are also in charge of defining some areas of the rail policy in France since they define and contract with *SNCF* for the regional transport (*TER*). They receive public funding from the State to pay the unprofitable lines operated by *SNCF*. The French Rail Regulator (*ARAF*) is rather young

[48] Interviews with stakeholders carried out with Elise Aloy (Chargée de mission régulation et concurrence, *RFF*), Pierre Messulam (Director of Railway Strategy and Regulation, *SNCF*), Michel Quidort (Manager for External Relations and European Affairs, VeoliaTransdev).

(created in December 2010). Its competencies are broadly related to the access of the network and it is supposed to incentivize the IM, in charge of the network. In addition, security issues are within the scope of another Agency, *EPSF*.

This fragmentation and complexity leads to two main difficulties for *RFF* when it comes to the management of infrastructure: (1) efficient planning of works and train paths allocation on the network is complex, and (2) since *RFF* does not have an entire control over its production, neither the State nor the Regulator can give an efficiency objective[49].

Harmonization of the sector does not resolve the problem of knowing how to run a railway system. There are several layered dimensions: in the railway sector, the planning and the pre-operational program are structuring (something required by mixed traffic). This dimension of planning is only perceived by those who have many trains: "*only they have an understanding of the 'marginal' train and only they understand thoroughly the physical characteristics of the network, the material (e.g., the trains that speed up quickly and the others) or what the management of passenger flows entails*". Neither the IM, nor the Regulator or the Ministry of Transport have this knowledge. Finally, the operator active on a marginal part of the network does not understand the problem.

As far as the ideal organization to have a systemic view is concerned, the opinions diverge. For some, it is *ARAF*, maybe not only by itself. The role should be devoted to the Ministry of Transport but it appears not to be able to carry such a role in its current configuration. In fact, the systemic view is just appearing. Paradoxically, the systemic view is defended by *ARAF*, whereas it should be the Ministry of Transport given its guardianship of safety, of the historical operator and of the IM.

One can also hear the view that the French rail industry should be organized in order to give each actor its full and complete responsibility. The European framework sets minimal requirements on the governance; especially a complete and full vertical integration of the network manager by the dominant railway operator is clearly excluded.

It is also noted that there are no references in Europe: each country has developed its own model, and France should find its own way.

RFF holds the view that a full and complete network manager should be set up. The body should be in charge of the consistency of the exploitation, of the management and of the enhancement of the network. It should operate four key functions: (1) capacity allocation between circulation and intervention; (2) setting and collecting track access charges, under the supervision of the Regulator; (3) management of the network (maintenance and circulation); and (4) ownership of investment projects on the network. In order to give the network manager the necessary control over the performance levers of the network, *RFF* defends the idea that it should be "merged" with *SNCF Infra*.

One operator holds the view that the compartmentalization of the system is rather useful in the perspective of an opening to competition: the Regulatory Authority (*ARAF*) is there to put back together and police the relationships between the various actors, be it via its views on

[49] The recent *Assises Ferroviaires* held in 2011 on governance of the system concluded that (1) the IM should encompass all the essential facilities, but the stations and that (2) the IM (*RFF*) and the Delegate IM (*SNCF Infra*) should be grouped. The debate is open on where this "unified" IM should be located (i.e. unbundled from *SNCF* or merged with the *SNCF*).

network statements, the current management of the network or its view on the opening of the market. *ARAF*, together with the Ministry, should evolve in its role – one that coordinates rather than provide arbitrage or send back to back the opposing parties (*RFF* and *SNCF*).

The newly set up Agency is seen as having rendered decisions that show a systemic understanding of the railway system (e.g., on stations, confirmed by the Competition Authority). It may be in the process of learning the "tricks of the trade" but its youth may guarantee a fresh view on the system (i.e., not burdened by the historical operators). For the new entrants, *ARAF* is of course welcome in the process of establishing a new governance framework. *SNCF* will continue to play an important role, but *ARAF* is central in establishing a clear separation of roles. In fact, new entrants hope that *SNCF* does not remain the systemic reference for the railway system.

Like in other countries with an incumbent operator, some view that *SNCF* is the only operator with people who have enough experience and who have spent time in the various operational and planning functions: "*Rail is all about managing interfaces as it is impossible to optimize the system globally (think of fuses and of the vision of the system). SNCF has the global knowledge of the system*". The IM does not speak with clients so it does not have a systemic view. As to the UK (where the IM plays a central role), it functions relatively well but the network is actually a group of regional "monopolies". As to the other operators, "*they do not understand the infrastructure*". The rigidity of the infrastructure entails that a certain level cannot be reached. In railways, one needs to know how to manage the flow of passengers: "*Only the dominant operator knows how to do this since he has the most trains*". The same applies to construction of the network.

The view is not shared by everybody. *ARAF* and the operators (all together) were confident to have a global vision of the system and defenders, without reference to bundling or unbundling. Operators also think about infrastructure management. Actually, this is independent of the organizational structure of the railway system (integrated or unbundled).

There seems also to be little consensus as to who has the railway's industry interests at heart and as to who understands and defends the industry. For some, end user of trains, being it a passenger or a freight client, should be the focus of the whole industry. But given the importance of PSOs and public funds, the taxpayer is also a concern. As a Transport Authority, the State is seen as defining some public services of transportation, but Regions do the same for regional transport. As the owner of *RFF* and *SNCF*, the State makes arbitration between the sometimes conflicting interests of these two entities. Political pressures sometimes shape the routings of trains, but public funds are not always planned to cover the unprofitable routes.

The issue of financing *RFF* is also raised (it shows its growing debt). Some wish that the commitment of the State to support the transport policy could be translated into a multiannual commitment on public funds.

The Regulator monitors the access to the network and ensures that the monopoly over the network conducts its missions in an efficient way. But, this economic regulation is supposed to take place in a framework given by the State.

System's performance

The overall picture of the French railway sector was greatly modified by a number of changes in the network: the opening of the "grandes lignes" has brought a jump in volume (i.e., increase in volume produced and decrease in unit cost) and the generalization of the *RER* (in 1988). In addition, the demographic (dense urban zones vs. diffuse zones) and topographic structures make the notion of punctuality hardly comparable across countries. For instance, Germany is a meshed network whereas France is a star network (hub). As a result, a delay will propagate very differently across the two networks.

The question of performance is complex, as it is difficult to make a link between money spent and performance. In fact, the global pressure to improve performance does not work out. It is also very difficult to aggregate indicators, as the local situations are very different. In other words, there are technical and political asymmetries that make the comparison between international aggregates largely meaningless.

Even at the domestic level there are issues. For instance between *SNCF* and *RFF* there is a problem of KPI consistency: the ratio of rail replacement varies from 1 to 5 between building site. Some of the most important KPIs are quality, security and finances.

Surprisingly, *RFF* has no official position on this subject. Nonetheless, any indicator giving an idea of the weight of rail as a mode of transport should be preferred. After all, the share of rail in the intermodal competition should rise, be it for passengers or freight. Besides, indicators aimed at assessing the value for money of the rail should also be selected. This is especially true in the context of tense public finances.

For one new entrant, the most important PIs at the system's level are: value for money (see the experience of the UK or DE where 15 years of tendering has brought 48% more passengers and 25% less subsidies), cost (compensation train-km for contractualized services, two to three times more expensive in France than in Germany), cost of structure (*DB* costs much less than *SNCF* for contractualized services); if looked more to the operational side, there is quality (punctuality and reliability).

For the dominant operator, the five KPIs are: technology (aging and loss of substance), security, cost (public finances for infrastructure and PSOs and passenger price), regularity and punctuality (frequency and delays).

Stakeholder's performance indicators

For the contractualized operators (e.g., *Veolia* or *SNCF* in certain cases) the idea is to answer the demands of the end user and of the community buying the service either at the Regional or at the State level (in 2010, *SNCF* entered in contracts with local administrations for the planning of 40 lines). In practice, the KPIs are passenger-km and train-km cost, rate of occupancy. One operator mentioned that in order to be able to "*act within the contracts, the PIs are defined when negotiating the contract itself. As a result, we do not have 'universal' PIs since they can vary contract by contract*". In other words, the PIs are defined contract by contract, including the compensation. PIs often include reliability, punctuality, cleanliness, or even customer service: it actually depends on the contracting parties and can be as detailed as

the contracting party wants or depending on a dialogue between the operator and its contracting Authority.

PIs for regional/contractualized operators are set by the Authorities (Local, Regional or National). Given the heterogeneity of the contracts, there are many potential scenarios for the negotiation of PIs. In many contracts the objectives and the PIs are fixed. The difference comes from tenders in which there is more room to achieve the PIs. For contractualized services (public service), it is the Authorities who fix them. For open access, it is the operator.

For one operator, the key functions needed to achieve performance in the railway system are empowerment and quality of local managers (decentralization requires competent staff): this means autonomy and presence of a manager driving the zone.

Performance for the railway infrastructure is fundamentally about delivering the output valued by customers, funders and other key stakeholders in a sustainable way, for the lowest life cycle cost. The objective is to tailor the performance of the network (delays, availability, reliability, safety, among others) according to the market needs. A route approach is thus necessary. Maintenance and renewals policy should be optimized at the relevant geographic level of the network (homogeneous sub-networks delineated according to their main usages), while commercial and maintenance policies should be aligned. Unfortunately, the fragmented governance of the rail industry is major hurdle to this implementation.

In 2008, a performance contract, called "contrat de performance", was signed between *RFF* and the French State (at the initiative of *RFF*): 33 engagements covered the period 2008-2012. Since 2010, annual objectives, deriving from the multi-annual contract, are internally set up for *RFF*: each objective has one or several (quantitative or qualitative) PIs[50]. With time, the number of objectives has been reduced (18 in 2010, 12 in 2011 and 4 in 2012).

At *RFF*, targets to achieve and KPIs have become more and more accurate. A report on the 33 engagements of the performance contract is issued twice a year. Implementation and achievement of the objectives by national units (corporate services) and regional units (regional offices) are checked twice a year (May and November) during reviews organized by a dedicated team within the corporate governance and strategy unit (objectives/resources reviews). This team also assists the concerned entities in steering and enforcing their objectives. Each national and regional unit is checking the progress in the objectives' achievement whether monthly or on a quarterly basis. The executive committee is doing so each month.

Additional points made in interviews

A railway system is not only defined by physical characteristics. The name of the game is to make the flow of trains and the flow of passengers coincide. The time constant to manage those two flows is not identical. The "gestion fine" is not identical: in operational matters, one has to anticipate problems. At the same time, the way infrastructure is conceived has an impact on the flow.

[50] All management levels define objectives to monitor its activity: the executive committee, the management committees in the Regions and the management committees in the head office.

The State heavily participates in the rail sector since public spending amounts to 11 billion euros in 2009 (euros value 2000). The State is the owner of *RFF* and *SNCF*, and it also arbitrates some of the debates between these two public firms.

For the infrastructure, the French rail situation can be sketched as an "extreme" principal/agent situation where expertise and information are located within the agent. For the principal, setting efficiency objectives and negotiating contracts is almost impossible. This situation should be changed, and a minimum reform should at least encompass transferring to *RFF* the necessary competencies (e.g., maintenance engineering, capacity planning plus the information systems). Furthermore, an appropriate "conseil de surveillance" should be set up.

One of the effects in the contractualized services is decentralization and autonomy (empowerment to local operators as it is closer to the market and the Authorities), which allows flexibility and resilience. *DB* has acquired this after fretting with competition but this is not the case for all the analysed countries. In Germany, Veolia has a subsidiary for almost every contract.

Summary

The key points emerged from the interviews are as follows:

System perspective:

- *SNCF* speaks for the system in France, but new entrants hope it does not remain the systemic reference for the system;
- It is claimed that system knowledge may only be with an operator working on large scale on a network with main passenger and train flows to manage. This does not suit the IM nor the Ministry or companies operating on small parts of the network;
- It was also stated that *SNCF* has experienced staff and that the IM does not speak with the client, so it does not have a systemic view. "*Rail is about managing interfaces as it is impossible to optimize the system globally*";
- Public policy on railways is determined by the State and, for regional transport, by the Regions;
- For some, *ARAF* (the Economic Regulator) should possibly be the body having the systems view. While it might be seen as too "young" (it started operations in 2010) even though its decisions have shown a systemic understanding of the railway system. it is also deemed that *ARAF* may guarantee a fresh view of the system (not burdened by the historical operator);
- Some point to the Ministry as the ideal body with a system view but also remark that it is currently unable to have this role;
- The system is seen as fragmented: path allocation is complex and *RFF* does not have complete control over its own production (but would like to have it). A full and complete network manager should be set up;
- Some see fragmentation useful to open to competition and think the system should be held together by *ARAF*, the Regulator;
- It was indicated that *ARAF* and the Ministry should evolve their role to one that coordinates rather than provide arbitrage or send back to back the opposing parties (*RFF* and *SNCF*). The Regulator monitors the access to the network and ensures that the

monopoly over the network conducts its missions in an efficient way. But, this economic regulation is supposed to take place in a framework given by the State;
- There seems to be little consensus as to who has the railway's industry interests at heart and as to who understands and defends the industry. However, all have a global vision of the system and defenders, without reference to bundling or unbundling;
- There is a dual focus that should be balanced: on end users and on taxpayers (also given the importance of PSOs);
- The State has multiple roles. As the owner of *RFF* and *SNCF*, the State makes arbitration between the sometimes conflicting interests of these two entities. Political pressures sometimes shape the routings of trains but public funds are not always planned to cover the unprofitable routes.

System performance:

- It is deemed difficult to make system comparisons across networks. For instance, Germany is a meshed network whereas France is a star network (hub). As a result, a delay will propagate very differently across the two networks;
- It is also deemed very difficult to compare aggregate indicators, as the local situations are very different. Even at the domestic level there are issues;
- Key performance areas at system level are: quality, security and financing;
- KPIs for the system characterized by stakeholders include: punctuality, reliability/regularity and cost to the State;
- Other KPIs mentioned include: price of tickets, cost of operators' structure (it was noted that *DB* costs less than *SNCF* on contracted services), security and ageing and loss of substance of technology.

Stakeholder's performance:

- KPIs are defined differently in the various contracts, though they usually refer to passenger-km and train-km cost, rate of occupancy, punctuality, some qualitative PIs less easy to measure: in some contracts, one PI can be to increase revenues but also to reduce fraud;
- For the IM the PIs are the 33 listed in the *contrat de performance* signed with the State and on which they report twice a year. Moreover, *RFF* has internal objectives, whose number has been narrowing with the years;
- For the infrastructure, the French rail situation can be sketched as an extreme principal/agent situation, where expertise and information are located within the agent. For the principal, setting efficiency objectives and negotiating contracts is almost impossible. This situation should be changed, and a minimum reform should at least encompass transferring to *RFF* the necessary competencies (e.g., maintenance engineering, capacity planning plus the information systems);
- One of the effects in the contractualized services is decentralization and autonomy (empowerment to local operators as it is closer to the market and the Authorities), which allows flexibility and resilience.

5.3 Germany[51]

The system's perspective

Given the set-up of the German railway system, it is no surprise that the views as to who speaks for the system diverge. On one hand, there is the view that Government Agencies (the Ministry of Transport and the Regulator) as well as the Association of German Transport companies (*Verband Deutscher Verkehrsunternehmen - VDV*) speak for the system. The Federal Ministry of Transport speaks for the system as the main financer and political shaper (have more traffic on railway system). The Ministry oversees the whole transportation scenery in Germany and in Europe, and has the different transport modes function together. *BNetzA* also promotes fair access rules to the system: sect. 1 of the law mentions the need to promote competition on the network to make railway more attractive. *EBA* is another stakeholder in charge of safety of the system and planning. It is in charge of safety in the infrastructure (new infrastructure and decommissioning) and in the rolling stock. Then there are also various associations, traffic, consumers, RUs (private competitors) association: all could be grouped together to speak for the system but there is no single entity.

On the other hand, the incumbent operator (*DB*), while acknowledging the variety of stakeholders (private and public actors), is considered as the entity speaking for the system. A number of reasons are brought forward: in spite of the opening of the railway market to competition, *DB* manages nearly the entire network and has the largest shares in the passenger (and freight) segments. In other words, it covers the whole value chain. In addition, there is the perception that *DB* is in charge of the system's responsibility: in the public sphere (e.g., the media), *DB* is addressed if there is something to say. *DB* is also blamed if there is an issue. In short, even if there is a competitive landscape, it is still *DB*, as largest company, to be seen as the responsible party by the public, especially when there is a crisis (e.g., winter problems, security issues). *DB* also coordinates processes between the railway industry, Ministries and Regulators in such cases. For instance, a major problem for RUs in the past has been the degree of detail required by the *EBA* when issuing homologation of rolling stock. This caused delays in some cases. The Federal Ministry of Transport, Building and Urban Affairs, *EBA* and *DB* devised the "Rolling Stock Manual" on 1st March 2011 to eliminate problems in the homologation process. *DB* had the role of speaking for all German RUs in the streamlining of the homologation process. A similar central role can be witnessed in the development of guidelines describing the process of how railway manufacturing should be organized (from processes homologations). Not surprisingly, *DB* holds the view that it may be an efficient market structure to have one or two companies covering the whole network and having an integrator view. The rationale behind being that one needs a clear design of regulatory principles to safeguard competition and that competitors are also profiting from having an integrator pushing the system forward. The opposite fragmented model (UK) can be coordinated externally by the market actors (i.e., there is no designated integrator) but it requires complex arrangements to organize the integration of the system, leading to an increase of the overall cost.

In summary, there is no single entity in Germany speaking for the system but different stakeholders promote the system. *DB* Group is the first big stakeholder. For instance, *DB*

[51] Interviews to stakeholders carried out with Frank Miram (Leiter Regulierungsmanagement Konzern, *DB*), Karsten Otte (Head of the Railway Department, Bundesnetzagentur), Martin Ochs (Eisenbahn Bundesamt),the latter via email.

Netz is very strong as IM with about 37,000 km of lines. There are also other infrastructure sister companies (like *DB Station* and *DB Service*) in the *DB* Group. *DB* Group is very strong, powerful and influential. It has the specific and expert knowledge: finance, technical development, etc. One cannot replace their expert knowledge, neither in the Ministry of Transport or the *BNetzA*.

As to the ideal organization, there is the view that it is advisable to have a system integrator able to cover the full value chain and have the resources to invest in R&D. While Veolia has considerable market shares in certain markets, it does not cover the whole system, only *DB* does (as the largest train operator in passenger and freight markets and manager of nearly the entire rail infrastructure in Germany). This makes *DB* responsible for a major part of the economic value chain in the railway system. *DB* also spends a large amount on R&D in order to increase the efficiency of the value chain. Because of this and its integrated structure, *DB* is thought to have the broadest knowledge and understanding of the system as a whole and to be in the best position to defend the entire system. This view of *DB* of a system integrator (i.e., having the company operating the largest part of the railway value chain driving forward the interests of the railway sector) is seen by some as an efficient way to organize the market.

As to Authorities or the public sector, the German Government sets out the interests and goals of the railway system, a duty enshrined in the constitution. Public Authorities do not have the whole knowledge: *EBA* focuses on safety and financing, while *BNetzA* focuses on regulation, so they both have only a partial view of a system. *DB* is the vehicle used to achieve those goals. For instance, *DB Netz* has the interest to deliver a functioning railway system and to earn money as they regard themselves as a normal economic enterprise (which is actually what it is, from a constitutional point of view).

As to having the interest of the system at heart, views are that the "*heart needs to be sliced into several parts*". The *DB* Group, as the integrated company, has the interest at heart for the entire system. Even in non-*DB* quarters, it is believed that "*DB really wants that the operations work well on the infrastructure, even though they are sub-divided into IM and railway undertaking*". The Ministry of Transport could be considered as a supporter of the integrated group. It is still official policy that an integrated system pursues economic interests best, delivers the best quality, and frees the State from the financial burden best. Each year the State is financing with several billion euros of public money infrastructure (maintenance and expansion), passenger traffic and scientific developments. The State considers it as a public obligation. . The Ministry of Transport main objective is to guarantee supply from a public viewpoint, while the *BNetzA* focuses on enforcing competition.

In a nutshell, a balance has to be found between the companies mainly thinking of earning money and the Public Authorities thinking of delivering basic public transport services as a backbone to the industry/country at an affordable price (but diminishing in the long-run). Railway tracks are an expensive infrastructure that intrinsically does not have the potential for fundamental innovation, as, for instance, the telecom sector has, which is expensive as well yet it holds by its very nature room for continuous development. Railway tracks will remain a natural monopoly (no duplication of the infrastructure) and it is very costly. Having the users pay all the costs would be too expensive, making the railway sector losing modal shares to other modes of transport. It is considered to be a public task, also from a constitutional point of view (Art 87e), which is incidentally another reason why the infrastructure cannot be privatized. The Federal railway is the property of the Federal State.

The State has to be the majority owner of the railway infrastructure and has the constitutional task to support it.

Having an actor-pivot should not take away the need to have a proper regulatory environment to organize the benefits of the system[52]. The question remains as whether such a system integrator precludes having competition. Both regulation and competition are necessary to drive innovation, requiring an effective regulatory regime.

It is noted that, as an integrated company, *DB* defends the system in its entirety, for example by efficiently solving conflicts between the IM and the leading train operating company. In a separated rail system, conflicts can be solved and coordination can also be reached, but at much higher transaction costs. The finger-pointing taking place in the United Kingdom and Netherlands as a consequence of quality problems shows that there is no party defending the entire system.

System's performance

It is noted that the big reform of the state railways in the early 1990s had positive effects: traffic performance was increased, efficiency of public contributions, modal split, quality, etc. People have a short memory when it comes to performance. Looking at data, service quality has increased since the privatization process. It was a positive step in the right direction.

For the Ministry of Transport, the five system-wide PIs fall within the usual, i.e., quality (understood as punctuality and reliability), sales/turnover, number of people and goods transported, accidents (a remit of *EBA*) and the length of the route network operated (in km).

For one operator, performance system-wide relates to: traffic performance (passenger-km and ton-km)[53], modal split of rail, efficiency of public contribution (e.g., how much the tax payer pays for train services), quality (e.g., punctuality[54], cleanliness) and safety indicators (e.g., number of accidents) and customer satisfaction (which should be reflected in traffic performance and the modal split of rail).

The Regulator considers as first and foremost PI the transport performance: timeliness, capacity access on the lines (A corridor), no disruptions/disturbances, supply of transport services to passengers on a regular basis, the result of the interplay between passenger traffic (loops in densely populated areas) and freight, whose interests, in the end, are colliding[55]. Secondly, prices (to the RU and the end customers) and revenues (interest of the capital employed). Thirdly, the subsidy requirements. Fourth, the costs. Fifth, competition.

[52] Attention is drawn to the difference between *SBB* and *DB* in this function of system integrator. Germany has unbundled the system (with separate legal entities). The steering body (*DB* Holding) is holding the system together and taking over the systemic function from the Ministry, whereas *SBB* is a completely integrated company – the EC splits the world in integrated and unbundled.
[53] Since 1994, freight performance has increased by 52%, passenger performance by 27%.
[54] Punctuality statistics are published on an aggregated, monthly basis for long-distance and regional trains since 2011.
[55] See additional points for a discussion on priority.

Stakeholder's performance indicators

Actors' PIs differ somewhat from system's PIs. For one operator, PIs include economic indicators (i.e., cover costs and capital costs, be able to re-invest). Concepts like return of capital are employed (10% of return of investment for the group), ratio of financial debt to equity, ratio of operating cash flows to net financial debts; each business unit (BU) has financial targets which are different depending on the segment (e.g., infrastructure vs. logistics depending on the risk profile). There are other missions like *CSR*, high customer satisfaction (covering punctuality, cleanliness of trains and stations; BU are monitored in that respect; the statistics are published monthly on the Internet), and sustainability[56].

Publication of statistics was a big public debate in Germany as it was considered very non-transparent. *DB* is now publishing *ex post* the last month. The whole issue is very complicated since it is not only a simple figure, the network is complex and there are many external effects. One also has to remember that "*the client is only interested in his individual train*". Overall though, the attitude has changed and transparency is now considered as positive.

For one operator, the most important drivers of performance of the railway system are: maintaining the incentives of a private sector company, competition and effective regulation, a clear separation between public and private tasks, allowing an integrated company structure to lower transaction costs and sufficient level of public investment into infrastructure. A factor out of scope is the public investment in the infrastructure. For instance, *DB* sees systems like high speed lines in France and Spain (investment in new tracks and trains) with no competition. This comes from the specific investment in high speed lines and no specifically well-organized management.

At the operator's level, performance is divided by internally and externally set performance. The CEO of *DB* Group is responsible vis-à-vis the supervisory board four times a year. There are also representatives of the Government. In the centre of the reporting system, there are financial and commercial indicators. There are also multi-annual contracts defining a lot of PIs measured every year. For instance the network manager has to deliver many performance reports and it is penalized if targets are missed. There are many specific incentives to improve conditions on the network.

In Germany, the Regulator is monitoring the railway sector via the development of PIs. It publishes a market survey since 2007. For every year, there are market surveys on how the sector is monitored. *BNetzA* does not have its own indicators or targets. It only monitors PI designed in the market itself.

There is also a performance system that the Regulator wants to see (e.g., every IM is legally obliged to apply a performance regime to increase its performance). The performance regime is something else. Every operator has to calculate the punctuality parameters between RU and IM (*bonus-malus* system) and it has limited impact on the performance of the system.

[56] For instance, *DB* is trying to increase the amount of green energy used in the railway system. *DB Energy* is acquiring shares of power stations and they did long-term water contracts to increase the share of renewable energy.

Some PIs are set by *DB*. The Government is taking a dividend from *DB* (first time in 2010, it took 500 million euros from *DB* revenues and they are partially re-investing in the network).

EBA has PIs as to safety (laid down in railway and technical laws).

For the Regulator, it boils down to the performance of the IMs, i.e., render services to the RU, free of discrimination, giving access with affordable charges, deliver good and regular scheduling (work cycle), deliver agreeable stations, enhancing capacity, diminishing disruptions, etc. In fact, the basic measurements for how attractive the railway system is for the end users are the total revenue, tonne- and passengers-km, adequate path supply and their change year-on-year. The drivers are also good scheduling and good work cycle.

PIs can be negotiated as it happened for the 2.5 billion euros multi-annual contract. After a long discussion, various PIs came out, and they were negotiated with the Ministry of Transport. As to cost efficiency (if it becomes a law), it is likely that *BNetzA* would have to negotiate with the IM. It would not be a top-down decision, without having discussed it with the IM. This is the way the Regulator works in the other regulated industries. After some time, they are set but they can be challenged in courts (not so rare). In other sectors there are ruling chambers setting PI after proceedings similar to court rulings; they can be challenged in court. There are no ruling chambers in the railway sector. It was proposed to the lawmaker and it may be set.

The Regulator is not really satisfied by the PIs. The current PIs are not applicable to *BNetzA*'s mission, who only takes action if an IM violates rules. In the current context *BNetzA* solely inspects whether the prices reflect actual costs, yet it would be much better to have a PI which focuses on cost efficiency. *BNetzA* would have to deliver a notion of efficiency but it is not laid down in law currently (as it is done in the telecom, energy and postal sector). Those are either designed from scratch or by comparison with other sectors or companies within the sector (benchmarking). The Ministry does not have the tools or ideas to set the cost efficiency schemes by benchmarking (comparable IM in the country or abroad) or an analytical method. It is very hard to compare IM across countries. *BNetzA* would focus on certain cost elements or services rendered and ask within the sector whether there are similar providers than can offer services more efficiently. For sidings, *DB* and private companies can do it.

The lack of adequate PIs is attributed to good lobbying. For instance, in 2009, the Federal State entered into a multi-annual contract with *DB Netz*, *DB Station* and *DB Energy* to maintain the existing infrastructure (2.5 billion euros). This contract does not contain any efficiency scheme but, since the sum is not indexed on inflation, it forces the IM to behave slowly but efficiently to meet those tasks listed in the contract (given that the contract obliges the IM to fulfil certain PI followed by *EBA*).

Germany is also thinking of revising the law but there is no idea as when it will be allowed to have efficiency schemes as to the costs (maybe on an annual basis or every second or third year).

Additional points made in interviews

It is noted that Germany may have been late in starting reforms in the early 1990s due to the reunification (500.000 workers at the peak) but the French have somewhat missed the mark

with the unions and the strong notion of public service. There was no structural means (introduction of competition). Reunification was a lucky political coincidence. With reference to other EU States, the EU Directives give clear impact/pressure to reform things. The financial crises of the Member States lead to reforms. Pressures on the transport budget will increase heavily due to the debt crisis.

As to priority between passenger and freight: if you have a request for a path, there are rules: for instance, according to EU law, if you have an application, the trains that are integrated into the net or those organized on a regular basis (clock-face schedule) have priority over cross-border traffic. Both have priority over freight traffic. EU Regulation 913 (2010) proposes a different scheme: there needs to be a corridor along which a certain capacity needs to be reserved for freight trains.

Some further points on performance and its governance at *DB*: the Supervisory Board, which consists of representatives of the shareholders (i.e., the German Government), monitors the performance of the Management Board. Compensation of members of the Management Board is linked to the level of success in attaining business goals set by corporate planning. Performance targets for each business unit are set by the Management Board. Business-unit-specific PIs are used to monitor operating performance such as load factors, capacity utilisation (e.g., tonnes or passengers per train) or volume sold. These operational PIs are produced on a monthly basis. For example, the operating value drivers "volume produced" and "station stops" are used to monitor *DB Netze* tracks and *DB Netze* stations.

Multiannual contracts such as the "Service and Financing Agreement" (*LuFV*), between the German state and the infrastructure provider are also based on performance targets, which the network manager has to deliver. In case of failure, he is penalised.

Promotion of competition in the railway sector is seen as a means of creating an ideal railway system for users as to access and charges: the underlying purpose is not only to support the RU as users but also the end-users (forwarders, passengers). Competition is a tool to pursue the interests of the end-users.

There is a consensus that railway infrastructure by nature tends to be a monopolistic market. Building alternative tracks or service facilities is usually not economically viable. As the IMs therefore lack a market-driven need to enhance their performance it is necessary to have a regulatory system in place that ensures that the IMs do not abuse their monopolistic powers. Performance could be achieved by extension of infrastructure. Therefore much money is needed.

Summary

The key points emerged from the interviews are as follows:

System perspective:

- There were diverging views on who speaks for the system;
- Some indicated Government Agencies: Ministry of Transport, the Rail Regulator and the association of German Transport Companies (*VDV*);

- However, *Deutsche Bahn* is seen as speaking for the system, since it manages nearly the entire network, it covers the whole value chain and there is a perception that *DB* is in charge;
- *DB* Group is very strong and very powerful at influencing. It has the specific and expert knowledge: finance, technical development, etc. One cannot replace their expert knowledge, neither the Ministry of Transport nor the Regulator (*BNetzA*);
- The media address and blame *DB* if there is an issue;
- German Government sets out the interests and goals of the railway system, but Public Authorities do not have the whole knowledge;
- As to the ideal organization, there is the view that it is advisable to have an "actor-pivot" or a system integrator able to cover the full value chain and have the resources to invest in R&D;
- *DB* holds the view that it may be an efficient market structure to have one or two companies covering the whole network and having an integrator view. The rationale behind being that one needs a clear design of regulatory principles to safeguard competition and that competitors are also profiting from having an integrator pushing the system forward. This view of *DB* of a system integrator (i.e., having the company operating the largest part of the railway value chain driving forward the interests of the railway sector) is seen by some as an efficient way to organize the market;
- The question remains as whether such a system integrator precludes having competition;
- The *DB* group as the integrated company has the interest at heart for the entire system. Even in non-*DB* quarters, it is believed that "*DB* really wants that the operations work well on the infrastructure, even though they are sub-divided into IM and railway undertaking";
- The Ministry is also seen as having the system at heart; it wants a functioning supply of transport throughout the country. It is also noted that the Ministry of Transport could be considered as a supporter of the integrated trust. *DB* is a vehicle of Ministry policy;
- It is a systemic problem: an expensive infrastructure without the potential of development that was similarly achieved in the telecom sector.

<u>System performance:</u>

- It is noted that the reform had positive effects: traffic performance was increased, efficiency of public contributions, modal, quality, etc;
- Looking at data, service quality has increased since the privatization process. It was a positive step in the right direction;
- Most mentioned system wide PIs include: overall production ones (passenger-km and ton-km), modal split, subsidy requirements/efficiency of public contributions, safety indicators, but also indicators related to quality and customer satisfaction;
- Several corresponding indicators are pointed out by the Ministry and by an operator (quality, customer satisfaction, people and goods transported);
- The Regulator pointed to financial elements (prices, revenues, subsidies, costs) as well as operational ones in terms of capacity allocation against conflicting requests. However, the Regulator would like, as to cost control, to have PI as to efficient cost, while now it just checks whether prices reflect the existing costs.

<u>Stakeholders' performance:</u>

- The Safety Regulator has indicators relating to safety;

- The Economic Regulator monitors the railway sector and publishes a market survey since 2007. However, the Regulator does not have special indicators and monitors those designed in the market: every IM is legally obliged to apply a performance regime to increase its performance;
- The Regulator would like to see indicators referred to efficient costs rather than checking whether prices reflect existing costs. However the notion of efficiency is not currently laid down in the law;
- There is a belief that adequate PIs often lack, as in a multiannual contract among the Federal State and *DB Netz*, *DB Station* and *DB Energy* for network maintenance is attributed to good lobbying;
- For one operator, the most important performance drivers of the railway system are: maintaining the incentives of a private sector company, competition and effective regulation, a clear separation between public and private tasks, allowing an integrated company structure to lower transaction costs, and sufficient level of public investment into infrastructure.

5.4 Great Britain[57]

System's perspective

Like in other countries, no single organisation detains or claims a systemic view of railways. In fact, the existing institutional arrangement (i.e., one IM, multiple operators, one Economic Regulator and the *Department for Transport*) almost precludes by definition a systemic view. Industry has to take care of its own affairs (politically driven).

A common view is that the *DfT* is expected to have a good overview of the system (not the Minister but the people in *DfT*) as it sets the *HLOS*, provides funding for railways (GBP 5 million out of the GBP 12 billion annual cost) and manages railway franchises. The increased involvement of the Government into more operational aspects of railways (e.g., technical regulation) draws some criticism.

A difference is made between the use of the system and the system itself.

Some believe that the systemic view of the railway system falls naturally on the shoulders of *Network Rail*, but that the IM takes too much of a narrow view of the industry. At the same time, when one stakeholder (e.g., *DfT*) speaks or acts in the name of the entire industry, some feel that their interests are not well represented (e.g., public statements that are not balanced can be made on behalf of the industry yet they might not represent the entire interest of the industry).

Having a systemic view is extremely hard to achieve given the sheer complexity of the railway system. In practice, the multiple tasks to run the railway have been allocated to several actors with an oversight of either the Regulator (*ORR*), the Ministry (*DfT*) or both (e.g., the Government sets the framework within which open access and franchise operators

[57] Interviews carried out with with Peter Foot (Network Utilisation Manager, National Networks, Department for Transport), Sarah Mountford (Network Rail), Paul McMahon (Deputy Director, Railway Markets and Economics, ORR) and Annette Egginton, (Head of Competition & Consumer Policy, ORR), Philip Meikle (Head of Performance, CrossCountry Trains), Alec McTavish (Director Policy and Operations, ATOC).

work but open access operators are also subject to passenger license from *ORR*, including an obligation to participate in arrangements, which deliver whole-network benefits to passengers).

The railway system is complex beast and many people claim to understand it. One body closest to understanding it is *ORR*. While not knowing the details of what makes *TOC*s' business logic *ORR* has a fair understanding and can pick up and interpret what *TOCs* are saying very quickly.

The current structure prevents a systemic view: the Government will always take the political view. Both *Network Rail* and the *TOCs* will try to protect their situation. In other words, there is no natural objective voice. Many conflicting interests need to convey, but the lack of an ideal organization is not the result of liberalization, rather the result of the structure of the system. Some share the view that it could be useful to have an objective and sensible body who sees the needs of rail users and groups operating franchises ("*these companies do need to make money and Network Rail doesn't*"). Given that all parties try to give a strategic shape to the industry while providing a service (value for money, infrastructure maintenance, etc.), somebody overseeing this effectively is quite important.

Not surprisingly, many stakeholders share the view that who speaks for the system also depends on the issue at stake. There are a number of actors with a systemic view: Government, Regulators, *Network Rail* (in their role as a system's Authority). It is in the interest of everyone to have some things dealt with on a system-wide basis, but the question is to differentiate system-issues from non-systemic ones.

Interviewees tend to share the views expressed in the *McNulty Report* on leadership: there may be room for an additional leadership group, but its remits ought to be clearly defined. For instance, the leadership body could be entrusted with setting up an architecture to have a say on systematic planning issues.

There is however a difference between leadership and accountability. Responsibility needs to be embedded in Government strategy. In addition, a competitive industry may not need a leader (e.g., see other sectors).

The views range from both extremes: either, nobody or everybody has the entire system at heart. Some actors (e.g., *DfT*) may have a lot of knowledge (it is staffed with many ex-railway industry people) and the tools, but they end up with getting too much into details rather than giving strategic directions. It is widely acknowledged that, within the confines of funding, *DfT* does a good job. In other words, *DfT* may be the guiding mind but not the delivery hand. The Economic Regulator (*ORR*) is perceived as being somewhat reactive but central to the system.

On the supply-side, vested interests may prevent an objective view of the system.

The notion of systemic view is also influenced by the fact that one can see railways as a set of partnerships or a cascade of relationships.

System's performance[58]

When asked to enumerate the five most important PIs from a system-wide perspective, views tended to be influenced by the respondents' organisational perspective (even though the question was formulated at a system-wide level). For instance, on the supply-side, customer needs come first together with number of passenger transported (including modal shift) and financial aspects. Some of these needs are either expressed in terms of punctuality (e.g., "*are trains on time?*") or service level (e.g., "*do customers get what they pay for?*") either on the train or at the stations. That said, issues like timetabling, path allocation and charging (i.e. those underlying the provision of the service) were mentioned. Notions of operational performance of the railway system are thus often brought forward: reliability, availability and punctuality (understood either as delays in minutes or cancellations)[59] and capacity (e.g., path routes and seats on trains).

It was also noted that it is very difficult to gage the behaviours driving performance. For instance when *Network Rail* was measured solely on delay minutes, it was better off cancelling trains (zero minute delay). Now *Network Rail* is measured loosely on cancellations as well. Another issue lays in the circular arguments with the concept of performance and in particular the interaction of operators and IM.

The economic benefit brought to the country, in terms of amount of revenue to be gained from the network as well as subsidy level, are also considered as KPI. The "market" approach emerging from the interviews reflects of course very much the institutional arrangements of the railways (private operators can simply not afford to make losses over a long period). In other words, the railway sector needs to be an attractive proposition for investors and companies to work in. There again, the "value for money" drive seems to have informed answers.

Interestingly enough, the environment is never or very seldom mentioned. Nor is safety, although, when asked, all respondents appear to take it for granted.

There are hopes among respondents for increased collaboration between railway actors (in particular *TOCs* and *Network Rail*) to work towards cost reduction, including via the devolution to the local level of responsibilities to be more in phase with local circumstances.

One recurrent reckoning is that incentives must be designed to reflect the overall objective from the network, but aligning incentives within the organizations and across the system is probably the hardest thing to do.

Stakeholder's performance indicators

Not surprisingly, the drivers behind the various organisations' definition of performance vary to a great extent. Performance drivers are either financially or customer-driven, depending on which side of the sector one sits.

[58] See also Appendix VI.

[59] For the record, the operational performance in the UK is measured through the Public Performance Measure (PPM). As usual, the devil is in the details. For instance, a cancelled train and a train 5 minutes late score the same, although the disruption to passengers created by a cancellation (e.g., during rush hour) is likely to be greater.

For the Regulator and Government, the *HLOS* are part of the 5-year rail strategy and embedded in the wider transport strategy, so is a high level of PPM (in the basic 90). Other drivers include exogenous events (e.g., the Hatfield accident that led the whole sector to reconsider safety) or the political short-term cycle. PPM remains the single most used performance measure but it is not exempt of tensions (e.g., process of delay attribution).

On the supply side, firms are interested in meeting revenue and growth targets. At the same time part of the contracts with *DfT* are based on train/operation performance (i.e., delay minutes, cancellations and capacity)[60]. That said, in the words of a *TOC* performance manager: "*My job is to work with the management team and engineers to keep cancellations low (meeting operational performance targets set by Dft). The other side of my job is to contract-manage Network Rail*". Performance can also be driven by a reputation factor. Operators do not like to be at the bottom of the list. In fact, operators make investments not required by the Government.

One has to remember that franchises "force" operators to work within a framework where there are many obligations (e.g., deliver outputs for passengers). Within that framework operators try be as profitable as possible (e.g., by attracting as many passengers as possible by offering them fares they are willing to pay, train that run on time and all days of the week and network availability).In other words, for franchises it is about turning a profit and respecting the contract.

Operators look at passenger satisfaction (regularly monitored), physical measures (errors made in processes), and provision of impartial information (studies of stations impartial advice). In fact, there is a wide range of quantified measures that are publicly available.

PIs are reported 4-weekly (responding questions such as "are trains running on time?", "are they always running?"). All statistics are collected 4-weekly and are publicly available. This is a very transparent process, even if operators tend to spend a lot of time dealing with *Network Rail* rather than with their own internal operations[61].

PIs evolve over time. For instance, network availability is the latest PI introduced. The big change is that performance is now a very precise business: there is absolute clarity on what is measured because it is so important for *TOCs*. *TOCs* are given targets for the whole of their franchise (every year improvements, etc.)[62].

PIs and targets are negotiated between *DfT* and *ORR* together with the operators and *Network Rail*. The performance regime is based on the *HLOS* and made by *ORR* (it includes train performance, capacity and safety). The recurrent performance regime renegotiation tends to create tensions between the Regulator and the Government. In practice, the IM comes up with money needed and performance.

The UK uses a *Joint Performance Improvement Plan* (*JPIP*). In fact, one way to look at the process is that the Government wants to buy a given level of PPM from the industry, which

[60] There is an annual moving average that needs to be below a benchmark.
[61] The proportion of route-caused delays is generally *Network Rail*-caused. The majority of a particular operator delays is caused by *Network Rail* or said to be within their remit.
[62] A key thing is setting the targets, another is to decide what happens if there are not met (e.g., ending the franchise). There is a range of measures available to the Government going from penalties to non-renewing of the franchise).

leads to certain performance targets. Operators tend to have wrestling matches with *Network Rail* over targets and responsibilities, whereas negotiation appears less a hard thing with *DfT*.

In terms of room for negotiation (type of PIs and targets to reach), the parties tend to agree on what is feasible and desirable for the industry. As pointed out, there is certainly a dialogue about the best way to measure things. At the end of the day the Regulator and the Government make the ultimate decision. In other words, *TOCs* are involved in the decision-making process but it is ultimately the Government who decides what it wants from the franchise. Given the structure of the British railway systems with private actors, the Government needs to carefully weigh the cost of doing things: if its demands are too high there will not be any bidder. For franchise operators, it is not necessarily a negotiation but more about influencing. As all actors have different ideas, the control period/*HLOS* is useful because the Government can have a conversation about what they want (input comes from the *TOCs* and *Network Rail*). It is thus a useful tool for all the stakeholders to flag particular issues.

Not surprisingly, the contractual part (i.e. performance targets set in the franchise agreement) coexists with *TOCs* setting internally their own PIs. For instance, one operator looks at the number of operational incidents caused in a day[63]. Levers to improve performance also evolve over time. Since franchises are measured mainly by minutes by the Government and the performance and cash regimes between *TOCs* and *Network Rail*, *TOCs* tend to put the money in fleet engineering to improve reliability and make savings (to have a high return in terms of operational performance) at the beginning of the franchise. Contracts with train drivers and the conductors may also undergo renegotiation for more flexibility. Once the "big engineering" is in place, operators may be looking at system/process improvements with local managers.

Additional points made in interviews

In addition to the parties interviewed, other actors play an important (even if limited) role in the British railway system. For instance, Passenger Focus is the consumer representative body. It conducts regularly the *National Passenger Survey*. Passenger Focus is Government-funded and studies passenger satisfaction, time to address complaints, how many complaints, how well they are addressed, i.e. what passengers think of operators.

One of the current issues with the institutional arrangement regarding competition is to strike the right balance between *ex ante* and *ex post* regulation. In addition, there is the issue of case allocation between the various Agencies with power to look at competition (*OFT*).

While *Network Rail* is said to be responsible for 70% of failings on the network, it is at times difficult to fault *Network Rail* (some new equipment has proven unsatisfactory).

DfT franchise managers spend 70% of time on finance and only 30% on quality issues. They have less trouble with operators because they tend to reach their targets.

[63] An error at a different point of the network or at a different time can have completely different impacts on the network in terms of delays and cancellations. In other words, repercussions of an identical mistake depend on density.

Safety is monitored very closely up to reach the status of being taken for granted. "*No matter how you organize railways, safety is fundamental and comes first*". All the studies show that there is no trade-off between different ways in organizing a railway sector and safety.

One of the present issues is whether checking a *TOC* is delivering is *ORR*'s job or *DfT*'s (as currently).

Finally, a very important issue that is not addressed is about fares and the big distortion within the UK.

Summary

The key points emerged from the interviews are as follows:

System perspective:

- There is no single organisation that detains or claims a systemic view of railways. In fact, the existing institutional arrangement almost precludes by definition a systemic view. It was even noted that having a systemic view is extremely hard to achieve given the sheer complexity of the railway system;
- It was claimed that one body closest to understanding the system is the *ORR*. While not knowing the details of what makes *TOCs*' business tick, *ORR* has a fair understanding and can pick up and interpret what *TOCs* are saying very quickly;
- Some share the view that it could be useful to have an objective and sensible body that sees the needs of rail users and groups operating franchises. All parties try to give a strategic shape to the industry while providing a service, therefore somebody overseeing this effectively is quite important;
- It is in the interest of everyone to have some things dealt with on a system-wide basis, but the question is to define system-issues from non-systemic ones;
- The *Department for Transport* (*DfT*) is expected to have a good overview of the system as it sets the outputs for it;
- However, when one stakeholder (e.g., *DfT*) speaks or acts in the name of the entire industry, some feel that their interests are not well represented: vested interests may prevent an objective view of the system;
- Many stakeholders share the view that who speaks for the system also depends on the issue at stake;
- Either nobody or everybody has the entire system at heart, the views range from both extremes;
- *DfT* may be the guiding mind but not the delivery hand. The Economic Regulator (*ORR*) is perceived as being somewhat reactive but central to the system.

System performance:

- Even though we asked about the most important PIs from a system-wide perspective, views tended to be influenced by the respondents' organisational perspective;
- Indicators for performance at system level should reflect:
  - Customer needs and services level;
  - Financial aspects, and whether the railway sector is attractive for investors. The financial aspect include revenue from the network;

- Operational performance (reliability, availability, capacity, punctuality);
- The economic benefit brought to the country;
- Quality of capacity allocation and charges;

- Interestingly enough, the environment is never or very seldom mentioned. Nor is safety although, when asked, all respondents appear to take it for granted;
- It was also noted that it is very difficult to gage what behaviours performance drives (example of measuring delays leading to cancellations);
- Another issue is the circular arguments with the concept of performance and in particular the interaction of operators and IM (the latter is blamed for much diminished performance);
- A recurrent reckoning is that incentives must be designed to reflect the overall objective from the network but aligning incentives within the organizations and across the system is probably the hardest thing to do.

Stakeholders' performance:

- The drivers behind the various organisations' definition of performance vary to a great extent. Performance drivers are either financially or customer-driven, depending on which side of the sector one sits;
- Performance can also be driven by a reputation factor. Operators do not like to be at the bottom of the list. In fact, operators make investments not required by the Government;
- Indicators for performance at operator's level reflect
  - Requested performance: PPM remains the single most used performance measure but it is not exempt of "tensions" (e.g., process of delay attribution);
  - For franchises the key is about turning a profit and respecting the contract. Therefore they look at passenger satisfaction and operational measures (like those summed up in the PPM), errors made in processes, provision of impartial information, revenue and growth targets;
- Some of the PIs at operators' level are the same or close to those indicated at network level, although, as noted above, respondents did not seem to take a system view. Operational aspects, which are also summarized in the PPM, are present also among system relevant indicators, as are revenues, though in one case from the network and in the other from own operations;
- PIs evolve over time. Performance is now a very precise business: it is very important for RUs. The contractual part (i.e. performance targets set in the franchise agreement) co-exists with *TOCs* setting internally their own PIs;
- Network performance is negotiated between *DfT* and *ORR* together with the operators and NR. The recurrent performance regime renegotiation tends to create tensions between the Regulator and the Government. In practice, the IM comes up with money needed and performance;
- Given the structure of the British railway systems with private actors, the Government needs to carefully weigh the cost of doing things: if its demands are too high there will not be any bidders;
- Operators tend to have "wrestling matches" with *BR* about performance targets;
- On franchises and performance it was noted that a key thing is setting the targets, another is to decide what happens if there are not met. There is a range of measures available to the Government going from penalties to non-renewing of the franchise);
- Contract performance has effects on driving the operators to spend money on different elements of the business during the franchise.

5.5 The Netherlands[64]

System's perspective

Several respondents explained that, due to the setup of the Dutch railway system, there is no single person speaking for the system. However, when asked to indicate which body may have the role of "speaking for the system" and which has "a systemic view" they point to the Ministry. Only one respondent believes that the IM is the "ideal person/body to have a systemic view". One of the respondent suggested that regional passenger transport operators should get together in an association speaking for the industry, as has already happened in the freight sector.

Similarly, all respondents pointed to the Ministry when asked "who has the interest at heart for the entire system" and "who understands and defend the system in its entirety", and it was recalled that the position of the Ministry is subject to parliamentary discussion. One respondent only believes that the Ministry is possibly losing touch with the system for freight since the State is no longer involved in operations.

Also the IM was cited as having "the interest at heart for the entire system" and understanding and defending "the system in its entirety". The former position was attributed to the IM because it is in charge of day to day operations and has an interest to cooperate and facilitate traffic growth. For these reasons and for its link to the Ministry, the IM should have a stronger voice in speaking for the system, according to some respondents.

The IM was seen as understanding and defending "the system in its entirety" because, according to one respondent, when the Ministry is about to set new rules, *ProRail* checks their feasibility and reports to the Ministry.

One example of system-wide decision that the central Government is currently preparing to take is the future extent of the core network. Respondents explained that Regional Authorities would like to have control over more lines as well as combined bus and rail services. There is, however, concern on the part of some that detaching some lines from the core network might lead to inefficiencies. The same concerns refer to the possibility of mixing trains. Currently, there is also a debate about the interfaces between the core network and the local lines from 2015 onwards, when the new concession for operating service on the core network will be issued (most likely again to *NS*). Now services from local lines extend on the core network only if *NS* agrees.

One of the respondents noted that consumer bodies and regional bodies also try to have a role in speaking for the system but, according to the law, they may not have it. The same person said that when it comes to regional lines, the knowledge is now fully local, although when the transfer of responsibilities to local Governments was just at the beginning, Local Authorities had assistance from central Government.

[64] Interviews to stakeholders carried out with Kees Harinck (Account Manager, ProRail), Renée Elzinga (Head of Regulatory Affairs and Compliance, NS), Jochen Meulman (senior jurist, NMA/VK) and Wouter Montfoort (senior member of staff, NMa/VK), Masja Stefanski (senior policy advisor, Department of Transport), Frank van Setten (VeoliaTransdev), Loek Dieteren (Province of Limburg), Ton Spaargaren (Province of Gelderland), Eric Struch (Province of Zuid Holland, Arriva Nederland - various contributors with response to questionnaire coordinated by Akkelien Schaap (via email).

The existence of a public transport ambassador ("*OV-ambassadeur*", a senior politician was in this role 2006-2010) was also mentioned by few, though clarifying that this was a figure to give a personal reference to the Parliament and the stakeholders, should promote public transport according to Government plans but had not real powers and was to foster informal mediation in case of disputes.

Also most of the respondents concerned with peripheral lines[65] indicate that the Ministry/Government speak for the system in the Netherlands, although two of them indicate also NS in that role, and one of them associates *NS* and *ProRail* as the actors speaking for the system.

One of the people referring to *NS* as speaking for the system mentioned that it makes decisions that cascade onto local lines (a comment intended also in terms of opportunities created) so their influence still exists. The need for systemic view is felt not just in terms of strategy but simpler, but as important matters, such as ticketing.

When asked who should speak for the system some pointed to the Ministry or to the IM, as the other group of respondents. However, one points to each Region and another indicated the need for an independent mobility commission and for an organisation able to speak for the passenger transport industry (peripheral railway operators, in the Dutch case, run both bus and rail services).

When asked who has the interest at heart for the system, the stakeholders interested in peripheral lines gave replies different from the other group, and among themselves, pointing to the operators, the IMs, the Transport Authorities, the passenger and, in one case, to the Ministry, which had been the actor indicated by the other group of stakeholders. One of the respondents thinks the Minister personally has the interest at heart for the entire system, since the Parliament and the public opinion turn to her.

Similarly, diverse replies were offered when the peripheral line stakeholders were asked who understands and defends the system in its entirety. Some point to the Ministry, as the other group of interviewee, others to *ProRail* and the operators, to the PTAs (very likely referring to the peripheral line system) and the travellers, while one respondent indicated that nobody understands the whole system. Respondents from Provinces also claimed a role in understanding the system since they take a multimodal viewpoint and finance infrastructure that later is managed by *ProRail*.

One of the interviewees, when asked why safety is rarely mentioned in the interviews, pointed out that *ProRail* has it as one of its KPA.

[65] Our study of the Netherlands included interviews also to authorities and operators responsible for the services on the lines assigned to the Provinces and City Regions after the *Railway Act* of 2000. The interviews with them capture a partly separated system, due to the nature of the services, on lines that spur from the core network, but link to it, in terms of division of revenues from fares and sometimes with small overlaps. Most importantly, though, during the current discussion on the next core network concessions (2015-2025) the operators of those peripheral lines have suggested that they may run services "faster and better" (FMN, 2011) and put forward the idea of dividing the core network in several concessions, for which they could compete, while one suggested that would be ready to take over the whole network. Given the on-going developments, some interviews were conducted also with stakeholders involved also in services contracted by regional authorities. They are reported separately to mark the difference in current remit of the interviewees, relevant especially for the public authorities.

System's performance

Respondents have pointed to traffic growth as a KPI for the system, as well as to the PIs that are part of the concessions of the IM and of the national main line passenger operator. These are rather KPAs that are operationalized every year by detailing a set of actual PIs and levels.

The general KPIs from the IM concession (currently with *ProRail*) are:

- The availability and reliability of the rail infrastructure;
- The cleanliness, accessibility and security with regards to personal safety of the transfer-infrastructure (platforms, tunnels, stairs, elevators, ramps and walkways at railway stations);
- The quality of *ProRail*'s intervention in case of disruptions;
- The quality of the capacity allocation;
- The quality of information supply.

The provision of information is presently an issue in the political debate, especially with reference to information provided in case of disruption and winter problems. Respondents also explained that, as seen in the political debate, punctuality used to be a major issue, while the focus has now moved to frequency.

In fact, it was clarified in the interviews, the political dimension of the Dutch railways is very important and the Parliament debates railways every year.

The KPIs for the main network operations' concession (currently with *NS*) are:

- Personal security of travellers and employees;
- Punctuality;
- Availability of seats and general transport capacity;
- Service level, both in station and on trains, specifically the level of cleanliness of stations and trains and the adequacy of the information provided to travellers.

KPI levels for the core network are checked every three months and bonuses of *NS* and *ProRail* top management are linked to them. This is not written in the concessions but it is part of standard policy for any Dutch publicly owned organisation, one respondent explained.

It was also explained that the concessions and the indicators therein are the result of a process started with a decrease in realised values of previous KPIs (punctuality among others) that led the Ministry to micro-regulating. Now the Ministry sets the KPIs, and the operations are left to the concessionaires. The most recent change happened in two stages. Immediately after the concessions had been issued, the system was input based: the concessionaires were asked what they were doing towards improving indicators and performance. More recently the focus turned on the output and fines are issued to NS if targets are not met.

Stakeholder's performance indicators

The interviewer was referred to the concessions when asking about PIs for single actors and in this respect system-wide and operators' own KPIs are aligned. The general PIs for the IM and for the operator of the core network have already been reported above. As explained,

those are more like KPAs and are operationalized each year in a management plan for the IM and in a traffic plan for the operator. The plans contain detailed PIs and levels to maintain. *ProRail* and *NS* conduct consultations with relevant stakeholders during the preparation of each year's plans. The comments emerged during the consultations are also reported on the plans. Eventually, the plans are proposed to the Ministry, which agrees upon them.

ProRail's own position stems also from benchmarking other IMs. Indeed, the network concession requires that *ProRail*, every four years, benchmarks elements such as costs and productivity at least against those of the IMs of the United Kingdom, Belgium, Sweden, Germany, France and Japan. The benchmarks have to be reported to the Ministry and *ProRail* has to explain possible differences.

ProRail's KPIs are checked against targets once a year with the Ministry and every three months with the RUs.

It was also mentioned during the interviews that indicators have been adapted over the current, and first, concession period. For instance, KPIs account for services actually run to avoid that the operator, in order to meet the punctuality indicator, skips services. Such a particular indicator has most recently been included in the KPI on passenger punctuality which accounts for services actually run, that have arrived within five minutes of the scheduled time and have met the scheduled connections.

Respondents concerned with service under the remit of the Provinces or City Regions pointed much to punctuality, passenger satisfaction/passenger number, and affordability of service. The viewpoint of the customers was also remarked when pointing to the attractiveness of the services, and to travel information among the most important PIs or areas. They also indicated among the five most important PIs reliability (dividing also between reliability of service and of infrastructure) and capacity. Safety was also mentioned as well as the "*happiness of the local Government*" and financial elements such as the price of the ticket related to subsidy, and the operator's profit.

A respondent explained that "*quality criteria evolved by asking travellers*". It started at the beginning of service provision by Provinces when travellers could make appeals about services. Both Regional Authorities and operators have used KPIs since the beginning of rail operations. However, changing travellers' needs has implied changes in priority and setting performance criteria and indicators. As an example offered, connections made are now measured in relation to the number of travellers making the connections, so as to actually weigh the effects of rush hours and lull time.

The Government of a Province sets the KPIs, and the call for tender gives targets, but the operators may offer improvements. In that sense, the operators set the KPIs. After the procurement process there is no room for negotiation. In one case, however, it was explained that, depending on the contract, there may be negotiations during the contract but the PTA is very resilient. KPIs are measured by operators. PTAs check but "*they take the operators to be trustworthy when supplying information until the contrary is proven*": if they "*can no longer trust an operator it is a problem*".

Operators report checking different types of indicators at different intervals: punctuality and availability every month and passenger satisfaction twice a year. In other cases most KPIs are

checked every three months and once a year. Managers of private operators end of year bonus is affected by the indicator level achieved.

The KPIs for rail services and for all transport services in the Province of Limburg were provided as a follow up to one of the interviews (Source: Dieteren, 2012, personal communication). Rail services in Limburg have operational indicators on punctuality, capacity and replacement service in case availability in case of cancellation. They also have to perform against PIs for all transport services relating to customer satisfaction, cost/revenue ratio, amount of complaints against the number of passengers.

However, each Province sets its own and there is no general framework, although there a is publication by the Knowledge Centre on Public Transport (*KpVV*) to provide PTAs with a toolbox for contracting services, which suggests also KPIs that could be adopted. One of the respondents clarified that the *KpVV* system could have up to 90 indicators but the Local Authority he is concerned with would not need such an extensive set of information and is discussing which are the essential indicators they need to focus on.

When asked which the key functions to achieve performance are, respondents pointed to well run and maintained infrastructure and to cooperation among actors (with no single actor in the driver's seat, specified one of the respondents). Cooperation was also mentioned along with coordination of actors. One respondent made the point on infrastructure maintenance also along with the need for infrastructure availability.

Cooperation has been described from the viewpoint of the Local contracting Authorities, which join forces when travel patterns are interlinked. This is the case for instance in the East of the country where several agglomerations cooperate in a single public body.

The need for cooperation was remarked also with reference to the need for partnerships among operators, although one respondent remarked that the passenger operators cooperate in providing a connected network but freight companies simply compete to get the best track access.

One example of partnership among operators is the operational control centre (*OCCR - Operationeel Controle Centrum Rail*) recently set up to deal with day to day traffic management. This control centre was investigated by the Regulator (*NMa/VK*) on request by the Commission and cleared. To ensure transparency at the *OCCR*, actions are registered on a logbook. The person mentioning this example noted that not everything may be normed ("*the fine expertise cannot be described*") and it is necessary to work on the basis of mutual trust. It was clarified that *ProRail* has no right to impose a solution in case of conflict; rather they work to reach agreed solutions. In traffic control, *ProRail* takes action only for safety reasons; other actions are agreed with operators.

Respondents explained that the OCCR is staffed by *ProRail* and, while all operators have access to it, only *NS* is always present. Regional operators do not have enough staff to be present in person at the centre (in Utrecht) or attend all the meetings –these are video meetings, three times a day. As a result, in the opinion of one of the respondents, they may lose touch with the system. On the other hand, since regional operators work on lines that are somewhat separated from the rest of the network, they only wish to be involved when something goes wrong.

Another example of cooperation, described by one of the respondents, is an initiative called "tracking together", whereby actors of the railway system conduct a strategic discussion on long term prospects and issues. The interviewee who mentioned this initiative believes that unbundling works by cooperation and actors are not simply users of the network, but wish to have a role in the public discussion about its development.

Other key functions that need be in place for the railways system to perform are clear rules. These are cited with reference to capacity allocation and day to day operations.

For the system to thrive as a market, the need of business opportunities was recalled.

Taking a more operational viewpoint, respondents indicated maintenance as a key function to achieve performance.

One respondent only stated that a key function for the system to work would be managing transport, as in the whole of the transport system, not just rail or modes separately. The same respondent feels there is a need of somebody in charge of improving the whole transport system.

Respondents concerned with services contracted by Regional Authorities also pointed to cooperation and trust. One stated decisively "*good management teams, good trains, good tracks (a precondition)*". Realistic KPIs are also important for some, as is the control and monitoring by the public administration.

Some also pointed simply to "money", intended as a lever. In fact it was clarified that "*transport companies are much smarter than we are at the PTA. They are far better at thinking at possibilities, and we do not have the power nor the possibilities to make a contract in which everything is written down. There will still be gaps whatever we do. Even when learning by doing. It is fine if we may define 80% of the system. In that 80% money is an important indicator and we have made contracts where money has an effect. Money hurts the transport company, if the service is that bad that they do not have travellers it hurts: the company loses, they lose travellers and income.*"

Additional points made in interviews

Interviewees noted that railways are an emerging market. It was also remarked that, as a market, railways cannot be left without Government intervention without risking to have undesired effects. The brief experience of competition on the rails for passenger services lived in the Netherlands in 1996-1999 (with operator *Lovers Rail* only) was touched upon in the interviews suggesting that a main issue at the time was the lack of clear rules to introduce competition.

The provision of passenger traffic on the core network is moving towards a high frequency system, with shorter trains at shorter intervals. Test periods have been run by *NS* in 2010 (for three weeks) and previously. In this framework there has been the suggestion to procure intercity and regional trains on the core network separately, but it has been shelved: those services are too intertwined. One of the respondents remarked that this is an issue brought up only by NS as an argument towards keeping the concession of the core network for the 2015-2025 period. Regional operators have shown interest in services on the core network, one of

them with the intention of becoming responsible for the whole core network, others with the idea of seeing it split into several concessions. They state they would do "*better for less*" and would achieve enhanced coordination of bus and rail services as they did when taking over services of regional interest. Also Local Authorities have an interest in having a say on those services and envisage the possibility of having services of local interest contracted to regional operators, with a view to expand the services they offer beyond the current lines. However, views are not homogeneous, and one respondent suggested that operations on the core network might be too complex for local operators. Part of the reasoning is that private companies have short decision lines but also no overheads so, if matters become too complex, they may not make it.

One of the respondents suggested that there might be capacity shortages in the future and that the solution would be to build some new stretches of rail and separate freight and passenger traffic.

In local concessions much room is left for innovations/operating decisions by the operator.

Example brought during the interviews include Wi-Fi on the trains, first introduced by *Noordned*, a concessionaire of regional services, and the request granted by the Authorities to run second class only services on regional lines.

One respondent noted that when new entrants took over regional services, *NS* was directed to accept them by the Ministry. The changeover of operator was a success, the same respondent remarked, with savings in costs, introduction of new rolling stock and avoidance of parallel bus lines (and consequent reallocation of subsidies). The initiative to put bus and rail together came much from the operators, some of which were bus operators beforehand. The same respondent remarked "*rail receives much more political attention than buses*" and that bus operations would not have made it, had they not been joined with rail operations. On the strategic view of operators, one of the respondents pointed out that "*Operators want to make money and they may do it either by having income increasing or cutting costs. But they also have to believe in their products. To show it, they have to produce plans for the years of concession.*" It was further clarified that "*At the start of competition in Provinces, operators decreased costs by cutting staff but staff laid off were often the people able to develop public transport. That is why public transport quality was the responsibility of the Authority: operators did not have people for it. Nowadays the operators are convinced that they have to develop public transport themselves and they have again employees to develop it as well as the reserve money needed for the development.*"

PTA may find difficult to collaborate when they have joint responsibilities on lines and one has to take the lead. Experience would point to a not too fragmented system of PTAs.

Another respondent concerned with regional services pointed out that local railways are the backbone of a much wider system and structure the territory, attracting investments in real estate in a virtuous circle.

A complaint about the IM and its current mission was that before vertical separation it would focus on keeping train running and minimise disruptions, for instance trying to keep maintenance at night. Now the IM has also a focus on itself and try to avoid working at night while preferring cancelling services at weekend, also following more onerous safety practices.

Summary

The key points which have emerged from the interviews are as follows:

System's perspective:

- Due to the setup of the Dutch railway system, there is no single person speaking for the system;
- The Ministry is the body indicated by most interviewees as the one that may have the role of "speaking for the system" and which has "a systemic view";
- Also respondents concerned only with peripheral lines indicate the Ministry, as the body speaking for the system, although some indicate *NS*;
- It is again the Ministry who has the interest at heart for the entire system and who understands and defend the system in its entirety, and it was recalled that the position of the Ministry is subject to parliamentary discussion;
- Stakeholders concerned with peripheral lines gave replies different from the other group, and among themselves, pointing to the operators, the IMs, the Transport Authorities, the passenger and, in one case, to the Ministry;
- One respondent believes that the Ministry is possibly losing touch with the system for freight since the State is no longer involved in operations;
- Also the IM was cited as having "the interest at heart for the entire system" and understanding and defending "the system in its entirety";
- The IM defends the system in its entirety because it is in charge of day to day operations and has an interest to cooperate and facilitate traffic growth;
- Diverse replies were offered when the peripheral line stakeholders were asked who understands and defends the system in its entirety;
- Respondents from Provinces also claimed a role in understanding the system since they take a multimodal viewpoint and finance infrastructure that later is managed by *ProRail*;
- The need for systemic view is felt from stakeholders concerned with peripheral lines not just in terms of strategy but simpler but as important matters, such as ticketing.

System's performance:

- PIs for the system are traffic growth and the indicators in the concessions of the IM and of the core network operator (*NS*);
- Concession indicators for the IM span the areas of availability and reliability of the infrastructure, including intervention in case of disruption, quality elements for public spaces in stations and information;
- Concession indicators for the core network operator concern personal security, punctuality, capacity, and quality of service as well as information;
- The provision of information is a key areas for performance of both actors and is presently an issue in the political debate;
- Punctuality used to be a major issue, while the focus has now moved to frequency;
- The political dimension of the Dutch railways is very important and the Parliament debates railways every year;
- Those performance areas are operationalized each year with indicators and thresholds. The Ministry sets the KPIs and the operations are left to the concessionaires;
- Immediately after the concessions had been issued, the system was input based: the concessionaires were asked what they were doing towards improving indicators and

performance. More recently the focus turned on the output and fines are issued to *NS* if targets are not met.

Stakeholders' performance:

- PIs for the core network operator and for the IM derive form the concessions, as noted above. In this sense they are aligned to system ones;
- Many of NS indicators derive from customer ratings rather than hard data elaboration
- *ProRail*'s own thresholds result also from benchmarking other IMs;
- Indicators have been adapted over time and have become more sophisticated. KPIs account for services actually run to avoid that the operator, in order to meet the punctuality indicator, skips services. Such a particular indicator has most recently been included in the KPI on passenger punctuality which accounts for services actually run, that have arrived within five minutes of the scheduled time and have met the scheduled connections;
- Respondents concerned with peripheral lines point to operational indicators (punctuality, reliability, capacity), customer satisfaction (also with information), and financial elements such as the price of the ticket related to subsidy, and the operator's profit;
- "Quality criteria evolved by asking travellers". It started at the beginning of service provision by Provinces when travellers could make appeals about services;
- The Government of a Province sets the KPIs, and the call for tender gives targets, but the operators may offer improvements. In that sense, the operators set the KPIs;
- Key functions to achieve performance include well run and maintained infrastructure and to cooperation among actors and their coordination. Also clear rules for capacity allocation and day to day operations, the need for business opportunities are deemed necessary to achieve performance;
- Cooperation has been described from the viewpoint of the Local Contracting Authorities, which join forces when travel patterns are interlinked;
- The need for cooperation was remarked also with reference to the need for partnerships among operators;
- "The fine expertise cannot be described", and it is necessary to work on the basis of mutual trust;
- Cooperation and trust were mentioned as necessary to achieve performance by stakeholders concerned with peripheral lines;
- A further driver for performance is money "we have made contracts where money has an effect. Money hurts the transport company, if the service is that bad that they do not have travellers it hurts: the company loses, they lose travellers and income.";
- One respondent remarked that the passenger operators cooperate in providing a connected network but freight companies simply compete to get the best track access;
- Actors of the railway system conduct a strategic discussion on long term prospects and issues, they wish to have a role in the public discussion about its development;
- The initiative to put bus and rail together came much from the operators, some of which were bus operators beforehand. The same respondent remarked "*rail receives much more political attention than buses*" and that bus operations would not have made it, had they not been joined with rail operations;
- PTA may find difficult to collaborate when they have joint responsibilities on lines and one has to take the lead;
- Before vertical separation the IM would focus on minimising disruptions, for instance trying to keep maintenance at night. Now it has also a focus on itself and try to avoid

working at night while preferring cancelling services at weekend, also following more onerous safety practices.

5.6 Sweden[66]

System's perspective

According to a group of respondents, in Sweden the Ministry of Enterprise or the State owned IM/system planner, *Trafikverket*, speak for the system, while another group of respondents indicated that all actors speak for the system, or have the possibility to do so.

In fact the Ministry of Infrastructure or *Trafikverket*, the multimodal IM, speak for the system for the majority of respondents. *Trafikverket*, the Swedish Transport Administration, is an Agency that operates at arm's length of the Ministry of Enterprise and it is an instrument of Government transport policy, therefore replies pointing to either or both have been considered together in this analysis. One respondent only made the point that the Government would not want *Trafikverket*'s voice to be stronger than the Ministry's, the former being dependent on the latter.

Indeed, several respondents mentioned directly the Swedish Transport Administration (*Trafikverket*), which, according to most replies, is also the ideal entity to have a systemic view.

Only one of the respondents underlined that, in his opinion, *Trafikverket* (established in its current form in 2010) is still settling into its new role: it is changing from being the body in charge of maintenance and construction to being the "general of the system", therefore dealing with coordination and consolidation of the views of the actors as well as having a strategic view on the railways (procurement of services being a minor task for this Agency). The picture of the "general of the system" has also been used with reference to the coordination of operations when winter problems arise. The winters of 2009 and 2010 have been particularly critical for the railway system, and the public debate about transport and railways attracts much attention, hence the importance of the item. The IM has the operational responsibility when it comes to winter problems, but its role is limited to coordination of actors also since a reduced plan for operations in winter is agreed in advance as are traffic priority rules.

It was also mentioned that *Trafikverket* is currently undergoing a change in terms of bringing together the cultures of the previous road and rail separate IMs.

Only one respondent referred to "speaking for the system" in terms of having a public role and indicated that, when there are problems, the visible stakeholders to whom the press turns are the Swedish Transport Administration, *Trafikverket*, and the incumbent and still major passenger transport operator, SJ.

[66] Interviews to stakeholders carried out with Lars Hellsvik (Senior Advisor, Director General's Office, Trafikverket, Mats Andersson (chief of staff, Transportstyrelsen) and Åke Lewerentz (legal adviser, Transportstyrelsen), Lennart Dahlborg (Director General, Statens Järnvägar), Tommy Jonsson (Trafikverket), Erik Bech-Jansen (Managing Director, Arriva Sweden), Tomas Wallin (Managing Director, Veolia Transport Sweden), Ulla Markström (Contract manager, Commuter Trains, AB Storstockholm Localtrafik).

The alternative reply to the "who speaks for the system" question pointed at several (potentially all) actors. It was remarked that in a system with a multiplicity of operators, any of them has the possibility of speaking for the sector; and they do so in different ways. For instance, they may report issues to the IM or to the Ministry, but also disseminate their concerns via the press, thus taking them to the public debate. The latter point links to the fact that even though many may speak for the system, the Government is the only actor politically responsible for it.

While most respondents believe *Trafikverket* is the ideal entity to have a system view, other respondents believe operators in general (but particularly long distance ones) have a system view as "*responsibility and activity go well together*" while other respondents pointed to *Trafikanalysis*. The role of this Agency, which is really at arm's length of the Ministry, is to provide transport statistics, but also to review the information that State owned Agency supply every four months to the Ministry to show how they are working towards their goals. *Trafikanalysis*, for instance, may assess whether the information provided is appropriate to address the points made by other Agencies. Its role seems therefore felt within the public sector. Most other respondents consider that *Trafikanalysis* has a minor role and see it simply as the body responsible for transport statistics.

Again, it was mentioned that the system view should be with the Government directly due to its political responsibility and to the fact that it spends public money to fund the infrastructure.

The IM and system planner, *Trafikverket*, is also the body that "has the interest at heart for the entire system" and that "understands and defends the system in its entirety" for the large majority of the respondents. While the Government should be "understanding the system" there was doubt that it actually can, due to some loss of sector knowledge, following the rail operations separated from the State a long time ago, and to several different Agencies in charge of advising the Government. The important role of the Agencies stems from the general structure of the Swedish public sector, based on small Ministries coordinating larger Agencies with operational roles.

There were differing views on the importance of having local people or units having "the interest at heart for the entire system". Some said there should also be a role for local stakeholders, especially when it comes to the larger agglomerations. On the other hand there was concern that regionalisation of views in *Trafikverket* may hinder effective system optimisation.

Consistently with the multi-stakeholder view taken for previous questions, some respondent explained that there is no single entity that "has the interest at heart for the entire system", and that "understands and defend the system in its entirety", but rather multiple Government layers (State, municipalities), again due to political and financial responsibility. A question, it was suggested, would be, whether this distribution of powers is a problem.

Some answers pointed to the ASTOC (Association of Swedish Train Operating Companies, *Tågoperatörerna*, representing both passenger and freight operators) as the body "understanding and defending the system in its entirety", although there was also concern that the voice of ASTOC is not strong enough.

System's performance

When asked which are the most important KPIs for the railway system, views reflecting the different roles of the interviewees have been offered and different priorities have emerged. Also, some respondents indicated KPAs, rather than single indicators.

Interviewees concerned with day to day operation have characterised the two top sets of KPIs or KPAs as:

- Capacity/reliability/actual capacity availability;
- Punctuality/customer satisfaction.

The two groups of KPAs are ordered alternatively by different interviewees. From a more policy concerned viewpoint, respondents underlined that priority on KPAs change due to the political agenda and the public debate. For instance, now punctuality is at the forefront, while market share is less important than it was until a few years ago. The latter is partly due to the increase in public transport share, partly in accordance with the current multimodal policy.

In more detail KPIs and KPAs characterised include:

- Capacity and capacity control, also in terms of used and spare capacity and accounting for the fact that the existence of bottlenecks is felt strongly by operators. In the Swedish system most lines are single track (3,700 km of railways are double or multiple track out of a total of 11,900 km) and the line between Stockholm and Gothenburg (on which the first long distance open-access service is already active) is partly congested (another major line concerned with capacity limits is Stockholm-Malmö). The indication of speed on the system as a KPI in terms of speed that can be normally achieved by services is again linked to capacity and the characteristics of the infrastructure.
- Reliability. One operator underlined that reliability should come before capacity of infrastructure, remarking that unavailable capacity is of no use. While some observed that the IM is accountable for about half of the problems experienced on the network (as pointed out by SJ in its annual report[67]), the issue of reliability has been described also from the point of view of interaction among different operations. In this context, reliability refers to exact operations to avoid ripple effects on a busy system and to having each operator responsible to use the system the way it is agreed. Fleet maintenance, pointed out as a KPA by the same respondent who underlined the need for exact operations, is linked to system reliability in that the correct maintenance of the rolling stock allows for higher reliability of the system and minimises impact on one's own as well as other's operations, and ultimately on the service to the customer.
- Punctuality. For some, this is the most important indicator, since it is linked to customer satisfaction. One respondent, though, thinks that punctuality might be a misleading indicator since for different kinds of services the same delay – say in the order of 2 minutes - might have a different importance also depending on where on the network the delay happens. The same respondent noted that the Swedish Transport Administration accounts in the same way for the delays of passenger and freight trains. The ideal indicator, it was remarked, would show punctuality for the customer (e.g., in the case of

[67] The 2010 annual report of SJ (the main passenger operator) indicates that punctuality is affected, in proportion, by the following items (own underlining): 51% infrastructure, 2% traffic management, 16% vehicles, 13% operator, 18% other. Underlined items are the responsibility of the IM.

freight, the arrival at the end customer, rather than the arrival at the marshalling yard) and, widening the scope to a customer satisfaction indicator, it would be useful to trace problems back to the actor responsible for them.

- Provision of information. Mostly the responsibility of the IM and traffic controller *Trafikverket*, provision of information is currently an important KPA linked to customer satisfaction. Its current importance is due to the disruptions experienced at the peaks of harsh weather during the past winters.
- Costs have also been characterised as a key indicator in interviews. For many the concern is about cost to the State (the Swedish reforms have been driven by the strong will of the Government to bring down railway costs and regain control of public money usage in railways, and to transfer funding responsibilities to the layer of Government directly affected, e.g., counties, municipalities). The cost aspect has been presented as well in terms of system production/cost ratio i.e. as value for money.

Moreover, costs have appeared in the replies also in terms of a particular cost item such as effective power usage charging. The respondent who brought up this point explained that it is the request of Transport Authorities, who contract out services, to have trains run on energy efficiency principles. With diesel trains the operator has also a financial incentive from direct fuel savings to require energy saving driving and train drivers accordingly.

Electric power, instead, is not charged on effective consumption; therefore the operators do not have financial returns from energy saving driving.

Energy and, more generally, the environment are currently important KPAs and drivers of policy also due to people's appreciation of environmental goals.

Market share has also been indicated as an important indicator as well as accessibility of the system both in geographical terms and for the elderly, the children, and the mobility impaired users in general. Accessibility to the system is felt as an issue particularly in the North of Sweden.

Output indicators have been mentioned only by a minority of respondents confronted with the request for system KPIs/KPAs. Output indicators would include passenger-km, tonne-km and, linked to production indicators, the number of people employed by the sector.

Some respondents also distinguished transparency as a KPA for the system, referring to the need to have clear understanding of how slots are assigned and how decisions are taken. With full opening of traffic there may be timetabling conflicts between services planned by CPTAs and open access services.

System wide KPAs and KPIs include as well safety, train path applications and infrastructure usage.

Finally, it was suggested that a measure of market opening could account for how long a company would need to actually get started with operations on the network.

Stakeholder's performance indicators

The Ministry of Transport, which takes a multimodal view at the transport system, does not have PIs used within a structured procedure (except when it sets yearly targets for

maintenance since this is linked to appropriations towards infrastructure funding). The administrations linked to the Ministry report every four months on their activities and are responsible to choose the data they use in discussions. One of the administrations, *Trafikanalysis*, reviews appropriateness of figures used. Much negotiation goes on for setting targets, which are very much the outcome of discussions among involved parties.

Trafikverket, which has the triple role of multimodal transport planner, IM and procuring Authority, has the following strategic challenges for the next 10 years (Trafikverket, 2011):

- An energy efficient transport system;
- Well adapted transport for passengers and freight in metropolitan areas (contributing to development of city environment);
- Efficient intermodal transport for trade and industry (with a focus on the long distance network, in accordance with the recently approved National Transport Plan);
- A robust a reliable infrastructure (and traffic information during disruptions that is useful reliable and easy to find);
- More value for money;
- A modern Agency (in terms of working methods and staff attractiveness and retention).

Within this framework, the main PIs for railways are:

- Traffic information;
- Capacity availability;
- Punctuality;
- Safety;
- Exchange of information between operators and traffic control;
- Rapidity in providing information to customers

all of which are checked twice a year.

As for KPIs of CPTAs contracts, operators remarked that the bonus/penalty makes a difference in terms of their profitability since most costs are similar or the same e.g., cost of staff. However, the weight given to KPIs set in different contracts is different. There was also concern that, in setting weights of KPIs in contracts, CPTAs focused on the weaknesses of the previous operator. As for room for KPIs negotiation, there is some discussion going on before services are tendered and CPTAs may ask the operators for information, but such information is public so operators are careful with what they give out. Once the contracts are awarded, the expected performance cannot be discussed, except in very special situations, such as infrastructure works that reduce punctuality.

When asked which the key functions to achieve performance are, many respondents returned onto the KPAs they had indicated earlier for the system. Some replies referred to the need for good infrastructure. Others pointed to the governance system and the provision of incentives.

Many respondents remarked the need for cooperation among actors, while only one indicated that competition for the end customers drives the whole system.

The importance of cooperation among actors, though within an open market, was positively underlined by several actors. It was explained that to be profitable in the long run it is important to cooperate. Lack of cooperation leads only to short term profitability.

Respondents suggested that while initially the railway actors have looked at optimising different parts of the system, they are now looking at optimising the whole system.

The one respondent putting forward competition for the end customer as key driver to achieve performance offered as an example that when *SJ* was exposed to competition, it had to drive down costs, so it started to challenge maintenance practices and now it is putting pressures on the IM to enhance infrastructure availability.

Market opening, in terms of functions and performance, was presented by some respondents as an important force to bring in innovation and efficiency. But market opening is not all that is needed for the system to function. The key point is getting in place a new system to attract new capital and new ideas. It was recalled that CPTAs have procured services using, since the beginning, own rolling stock and that the State has later invested in new rolling stock for CPTAs. These have acted as operators, deciding service characteristics when contracting them out, and their role has evolved, along with the entity and importance of the traffic they procure and the way they procure it. They are now procuring services across Counties (with no need to ask permission from the Ministry for doing so from 1st January 2012) to account for changes in travel patterns. Moreover several responsibilities are transferred to the operators, rather than being rigidly defined by the CPTAs, with a change from gross to net cost contracts and to bonus/penalty systems.

Some respondents pointed to the regulatory framework as an element of performance while only one suggested that a sector Regulator is not needed and competition rules and judicial system suffice. The importance of strong Regulatory Agencies was also underlined. The evolution of the Swedish Competition Authority, for instance, has led to a strong body with many more resources than it had when it was set up in 1993.

One respondent underlined the need for a strong Government that can deliver incentives, within a coherent framework, to enact its transport policy. Taking a more day-to-day viewpoint, respondents indicated maintenance as a key function to achieve performance.

Additional points made in interviews

There are still issued to be resolved with the Swedish railway market. Two of them are the availability of rolling stock and the presence of operators that may be cross financed by foreign State owned railway companies.

Lack of rolling stock hampers full opening of the passenger market, commented some interviewees. This is an important difference between traffic procured by Counties (who provide the rolling stock to the operators) and open market traffic. In the political debate, there has been the suggestion that *ASJ* (*Statens Järnvägar*), the State owned administration remaining from the former State railways and in charge of leasing rolling stock, might be the actor to provide rolling stock to operators with short leases (e.g., five years). However the Government has not decided in that direction. It is now expected that the market and actual rolling stock leasing companies provide the necessary assets.

Part of the difficulties come from the limited interoperability of rolling stock also in terms of weather resilience (*SJ* in its 2010 annual report explains the protection of its existing rolling stock from hardening winter conditions). It was suggested during the interviews that

operators based in Norway may take advantage of the similarity in rolling stock to enter the market. But it was also argued that other operators could purchase assets suitable for Swedish traffic and, in case, adapt it to other milder conditions later on.

Additionally, some respondents argued that long terms contracts for the use of infrastructure may help with financing of new assets.

One further issue felt by some respondents is the presence on the Swedish market of competitors that are subsidiaries of companies based elsewhere and owned by home Governments. Stakeholders are concerned that they may enjoy support from mother companies. This is perceived as possibly leading to unfair competition also since no Swedish RU is funded by the State, not even the passenger and freight incumbents, both State owned. Indeed part of the drive behind the reforms was to make State owned RUs profitable under commercial conditions.

Some more points on the recent changes on the institutional framework and on the market emerged during the interviews. When asked to explain the rationale for recent privatisation of the production unit of the IM, which became *Infranord* in 2010, respondents clarified that it is a quest for cost reductions, as much as a political direction of the current Government, and a feeling that there should be a separation between the Administration and the production sector. The privatisation of the production unit of the IM is seen negatively by some respondents who are concerned with loss of know-how and knowledge of the network. Other stakeholders have taken a different view and stated that, while initial issues are possible in any privatisation process, getting the contacts right solves issues and ensures quality services at reduced costs.

A further point refers to the interface between procured services in regional transport, which will continue to be the responsibility of Public Authorities and contracted operators, and possible commercial services. Several respondents explained that economic equilibrium of publicly procured services interfacing with commercial ones is not of concern in Sweden.

Capacity of infrastructure, especially on some lines such as Stockholm-Gothenburg and Stockholm-Malmö, is a problem and is expected to become more so with possible conflicting path requests. If decisions on capacity cannot be reached by consensus, a last resort could be to auction for the paths. That is not felt by some as a proper way to deal with the issue since smaller operators would not be able to come on the market.

Summary

The key points which have emerged from the interviews are:

<u>System perspective:</u>

- For the majority of respondents the Ministry of Enterprise or the State owned IM/system planner, *Trafikverket*, speak for the system, while another group of respondents indicated that all actors speak for the system, or have the possibility to do so;
- Even though many may speak for the system, the Government is the only actor politically responsible for it, it was noted;

- According to most replies Swedish Transport Administration (*Trafikverket*) is also the ideal entity to have a systemic view. *Trafikverket* is seen by some as a general of the system (and has to be so during winter problems, but mostly coordinating actors);
- The visible stakeholder to whom the press turns is still *SJ*;
- While most respondents believe *Trafikverket*, the IM and system planner, is the ideal entity to have a system view, other respondents believe operators in general (but particularly long distance ones) have a system view as "responsibility and activity go well together";
- System view should be with the Government directly due to its political responsibility and to the fact that it spends public money to fund the infrastructure;
- The IM and system planner, Trafikverket, is also the body that "has the interest at heart for the entire system" and that "understands and defends the system in its entirety" for the large majority of the respondents;
- However, while the Government should be "understanding the system" there was doubt that it actually can;
- Consistently with the multi-stakeholder view taken for previous questions, some respondent explained that there is no single entity that "*has the interest at heart for the entire system*", and that "*understands and defend the system in its entirety*", but rather multiple Government layers (State, municipalities);
- Some answers pointed to the Association of Swedish Train Operating Companies as the body "understanding and defending the system in its entirety".

System's performance:

- PIs for the system relate to capacity/reliability/actual capacity availability, punctuality/customer satisfaction and operational indicators. They also include provision of information, cost of the system to the State and in value for money;
- Priority on KPAs change due to the political agenda and the public debate. Now punctuality is at the forefront, while market share is less important than it was until a few years ago. The latter is partly due to the increase in public transport share, partly in accordance with the current multimodal policy;
- On reliability the IM is blamed for half of the problems experienced on the network but reliability refers also to interaction among different operations. In this context, reliability refers to exact operations to avoid ripple effects on a busy system and to having each operator responsible to use the system the way it is agreed;
- Energy and, more generally, the environment are currently important KPAs and drivers of policy also due to people's appreciation of environmental goals.

Stakeholder's performance:

- The Ministry of Transport does not have PIs used within a structured procedure. The administrations linked to the Ministry report every four months on their activities and are responsible to choose the data they use in discussions. One of the administrations, *Trafikanalysis*, reviews appropriateness of figures used;
- The IM has indicators regarding information, operations, and capacity availability. They link to those indicated as system wide indicators although there no indicator on costs, which were mention as important system wide;
- Operators are concerned with PIs in contracts and the weight given to KPIs set in different contracts is different;

- There is concern that concern that, in setting weights of KPIs in contracts, CPTAs focus on the weaknesses of the previous operator;
- Drivers for performance include good infrastructure, governance system and the provision of incentives. However, a strong Government that can deliver incentives within a coherent framework is required;
- Many respondents remarked the need for cooperation among actors. To be profitable in the long run it is important to cooperate. Lack of cooperation leads only to short term profitability;
- Also competition for the end customers was indicated as a driver for performance and one that drives the whole system;
- But market opening is not all that is needed for the system to function. The key point is getting in place a new system to attract new capital and new ideas;
- Lack of rolling stock hampers full opening of the passenger market;
- Some operators on the Swedish market are subsidiaries of companies based elsewhere and owned by home Governments. Stakeholders are concerned that they may enjoy support from mother companies;
- Capacity is an issue on the most used Swedish lines. It is foreseen that it will become even more so with more conflicting path requests. There is a call for a proper way to deal with the issue as an auction for the paths, introduced in the Network Statement, would put smaller operators at a disadvantage.

5.7 Conclusions

There are three main conclusions that one can draw from the interviews with the relevant stakeholders in the five countries. They pertain to the headings of the main interview chapters, namely the systemic approach (or lack thereof), the system's performance, and the performance of the stakeholders.

It is obvious from the interviews that no one speaks for the railway system of a country, let alone for the European railways system as a whole. All interviews seem to concur on that. However, when asked about who should have the system's perspective in mind, there are three different answers. In the countries where the incumbent still exists and does play a significant role, the system's perspective is naturally attributed to this historical operator, as it seems to be the only actor capable of playing should a role. Yet, this role is precisely challenged once the historical operator is being unbundled and put into competition with other operators or bypassed in some of its functions by Regulators. In Sweden, where the infrastructure has been unbundled and integrated into the Ministry, this IM/political actor seems to play the role of the "system's actor". In the UK, where the railway system is even more fragmented, the Regulator (*ORR*) seems to be taking on this role of the "system's actor".

In the interviews we have encountered again the point of distribution of some powers to local actors and the ensuing tension between the latter and the national, system-wide actors. This applies to several kinds of actor, public and private. Cases in point are the concern, among some in Sweden, that the infrastructure manage might lose a general view by allowing much local focus, while in Great Britain the *McNulty Report* advocates some localisation of powers on infrastructure and has been preceded along this way by the IM. Another example is the English Passenger Transport Executives asking for more involvement in franchises. In the Netherlands, Provinces are keen to have their say in national transport policy, also since they

pay for infrastructure of national relevance. The levels of governance of the much interlinked railway system, whose extension and limits are likely best determined by the travel patterns of the passengers, are still exploring how to fit the existing system and their own demands, but with much focus on the latter.

We have seen in chapter 4 that this is a very difficult undertaking. But after the interviews we can understand that this difficulty results in great part from the fact that, just as the system's perspective, the system's PIs are also lacking. To begin with, there seems to be a disagreement as to what good system-wide indicators are. Punctuality, reliability, quality, and safety are often mentioned but, with the exception of safety, corresponding indicators that meet the agreement of the various actors involved are still to emerge and to be measured systematically. Other indicators mentioned have less to do with the output of the railway system, but rather with the outcomes of a given policy (namely modal split) or with input variables (overall financing).

Such a disagreement about system-wide PIs as highlighted by the interviews in the five countries is hardly astonishing. It can be explained by the fact that system-wide PIs will be broken down to PIs of the relevant actors involved, which will lead to benchmarking and thus competition. It can also be explained by the fact a causal link may be established between the outputs (behaviours) of some of the operators and the system-wide PIs, which, in a competitive environment, may lead to additional responsibilities, penalties and thus costs. This means that the very definition of system-wide indicators will become a firm strategic matter and thus controversial. In times of a fragmented system where nobody speaks for the entire system anymore, the very process of defining system-wide indicators therefore seems to be in jeopardy.

As a consequence, our interviews show that each actor defines its own PIs, which are most likely in the first place suiting the actor itself, and only in the second place the system. These stakeholder PIs are also not harmonized, nor integrated nor consolidated, thus leading to a multiplication of measurements and ultimately to the impossibility of defining performance in a coherent manner. This will be further exacerbated if regulation is introducing incentive mechanisms.

Our interviews with the different stakeholders also show that no clear relationship exist between any given institutional arrangement and the performance of the overall railway system. This is not astonishing given that, with the exception of the incumbents, no one really has a system's perspective, and that most interviews cannot look back far enough in order to establish such a link.

Finally, we found particularly interesting the comment made by one Dutch stakeholder who referred to the railways as an emerging market. Elaborating on that point, we note that the longstanding physical existence of railway tracks stands in stark contrast with the maturity of the institutional framework required to support a sustainable development of railway markets. This situation is all the more surprising given the recent revival of interest (and corresponding increase in demand) for carrying people and goods on rails.

Borrowing the concept from Khanna and Palepu 2010 an emerging market is "*anyplace where buyers and sellers cannot easily and efficiently do business with each other*". In other words, these markets are not restricted to developing countries. They can actually be found in developed economies as well. One simply needs to look for institutional voids, i.e., specialist

institutions and intermediaries that are either completely absent, or not functioning as well as they might (think for instance of the US real estate market and subprime fiasco). One would not need to look too far in the railway sector to spot some institutional voids.

Not surprisingly the institutional voids found in emerging markets carry both opportunities and risks. Risks because the matching of demand and offer for rail services requires a number of intermediaries (e.g., venture capital to build new lines, finance rolling stock or more generally empowered Regulators with a clear remit) without which it would be very difficult or very inefficient to conduct business. However, they also offer opportunities since there is room for a company or a public administration to fill the voids and craft the market.

6 Conclusion

This report has been structured into three parts: in the first, we have described as precisely as possible the evolution of the institutional arrangements of the railway sectors of the six selected countries. We concluded that, while the policies and different Directives of the European Commission certainly do play a role, the institutional paths of each country are unique to the point that still today each country constitutes a unique institutional system. There are obviously some indications of convergence among the different national institutional systems, but this convergence is less about the core elements of the European Commission (e.g., unbundling) than about regionalisation and tendering of PSOs (in the Regions).

In the second part we have examined the performance, and especially the evolution of the performance, of the railway systems of the six selected countries. The original aim of the research was to establish for every country a relationship between the evolution of the performance on the one hand and the evolving institutional arrangements on the other. This has proven to be a very difficult undertaking and we have to conclude that the establishment of such a relationship is, at this point of our research, impossible. However, this is an interesting finding in itself, which basically can mean that performance evolves irrespective of the institutional arrangements or that the institutional arrangements will produce their effects only with a time lag beyond the scope of this research. Other explanations are that the PIs commonly used do not significantly respond to the change in institutional arrangements, given that the institutional arrangements are aimed at producing systemic effects whereas most of the measured PIs respond to firm behaviour.

This last explanation is actually supported by the interviews conducted and reported in the third part of this document. Here, we tried to understand what performance actually means for the main stakeholders of the railway systems of the selected countries (with the exception of Switzerland). We concluded that only actors that currently (still) have a system-wide approach to railways are the incumbents, at least in the case of France, Germany and the Netherlands. Emerging alternatives to the incumbents when it comes to caring for the entire system seem to be the IM in Sweden or the *Office of Rail Regulation* in the UK. Together with the lack of a common systemic view, it is clear that there are currently no commonly agreed indicators that would measure the performance of the entire railway system of a country (let alone PIs that would measure the performance of the European railway system as a whole). Most PIs available and measure are actor specific indicators which however do not necessarily add up to a systemic performance.

Yet, notwithstanding unbundling, most interviewees point to the need for system view. This is in line with the recent call for strategic view in the British rails sector. Where the incumbent has still a major role and works on most or the whole of the value chain, it is seen as the one with the most systemic view. However, the evolution of the institutional arrangements in all the countries studied clearly goes in the direction of an even more fragmented system, accompanied, at the same time, by a call for increased coordination among the actors.

Given the call for coordination and strategic vision to be clearly allocated to an institution, we may categorise railway systems observed as either bottom-up or top-down depending on whether the stakeholders are in a fragmented system or in a system where there is a strong actor leading. The latter is the case of France and Germany with *SNCF* and *DB* as key actors.

Switzerland, of course, would fall in this category as well. The other case relates to the Netherlands and Sweden, expecting the IM at arm's length of the Ministry to be a coordinator and in particular Great Britain, which seems to be finding the Regulator increasingly in a systemic role. Overall, Ministries do not seem to be able to take on the role of coordinator directly for lack of knowledge.

We have seen that all the institutional arrangements in the different countries are still evolving and that none of the countries has actually reversed its course. Yet, as this evolution towards growing fragmentation of the different national railway systems continues, the call for coordination becomes ever more pressing. In the absence of an actor capable (IM, Regulator) or credible (incumbent) to coordinate the system, we think that the definition of system-wide PIs from the perspective of users with a long-term time-horizon seems to be the only way to actually bring some coherence to the system. The practical challenge, however, will then be to break down these system-wide PIs to the level of each operator in the system (including the Regulator). The intellectual challenge will be to relate such system-wide performance to these institutional arrangements that are most conducive to their achievement.

To sum up, since we cannot characterise a system or another for best performance, we may make use of these conclusions to indicate some points of general interest as well as of interest in the Swiss case.

The relevance of local peculiarities and evolution paths in shaping each system suggest that national characteristics and needs should take first place when deciding to what extent a reform should be undertaken. The European Commission's policies and Directives indicate a broad course of development that leaves enough space to cater legitimately for domestic distinctiveness.

Voluntary tests of reforms, possibly along with their staged introduction, have proven a sensible course of action given the lack of clear link between institutions and system's performance, as far as our work has extended. Also, since a key item that needs sorting in carrying out reforms is the introduction or the reshaping of interfaces, the role of actors needs to be clear. The interface issue does not relate simply to transaction costs (which may be of limited relevance when compared to unbundling advantages, though it is not clear) but also to incentives and tensions among the actors. The difficulty in designing incentives speaks again in favour of tests and phases, as does the need to clarify the role of actors. The governance of railways accounts for more actors than that of other network industries (telecoms, energy) given the important involvement of Regional Authorities and the trend for regionalisation noted.

It emerges from our interviews that, whichever the character of the reforms, there is a pressing need for an actor of reference with knowledge of the system, strategic outlook, and clear perception of users' needs (whichever level of users is considered). Knowledge and credibility are both important points in defining such an actor, and any novel framework should also consider the connection between the actor of reference for the system and the actors(s) that are politically responsible for system view.

References

Alexandersson, G. (2009). Rail Privatization and Competitive Tendering in Europe. *Built Environment*, 35(1), 43-58.

Alexandersson, G. (2010). *The Accidental Deregulation*. PhD Thesis. Stockholm School of Economics.

Alexandersson, G., & Hultén, S. (2005). Sweden. In CER (Ed.), *Reforming Europe's railways: an assessment of progress.* Bruxelles/Hamburg: Eurailpress.

Alexandersson, G., & Hultén, S. (2009). *The complexity of market structure – prospects for on-the-track competition in Sweden*. Paper presented at the Thredbo 11 - International Conference Series on Competition and Ownership in Land Passenger Transport, Delft, The Netherlands.

Alexandersson, G., Hultén, S., Nilsson J.-E., and Pyddoke, R. (2012). *The liberalization of Railway Passenger Transport in Sweden – Outstanding Regulatory Challenges*. CTS Working Paper 2012 (5). Centre for Transport Studies. Stockholm.

Autorité de la concurrence. (2009). *Avis n° 09-A-55 du 4 novembre 2009 sur le secteur du transport public terrestre de voyageurs*. Paris.

BAV. (2009). *Ausschreibung der Rollenden Landstrasse (Rola): Kein geeignetes Angebot*: Press release, 17.12.2009. Available at http://www.news.admin.ch/message/index.html?lang=de&msg-id=30765.

Bitzan, J. D. (2003). Railroad Costs and Competition: The Implications of Introducing Competition to Railroad Networks. *Journal of Transport Economics and Policy*, 37, 201-225.

Boland, T., & Fowler, A. (2000). A systems perspective of performance management in public sector organisations. *International Journal of Public Sector Management*, 13(5), 417-446.

Bouckaert G. (1995), 'Improving Performance Measurement', in: A. Halachmi & G. Bouckaert [eds.], *The Enduring Challenges in Public Management: Surviving and Excelling in a Changing World*. San Francisco: Jossey-Bass, at p. 379-412.

Bouckaert, G. and Halligan J. (2008). *Managing Performance: International Comparisons.* London: Routledge

Brandt, N. (2008). Reaping the Benefits of Stronger Competition in Network Industries in Germany. Paris: OECD, Economics Department.

Campos, J., & Cantos, P. (2000). Rail Transport Regulation. In G. de Rus & A. Estache (Eds.), *Privatization and Regulation of Transport Infrastructure: Guidelines for Policymakers and Regulators* (pp. 67). Washington, D.C.: World Bank Institute Development Studies.

Cantos, P., & Maudos, J. (2001). Regulation and efficiency: the case of European railways. *Transportation Research Part A: Policy and Practice*, 35(5), 459-472.

Cantos, P., Pastor, J. M., & Serrano, L. (1999). Productivity, efficiency and technical change in the European railways: A non-parametric approach. *Transportation*, 26, 337-357.

Caves, D. W., & Christensen, L. R. (1980). The Relative Efficiency of Public and Private Firms in a Competitive Environment: The Case of Canadian Railroads. *The Journal of Political Economy*, 88(5), 958-976.

CER (2005). *Public service rail transport in the European Union: an overview*. Brussels: Community of European Railway and Infrastructure Companies (CER).

CER (2011). *Public service rail transport in the European Union: an Overview*. Brussels: Community of European Railway and Infrastructure Companies (CER). Brussels.

Cole, B., & Cooper, C. (2005). Making the trains run on time: the tyranny of performance indicators. *Production Planning & Control: The Management of Operations*, 16(2), 199 - 207.

Cowie, J. (1999). The Technical Efficiency of Public and Private Ownership in the Rail Industry: The Case of Swiss Private Railways. *Journal of Transport Economics and Policy*, 33(3), 241-251.

DB. (2009). *Annual report 2009*. Berlin: Deutsche Bahn.

DB. (2010a). *Annual report 2010*. Berlin: Deutsche Bahn.

DB. (2010b). *Competition report 2010*. Berlin: Deutsche Bahn.

Department for Transport (2007), *White Paper on Delivering a Sustainable Railway*. *Schedule to Appendix A.*

Desmaris, C. (2010). *Le transport ferroviaire regional de voyageurs en France : A la lumière de la théorie néo-institutionnaliste et des comptes de surplus*. PhD, Université Lyon 2 Lumière, Lyon.

Di Francesco, M. (1999). Measuring performance in policy advice output: Australian developments. *International Journal of Public Sector Management*, 12(5), 420-431.

Ding et al. (2008). *Improving the performance of the railways*. Paper presented at the WCRR, Seoul, Korea.

Driessen, G. (2006). *Competition Design and Efficiency in Railways*. Graduate thesis, University of Groningen.

Driessen, G., Lijesen, M., & Mulder, M. (2006). *The impact of competition on productive efficiency in European railways*. Discussion Paper 71. The Hague: CPB Netherlands Bureau for Economic Policy Analysis.

EIM (2010) *Rail Related Services: The key to fair competition in the railways!* Brussels:EIM

European Commission, (2008). *Multi-annual contracts for rail infrastructure quality*. COM(2008) 54 final.

European Commission. (2009). *Report from the Commission to the Council and the European Parliament on Monitoring Development of the Rail Market*.

European Commission. (2010). *Commission Staff Working Document Summary of the Impact Assessment - Accompanying document to the Proposal for a Directive of the EU Parliament and of the Council establishing a single European railway area (Recast)*. COM(2010) 475 SEC(2010) 1042.

European Parliament and Council. (2001a). *Directive 2001/12/EC of 26 February 2001 amending Council Directive 91/440/EEC on the development of the Community's railways. OJ L75 of 15.3.01*.

European Parliament and Council. (2001b). *Directive 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification. OJ L75 of 15.3.01*.

European Parliament and Council. (2007a). *Directive 2007/58/EC of 23 October 2007 amending Council Directive 91/440/EEC on the development of the Community's railways and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure. OJ L315 of 3.12.2007*.

European Parliament and Council. (2007b). *Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road, and repealing Council Regulations (EEC) No 1191/69 and (EEC) No 1107/70*.

Everis. (2010). *Study on Regulatory Options on Further Market Opening in Rail Passenger Transport*.

Finger M., Crettenand N., Laperrouza M., and Künneke R. (2010), *Governing the dynamics of network industries*, paper presented as part of ECPR's Standing Group on Regulatory Governance Biennial Conference Dublin, June 17-19 2010.

Finger, M., Groenwegen, J. & R. Künneke (2005). The quest for coherence between institutions and technologies in infrastructures. *Journal of Network Industries*, Vol.6, No.4, pp.227-260.

Friebel, G., Ivaldi, M., & Vibes, C. (2003). *Railway (de) regulation: a European efficiency comparison*. IDEI report no 3 on passenger rail transport, University of Toulouse.

Friebel, G., Ivaldi, M., & Vibes, C. (2008). Railway (De)Regulation: A European Efficiency Comparison. *Economica*, 75, 1-15.

Gathon, H. J., & Pestieau, P. (1995). Decomposing efficiency into its managerial and its regulatory components: The case of European railways. *European Journal of Operational Research*, 80(3), 500-507.

Gelders, D., Galetzka, M., Verckens, J. P., & Seydel, E. (2008). Showing results? An analysis of the perceptions of internal and external stakeholders of the public performance communication by the Belgian and Dutch Railways. [doi: DOI: 10.1016/j.giq.2007.01.003]. *Government Information Quarterly*, 25(2), 221-238.

Giannino, M. (2010). *The Abuse of Dominant Position in the Rail Sector: The View of the Italian Competition Authority*. SSRN eLibrary.

Gibson, S. (2005). Incentivising operational performance on the UK rail infrastructure since 1996. *Utilities Policy*, 13(3), 222-229.

Gómez-Ibáñez, José A, and Ginés de Rus, eds. *Competition in the Railway Industry: An International Comparative Analysis*. Edward Elgar, 2006.

Gorka, W. & Hoopmann, R. (2003). Fahrzeugpool in Niedersachsen. Organsation eines öfentlichen Pools am Beispiel der LNVG. *Eisenbahn Kurier* (6), 6 – 9

Gressier, C. (2005). France. In CER (Ed.), *Reforming Europe's railways : an assessment of progress*. Bruxelles/Hamburg: Eurailpress.

Growitsch, C., & Wetzel, H. (2006). *Economies of Scope in European Railways: An Efficiency Analysis*. Halle: IWH Discussion Papers Nr. 5.

Growitsch, C., & Wetzel, H. (2009). Testing for Economies of Scope in European Railways: An Efficiency Analysis. *Journal of Transport Economics and Policy*, 43, 1-24.

Holmström B. (1979). 'Moral Hazard and Observability'. *Bell Journal of Economics*, Vol. 10, No. 1, p. 74-91.

Holvad, T., Preston, J. M., & Huang, B. (2003). *Review of introduction of competition in railways in Europe*. Paper presented at the Proceedings of the 1st Conference on Railroad Industry Structure, Competition and Investment, Toulouse, France.

InterGRail. (2010). *Intelligent Integration of Railway Systems*.

Isenmann, T. (2010). *The view of the Swiss allocation body - Trasse Schweiz AG*. Presentation delivered at the 1st Florence Workshop on Rail Transport Regulation, Fiesole, 15 November 2010.

Ivaldi, M., & Mccullough, G. (2008). Subadditivity Tests for Network Separation with an Application to U.S. Railroads. *Review of Network Economics*, 7(1), 159-171.

Janic, M. (2008). An assessment of the performance of the European long intermodal freight trains (LIFTS). *Transportation Research Part A: Policy and Practice*, 42(10), 1326-1339.

Järnvagässtyrelsen. (2008). *Sector analysis of railway undertakings 2006-2007*.

Jensen, A. (1998). Competition in railway monopolies. *Transportation Research Part E: Logistics and Transportation Review*, 34(4), 267-287.

Jordana, J., & Levi-Faur, D. (2004). The Politics of Regulation in the Age of Governance. In J. Jordana & D. Levi-Faur (Eds.), *The Politics of Regulation: Examining Regulatory Institutions and Instruments in the Governance Age*. Cheltenham: Edward Elgar.

Jost F. (2011). *Performance and Governance in Railway Markets*. Talk delivered at the 2nd European Rail Transport Regulation Forum. Florence, Italy, 23 May 2011.

Jupe, R., & Crompton, G. (2006). "A deficient performance": The regulation of the train operating companies in Britain's privatised railway system. *Critical Perspectives on Accounting*, 17(8), 1035-1065.

Kaufmann, T. (2010). *Regulatory Action and Competition Law Enforcement in the Railway Sector*. Presentation delivered at the 1st Florence Workshop on Rail Transport Regulation: Aims, Models and Powers of Rail Regulators, Florence School of Regulation, Florence, Italy on 15 November 2010.

Khanna, T. and K. Palepu (2010). Strategy and Execution for Emerging Markets. *Working knowledge*, Harvard Business School.

Kirchner, C. (2005). Germany. In CER (Ed.), *Reforming Europe's railways: an assessment of progress.* Bruxelles/Hamburg: Eurailpress.

Kirchner, C. (2010). Germany. In CER (Ed.), *Reforming Railways*. Bruxelles/Hamburg: Eurailpress.

KPMG (2010). *Rail franchising policy - analysis of historical data*. London: Department for Transport.

Lalive, R., & Schmutzler, A. (2008). Exploring the effects of competition for railway markets. *International Journal of Industrial Organization*, 26, 443-458.

Lan, L. W., & Lin, E. T. J. (2005). Measuring railway performance with adjustment of environmental effects, data noise and slacks. *Transportmetrica*, 1(2), 161-189.

Lehmann C. (1999). Germany. In D. van de Velde (Ed.), *Changing Trains. Railway reform and the role of competition: The experience of six countries*. Aldershot/Brookfield USA: Ashgate.

Link, H. (2003). Rail restructuring in Germany – Eight years later. *Japan Railway & Transport Review*, 34.

Link, H., & Merkert, R. (2010). *Success factors and problems of rail franchising: a fresh assessment of the German case*. Paper presented at the European Transport Conference 2010, Glasgow, 11-13 October.

Lumbroso, S. (2009). *Concurrence dans le ferroviaire : quelle régulation ?* Actes de la Journée d'étude SNCF et IDEI – 8 juillet 2009. Paris: SNCF.

McNulty R. (2011). *Realising the Potential of GB Rail – Final Independent Report of the Rail Value for Money Study*. London.

Merkert, R., Nash, C. A., & Smith, A. S. J. (2008). Looking beyond separation - a comparative analysis of British, German and Swedish railways from a new institutional perspective. *Proceedings of the European transport conference 2008*, The Netherlands.

Meyer, A. and Meier, B. (2010). Switzerland. In CER (Ed.), *Reforming Railways*. Bruxelles/Hamburg: Eurailpress.

Micheli, P., & Kennerley, M. (2005). Performance measurement frameworks in public and non-profit sectors. *Production Planning & Control: The Management of Operations*, 16(2), 125 - 134.

Möllmann J. (2011). *Performance and Governance in Railway Markets*. Presentation delivered at the 2nd European Rail Transport Regulation Forum. Florence, Italy, 23 May 2011.

Mulder, M., Lijesen, M., Driessen, G., & van de Velde, D. (2005). *Vertical separation and competition in the Dutch rail industry: A cost-benefit analysis*. Paper presented at the Third Conference on Railroad Industry Structure, Competition, and Investments, Stockholm, 21-22 October.

Nash C.A., Smith A.S.J. and Matthews B (2005). Britain. In CER (Ed.), *Reforming Europe's railways: an assessment of progress*. Bruxelles/Hamburg: Eurailpress.

Nash, C.A, & Mattews, B. (2009). *European transport policy - Progress and prospects*. Leeds: Institute for Transport Studies.

Nash, C.A, & Nilsson, J. E. (2009). *Competitive tendering of rail services – a comparison of Britain and Sweden*. Paper presented at the Paper presented at the Thredbo 11 - Conference on Competition and Ownership in Land Passenger Transport, Delft, The Netherlands.

Nash, C.A. (2006). Europe: Alternative models for restructuring. In J. A. Gomez-Ibanez & G. d. Rus (Eds.), *Competition in the railway industry : an international comparative analysis* (pp. 201). Cheltenham, UK ; Northampton, MA: Edward Elgar.

Nash, C.A. (2008). Passenger railway reform in the last 20 years - European experience reconsidered. *Research in Transportation Economics*, 22(1), 61-70.

Nash, C.A. (2012). *20 years of experience with rail liberalisation: a balance sheet*. Presentation at the 4th European Rail Transport Regulation Forum, Florence School of Regulation, Florence, Italy on 19 March 2012.

Nilsson J.-E. (1995) Swedish Railways Case Study. In: *Railway Restructuring and Privatization: Best Methods* (Kopicki, R . and Thompson L., eds.).CFS Discussion Paper 111. The World Bank.

NMa (2010). *Annual report*. The Hague: NMa/Office of Transport Regulation

OECD Competition Committee. (2006). Structural Reform in the Rail Industry. *OECD Journal of Competition Law & Policy*, 8(2), 67-79.

OECD. (2006a). *OECD Reviews of Regulatory Reform: Switzerland - Seizing the Opportunities for Growth*. Paris: OECD.

OECD. (2006b). *Regulatory Authorities for Air Transport, Railways, Telecommunications and Postal Services in Switzerland*. Paris: OECD.

ORR. (2009). *ORR's approach to reviewing markets*. London: Office of Rail Regulation.

Oum, T., & Yu, C. (1994). Economic efficiency of railways and implications for public policy: a comparative study of the OECD countries' railways. *Journal of Transportation Economics and Policy*, 37, 121-138.

Perelman, S., & Pestieau, P. (1988). Technical performance in public enterprises : A comparative study of railways and postal services. *European Economic Review*, 32(2-3), 432-441.

Pittman, R. (2005). Structural Separation to Create Competition? The Case of Freight Railways. *Review of Network Economics*, 4(3), 181-196.

Pittman, R. (2008). *Railway Mergers and Railway Alliances: Competition Issues. Paper presented at the Emerging Competition Issues in Regulated Network Industries: Alliances, consortia and other quasi-mergers*. Université Libre de Bruxelles, 25-26 September, 2008.

Preston, J. (2009). *Competition for Long Distance Passenger Rail Services: The Emerging Evidence*. Discussion Paper No 2009-23. Paris: OECD.

Productivity Commission. (1999). *An Assessment of the Performance of Australian Railways, 1990 to 1998*. Canberra: AusInfo.

Pütz, A. (2005). *National rail undertakings after the GVG/FS case*. Paper presented at the Thredbo 9 - International Conference Series on Competition and Ownership in Land Passenger Transport, Lisbon, Portugal.

Quinet, E. (2010) France. In CER (Ed.), *Reforming Railways*. Bruxelles/Hamburg: Eurailpress.

Quinet, E., & Vickerman, R. (2004). *Principles of transport economics*. Cheltenham ; Northampton, MA: Edward Elgar.

Rodrigue, J.-P., C. Comtois, et al. (2006). *The geography of transport systems*. London, Routledge.

Rodriguez Pardina, M., & Schlirf Rapti, R. (2007). *Regulatory Requirements Under Different Forms of Utility Service Delivery*. Washington, D.C.: World Bank.

Rogers, W. (2007). Europeanization through Regionalization? Reforming the French railways. *Journal of Contemporary Studies*, 15 (2), 215-230

Schiesser, H. K. (2009). *Manual Schienengüterverkehr Schweiz*. Bern: Verband öffentlicher Verkehr.

Schweizerische Bundesrat, (1999). *Verordnung über Abgeltungen, Darlehnen und Finanzhilfen nach Eisenbahngesetz.*

Séguret, S. (2009). *Is competition on track a real alternative to competitive tendering in the railway industry? Evidence from Germany*. Paper presented at the Thredbo 11 - International

Conference Series on Competition and Ownership in Land Passenger Transport, Delft, The Netherlands.

SETRA. (2009). *Le transport ferroviaire de voyageurs sur le réseau ferré national français – Synthèse des connaissances*. Paris: Service d'études sur les transports, les routes et leurs aménagements.

Smith, A. S. J. (2005). The role of efficiency estimates in UK regulatory price reviews: The case of rail. *Utilities Policy*, 13(4), 294-301.

Stahl, D. (2010). *Challenges in alpine Intermodal traffic via Switzerland*. Presentation delivered at Intermodal 2010, Amsterdam, 30 November-2 December 2010.

Stehmann, O., & Zellhofer, G. (2004). Dominant Rail Undertakings under European Competition Policy. *European Law Journal*, 10(3), 327-353.

Trafikverket (2011). *Strategic aim and direction for Trafikverket 2011-2020*. Presentation dated 9 September 2011

Trafikverket. (2010). *Network Statement 2011*. Trafikverket

United Kingdom Parliament. (1993). *Railways Act of 5th November 1993, c. 43*.

United Kingdom Parliament. (2005). *Railways Act of 7th April 2005, c. 14*.

van de Velde, D. (1999). Switzerland. In D. van de Velde (Ed.), *Changing Trains. Railway reform and the role of competition: The experience of six countries*. Aldershot/Brookfield USA: Ashgate.

van de Velde, D. (2005). The Netherlands. In CER (Ed.), *Reforming Europe's railways: an assessment of progress*. Bruxelles/Hamburg: Eurailpress.

van de Velde, D. (2010). The Netherlands. In CER (Ed.), *Reforming Railways*. Bruxelles/Hamburg: Eurailpress.

van Dijk, H. (2007). Tendering and decentralization of regional rail passenger services in the Netherlands (1997-2005). In ECMT (Ed.) *Competitive tendering of rail services*. Paris: OECD.

Vromans, M. J. C. M., Dekker, R., & Kroon, L. G. (2006). Reliability and heterogeneity of railway services. *European Journal of Operational Research*, 172(2), 647-665.

Wallsten, S. J. (2002). *Does Sequencing Matter? Regulation and Privatization in Telecommunications Reforms*. Washington, D.C.: World Bank.

Weibel, B. (2005). Switzerland. In CER (Ed.), *Reforming Europe's railways : an assessment of progress*. Bruxelles/Hamburg: Eurailpress.

Weidmann, U., & Nash, A. (2008). *Open access to railway networks: Hidden discrimination potential in an integrated railway organisation*. Paper presented at the 1st Annual Conference on Competition and Regulation in Network Industries, Brussels, 28 November.

Westin, P.-E. (2009). *Review of public transport in Sweden: implementation on the passenger rail market and plans for the local public transport market*. Paper presented at the Paper presented at the Thredbo 11 - Conference on Competition and Ownership in Land Passenger Transport, Delft, The Netherlands.

Wolff, J.P. (2011). *Organizational structures and performance evaluation of railways*. Master thesis. TU Delft.

Wolmar, C. (2007). *Fire & Steam: How the Railways Transformed Britain*. London. Atlantic Books.

Yu, M.-M. (2008). Assessing the technical efficiency, service effectiveness, and technical effectiveness of the world's railways through NDEA analysis. *Transportation Research Part A: Policy and Practice*, 42(10), 1283-1294.

Appendix I: Railway actors in selected European countries

Country	Fully legally, organisationally and institutionally independent IM undertaking capacity allocation
United Kingdom	IM: *Network Rail*
	Incumbent RU: no incumbent
	Freight new entrants: *Advenza*, *Colas*, *DB-Schenker*, *Direct Rail Services*, *Fastline*, *Freight Liner* (HH and IM), *GB Railfreight*, *Serco*, *SNCF Freight Europe* Passenger new entrants: *Arriva Trains Wales*, *c2c*, *CapitalConnect*, *Chiltern*, *Crosscountry* (*Arriva*), *First East Midlands Trains*, *First Great Western*, *Fisrt Scotrail*, *Grand Central*, *Heathrow Express*, *Hull Trains*, *London Midland*, *London Overground*, *National Express East Coast*, *National Express East Anglia*, *Northern Rail*, *Merseyrail*, *Southern*, *Southeastern*, *South West Trains*, *Transpennine Express*, *Virgin trains*, *Wrexham & Shropshire*
The Netherlands	IM: *Pro Rail*
	Incumbent RU: *NS*
	Freight new entrants: *Bentheimer Eisenbahn*, *Crossrail Benelux*, *CTL rail*, *ITL Benelux*, NMBS, *DB Schencker*, *Rail4Chem*, *Ruhrtalbahn*, *SNCF*, *TX Logistik*, *Veolia Cargo* Passenger new entrants: *Transdev-Connexxion*, *DB Autozug*, *Prignitzer Eisenbahn* (*Arriva*), *Veolia transport*, *Arriva*, *Thalys Nederland*, *Syntus* (*Keolis*)
Sweden	IM: *BV*
	Incumbent RU: *Green Cargo* for freight and *SJ AB* for passenger
	Freight new entrants: *CargoNet AB*, *CargoNet AS*, *Hector Rail*, *Mid Cargo*, *Midwaggon*, *MTAB*, *Peterson Rail*, *Railion Scandinavia*, *TGOJ*, *TX- Logistik*, *Tågab*, *Tågfrakt*, *Stena Recycling* Passenger new entrants: *A-Train*, *Arriva*, *Bergslagens Järnvägssällskap*, *DSB*, *DVVJ*, *Engelsberg – Norber Järnväg*, *Inlandsbanan*, *Kalmar Läns trafik*, *Kalmar Veterantåg*, *NetRail AB*, *Norrtåg*, *Skånetrafiken*, *Malmbanans vänner*, *Ötraf*, *SL*, *Svenska*

Note: European countries with similar set-up include Bulgaria, Czech Republic, Denmark, Greece, Spain, Finland, Lithuania, Norway, Portugal, Romania and Slovakia

Country	Legally (but not institutionally) independent IM undertaking capacity allocation owned by a holding company which also owns the incumbent operators
Germany	IM: *DB-Netz*, other open infrastructures exist (e.g., *Arriva/Osthannoversche Eisenbahn* and *Arriva/Prignitzer Eisenbahn* with 530 km)
	Incumbent RU: *DB Bahn* for passengers and *DB Schenker* for freight
	Freight new entrants: around 300 licenced RUs but only a few really active, e.g., *Arriva/Osthannoversche Eisenbahn*, *Arriva/Regentalbahn Cargo*, *CTL*, *Rail4Chem*, *HGK*, *SBB Cargo Deutschland*, *TX Logistik*, *Veolia Cargo* Passengers new entrants (67): *Abellio*, *Arriva* (*Prignitzer Eisenbahn/Regentalbahn/Vogtlandbahn/Metronom*, *Ostdeutsche Eisenbahngesellschaft*), *Benex*, *EGP*, Eurobahn (*Rhenus Keolis*), *Transregio*, *Veolia* (*NWB*, *NOB*, *BOB*, *Regiobahn*, *Interconnex*, etc.), and a lot of public-owned local and regional railways with and without own infrastructure

Note: European countries with similar set-up include Austria, Belgium, Italy and Poland

Country	Independent IM allocating capacity having delegated certain infrastructure management functions (e.g., traffic management, maintenance and renewal) to the incumbent operating company
France	IM: *RFF*
	Incumbent RU: *SNCF*
	Freight new entrants: *Floyd*, *Gysev*, *MAV Hajdu Vasutepito Ltd*, *MMV*, *Rail4Chem*, *SNCB*, *Veolia Cargo*, *ECR*, *VFLI*, *Europorte*, *CFL Cargo*, *Colas Rail*, *TSO* V Passenger new entrants: none

Note: European countries with similar set-up include Estonia, Hungary, Latvia, Luxemburg and Slovenia

Source: EIM(2010)

Appendix II: European Directives relating to competition in railway

Directive 2001/12/EC (European Parliament and Council, 2001a)

Whereas (11): Bodies should be established with a sufficient degree of independence to regulate competition on the rail services market where there are no entities performing that function.

Article 10(7): Without prejudice to Community and national regulations concerning competition policy and the institutions with responsibility in that area, the regulatory body established pursuant to Article 30 of Directive 2000/14/EC, or any other body enjoying the same degree of independence shall monitor the competition in the rail services markets, including the rail freight transport market.

Directive 2001/14/EC (European Parliament and Council, 2001b)

Whereas (16): Charging and capacity allocation schemes should allow for fair competition in the provision of railway services.

Whereas (32): It is important to minimise the distortions of competition which may arise, either between railway infrastructures or between transport modes, from significant differences in charging principles.

Article 6(1): Without prejudice to the possible long-term aim of user cover of infrastructure costs for all modes of transport on the basis of fair, non-discriminatory competition between the various modes, where rail transport is able to compete with other modes of transport, within the charging framework of Articles 7 and 8, a Member State may require the IM to balance his accounts without State funding.

Article 6(3): Member States shall take the measures necessary to ensure that the functions determining equitable and non-discriminating access to infrastructure, listed in Annex II, are entrusted to bodies or firms that do not themselves provide any rail transport services. Regardless of the organisational structures, this objective must be shown to have been achieved. Member States may, however, assign to RUs or any other body the collecting of the charges and the responsibility for managing the railway infrastructure, such as investment, maintenance and funding.

Annex II contains a list of the essential functions Article 6(3) refers to:

- Preparation and decision making related to the licensing of RUs including granting of individual licenses;
- Decision making related to the path allocation including both the definition and the assessment of availability and the allocation of individual train paths;
- Decision making related to infrastructure charging;
- Monitoring observance of PSOs required in the provision of certain services.

Directive 2007/58/EC (European Parliament and Council, 2007a)

Whereas (7): The number of railway services without intermediate stops is very limited. In the case of journeys with intermediate stops, it is essential to authorise new market entrants to

pick up and set down passengers along the route in order to ensure that such operations have a realistic chance of being economically viable and to avoid placing potential competitors at a disadvantage to existing operators, which have the right to pick up and set down passengers along the route. This right should be without prejudice to Community and national regulations concerning competition policy.

Whereas (9): Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road (5) authorises Member States and Local Authorities to award public service contracts. These contracts may contain exclusive rights to operate certain services. It is therefore necessary to ensure that the provisions of that Regulation are consistent with the principle of opening up international passenger services to competition.

Whereas (10): Opening up international passenger services, which include the right to pick up passengers at any station located on the route of an international service and to set them down at another, including stations located in the same Member State, to competition may have implications for the organisation and financing of rail passenger services provided under a public service contract. Member States should have the possibility to limit the right of access to the market where this right would compromise the economic equilibrium of these public service contracts and where approval is given by the relevant regulatory body referred to in Article 30 of Directive 2001/14/EC on the basis of an objective economic analysis, following a request from the competent Authorities that awarded the public service contract.

Whereas (11): Some Member States have already moved towards opening up the market for rail passenger services by transparent, open competitive tendering for the provision of certain such services. They should not have to provide full open access to international passenger services, since this competition for the right to use certain rail routes has involved a sufficient test of the market value of running those services.

Appendix III: EU DG Competition railway-related cases

Date	Type	#	Details
11/1992	C	33585	92/568/EEC: Commission Decision of 25 November 1992 relating to a proceeding under art. 85 of the EEC Treaty (IV/33.585 - Distribution of railway tickets by travel agents) Official Journal L 366 , 15.12.1992 P. 0047 – 0059
3/1994	A		The Commission fines *Deutsche Bahn* under art. 86 for discriminatory pricing on its provision of traction and access to rail network. (OJ L 104, 23.4.1994, p.35 - IP/94/259)
1994	C		Four co-operation arrangements in the field of rail transport are exempted or given negative clearance: Eurotunnel (OJ L 354, 31.12.1995, p.66), ACI (OJ L 224, 30.8.1994, p.28), Night Services (OJ L 259, 7.10.1994, p.20), and CIA. The first three concern cooperation for the Channel Tunnel. (IP/94/762, IP/94/826, IP/94/870, IP/94/1202)
1996	S	C63/2000	Invitation to submit comments pursuant to art. 88(2) of the EC Treaty, concerning aid C 63/2000 (ex NN 102/2000). BahnTrans GmbH (2001/C 52/02)
9/2000	S	N687/2000	State aid N 687/2000 – United Kingdom Competition for Innovative Solutions in Rail Based Logistics
10/2001	A	37985	Commission warns *Deutsche Bahn* about discriminating against a private competitor
9/2002	M	M.2905	Non-opposition to a notified concentration (Case COMP/M.2905 – *Deutsche Bahn/Stinnes*) (2002/C 248/05)
8/2003	A	37685	Decision relating to a proceeding pursuant to art. 82 of the EC Treaty (COMP/37.685 GVG/FS)
8/2003	M	M.3150	Non-opposition to a notified concentration (Case COMP/M.3150 – *SNCF/Trenitalia/AFA*) (2003/C 258/05)
9/2004	M	M.3554	Non-opposition to a notified concentration (Case COMP/M.3554 – *SERCO/NEDRAILWAYS/NORTHERN RAIL*) (2004/C 277/03)
10/2006	M	M.4292	Non-opposition to a notified concentration (Case COMP/M.4294 – *Arcelor/SNCFL/CFL Cargo*) (2006/C 258/10)
10/2006	M	M.4398	Non-opposition to a notified concentration (Case COMP/M.4398 – *Veolia Cargo/RAIL LINK/JV*) (2006/C 290/10)
11/2007	S	C58/2006	State aid No C 58/06 (ex NN 98/05) – Aid for the *Bahnen der Stadt Monheim (BSM)* and *Rheinische Bahngesellschaft (RBM)* companies in the *Verkehrsverbund Rhein Ruhr* (2007/C 74/10)
11/2007	M	M.4746	Non-opposition to a notified concentration (Case COMP/M.4746 – *Deutsche Bahn/English Welsh & Scottish Railway Holdings* (*EWS*)) (2008/C 125/03)
2/2008	S	C47/2007	State aid C 47/07 (ex NN 22/05) — Public service contract between *Deutsche Bahn Regio* and the *Länder of Berlin and Brandenburg* (2008/C 35/10)
3/2008	M	M.4786	Non-opposition to a notified concentration (Case COMP/M.4786 – *Deutsche Bahn/Transfesa*) (2008/C 137/04)
8/2008	S	C41/2008	State aid C 41/08 (NN 35/08) – *Danske Statsbaner* (2008/C 309/07)
8/2008	S	C5/2010	State aid C 5/10 (ex NN 48/09 and ex N 485/09) – Public loan granted to *Železničná spoločnosť Cargo Slovakia, a.s.* (*ZSSK Cargo*) (2010/C 117/04)
6/2009	M	M.5480	Non-opposition to a notified concentration (Case COMP/M.5480 – *Deutsche Bahn/PCC Logistics*) (2009/C 185/03)
10/2009	M	M.5557	Sent back to National Authorities (Case COMP/M.5557 - SNCF-P/ CDPQ/KEOLIS/ EFFIA)
6/2010	M	M.5655	(Case COMP/M.5655 – SNCF/ LCR/ EUROSTAR)
8/2010	M	M.5855	(Case COMP/M.5855 – DB/ Arriva)

Source: Compiled from DG Competition
Note: A=Antitrust, C=Cartels, M=Mergers, S=Staid aid

Appendix IV: Regulation covering Public Service Obligations

Public passenger transport service by rail and road

The Regulation defines the conditions in which the competent Authorities can intervene to grant exclusive rights and/or compensation to public service operators (PSOs).

Public service compensation may be necessary to ensure the provision of services of general economic interest (SGEI) and guarantee safe, efficient, attractive and high quality passenger transport. This Regulation applies to regular and non-limited access, national and international public passenger transport services by rail and other track-based modes and by road.

Public service contracts and general rules

The competent authority[68] is obliged to conclude a public service contract with the operator to which it grants an exclusive right and/or compensation in exchange for discharging PSOs[69]. Obligations which aim to establish maximum tariffs for all or certain categories of passengers may be subject to general rules. To define the framework for the competent authority, the latter grants compensation for the net positive or negative financial impact on costs and revenue occasioned by compliance with the pricing obligations established in the general rules.

The public service contracts[70] and general rules define:

- The PSO to be fulfilled by the operator and the areas concerned;
- The parameters based on which compensation must be calculated and the nature and scope of all exclusive rights granted to avoid any overcompensation;
- The means of distributing the costs linked to service supply (staff costs, energy, infrastructure, maintenance, etc.);
- The means of distributing income from the sale of transport tickets between the operator and the competent authority.

The duration of public service contracts is limited and must not exceed ten years for bus and coach services, and fifteen years for passenger transport services by rail or other track-based modes. This period may be extended by up to 50% under certain conditions.

Awarding of public service contracts

Public service contracts are awarded according to the rules laid down in this Regulation. However, for awarding certain passenger transport services by bus or tram, the procedures of Directives 2004/17/EC and 2004/18/EC apply. Subject to certain reservations detailed in Article 5 of the Regulation, Local Authorities may provide public transport services

[68] Defined as "any public authority or group of public authorities in one or more Member States which can intervene in public passenger transport in a given geographical area, or anybody invested with such power".
[69] Defined as "requirement defined or determined by a competent authority to guarantee general interest services in terms of passenger transport which an operator, in considering its own commercial interest, would not assume or would not ensure in the same measure or under the same conditions, without compensation".
[70] Defined as "all arrangements made between one or more transport operators with one or more responsible authorities for all the rights and obligations of the service in question, including any unilateral public acts".

themselves or assign them to an internal operator over which they have control comparable to that over their own services. Any competent authority who uses a third party other than an internal operator must award public service contracts by means of transparent and non-discriminatory competitive procedures which may be subject to negotiation.

The obligation to instigate competitive procedures does not apply to:

- Low level contracts, the average annual value of which is estimated at less than 1 million euro or which supply less than 300,000 km of public passenger transport services;
- Where emergency measures are taken or contracts are imposed in response to actual or potential service interruptions;
- Regional or long distance rail transport.

Terms and conditions

The Member States have three months to provide the Commission with all the information necessary to determine whether the compensation allocated is compatible with this Regulation. Each competent authority must publish a global annual report on the PSOs incumbent on them and the resultant compensation received by them. One year prior to any competitive procedure, the competent authority must ensure that the following information is published in the Official Journal of the European Union: name and contact details of the competent authority, type of allocation proposed and services and territories likely to be affected.

The Member States must gradually come into line with the Regulation, with the end of the transition period fixed for 3rd December 2019.

Appendix V: Interview questions

Systemic approach to the railway sector

- Who "speaks for the system" in your country?
- In your opinion who is the ideal person to have a "systemic view"?
- Who has the interest at heart for the entire system?
- Who understands and defends the system in its entirety?
- In your view what are the 5 most important PIs for the railway sector seen from a system's perspective?

Perspectives on performance for different stakeholders

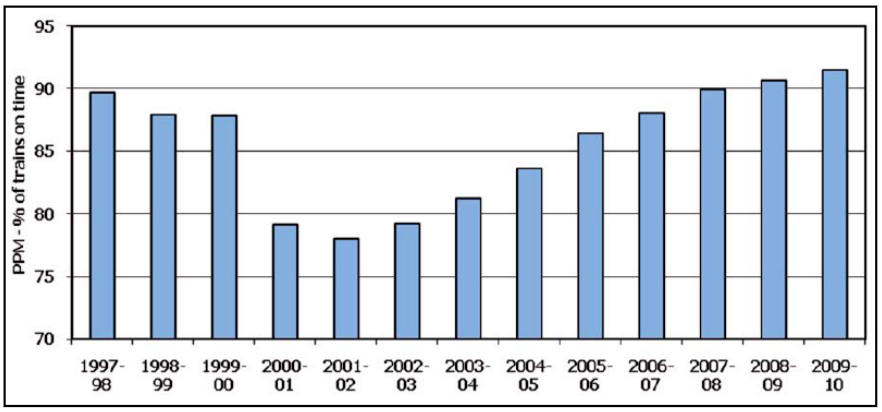
- How would you describe the mission of your organization?
- From the perspective of your organization, how would you describe the concept of performance?
- What are the drivers behind your definition of performance?
- Since when have PIs appeared in your organization? How have they evolved over time in terms of number of things to measure and targets to achieve?
- Who sets the PIs and targets?
- What room is there for negotiation in setting the type of PIs as well as the targets to reach?
- In your experience, what is their effect on the organization and its managers?

Functions and drivers

- In your opinion what are the key functions needed to achieve performance?
- What are the drivers for performance?
- What are your KPIs?
- Who sets the KPIs?
- How often are they checked against targets or thresholds?

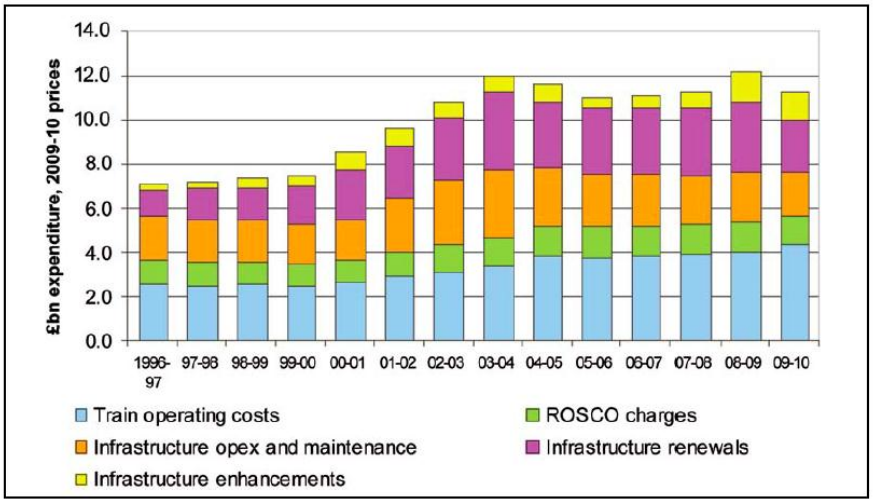
Appendix VI: Selected measures in the United Kingdom

Figure 78. Train reliability (public performance measure – percentage of trains on time)



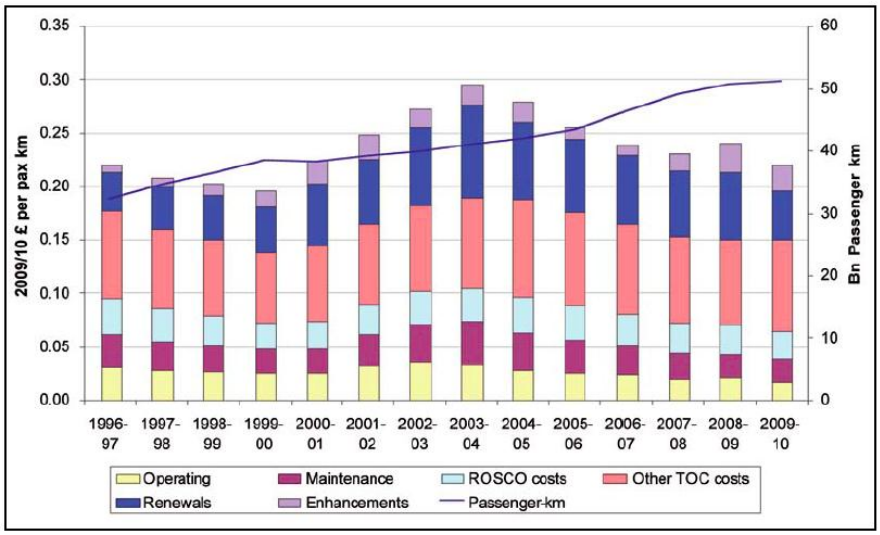
Source: McNulty report (2011)

Figure 79. Passenger rail industry expenditure 1996/97 to 2009/10



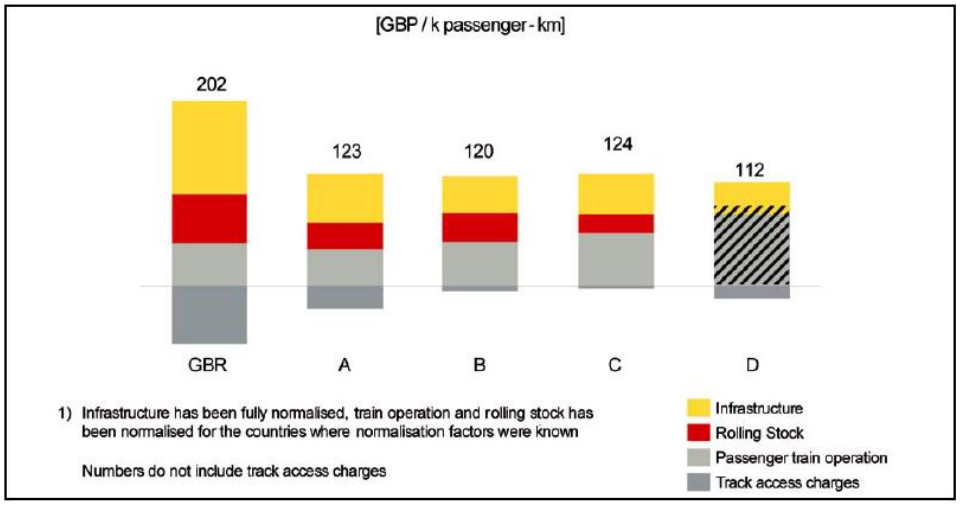
Source: McNulty report (2011)

Figure 80. Industry expenditure per passenger-km (2009/10 prices)



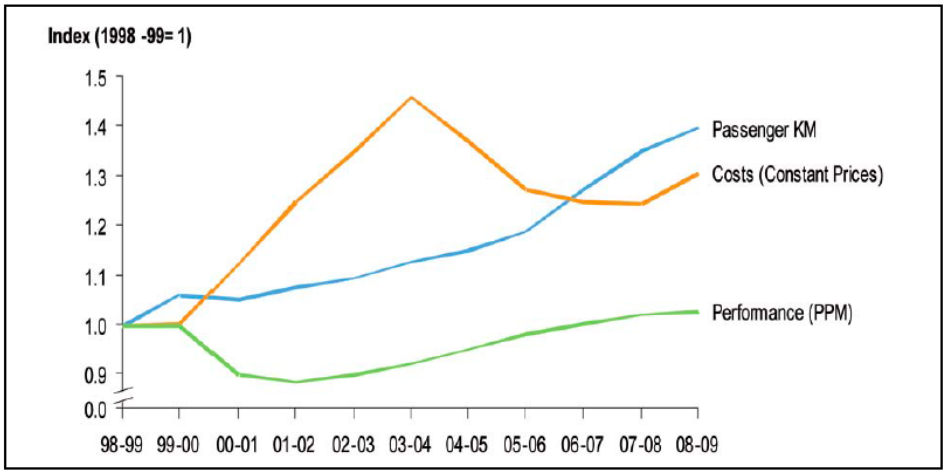
Source: McNulty report (2011)

Figure 81. Comparison of whole-system costs (partly normalised) £/'000 passenger-km



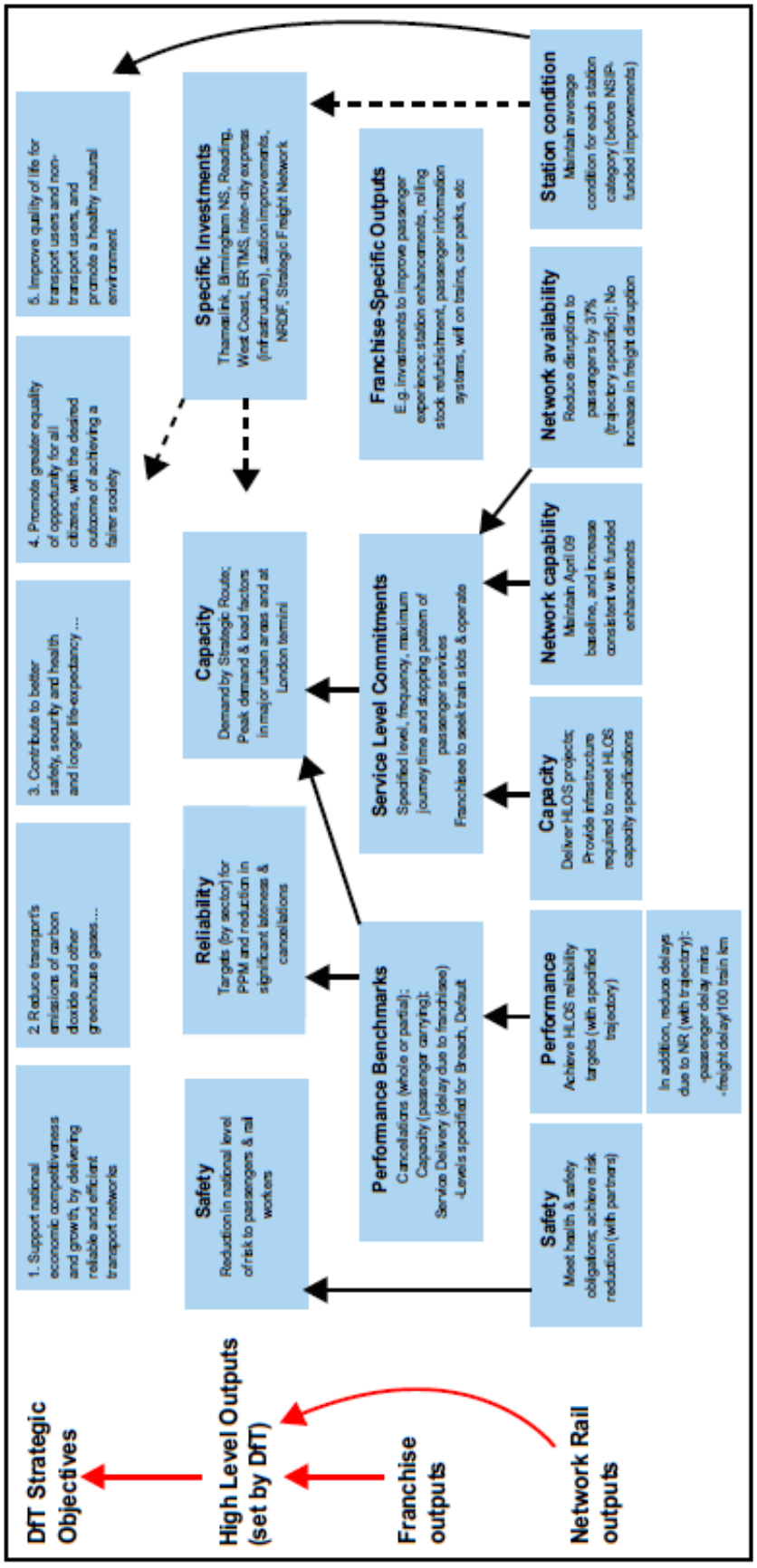
Source: McNulty report (2011)

Figure 82. Indexed trends in performance, passenger-km and costs



Source: McNulty report (2011)

Figure 83. Hierarchy of railway outputs



Source: McNulty report (2011)