Implementation of EU legislation on rail liberalisation in Belgium, France, Germany and The Netherlands

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ABSTRACT

This study provides a detailed and easy-to read overview of the railway liberalisation in Belgium and the three neighbouring countries. The European Union's liberalisation Directives are often complex and are implemented in very specific ways in the different Member States. The analysis goes into some detail about the Commission's underlying motives and economic theories for letting network industries, which had previously been regarded as natural monopolies, convert into competitive enterprises with the separation of infrastructure from operations.

The study takes a look at the impact of the European rail liberalisation Directives in Belgium and its neighbouring countries - France, Germany and the Netherlands. There are considerable variations in the way in which the Directives are applied. It is reflected in the way in which the separation of the infrastructure and the transport services within the railway companies was carried out, and in the degree of opening of the market in freight and passenger transport.

The analysis shows that the dominance of the former monopolists in the different Member States means that private rail operators face major obstacles. The financial analysis of the railway companies reveals wide variations in economic performance. The combination of better balance sheet figures and a bigger domestic market means that some major players in Europe are financially better off, giving them superiority over the smaller railway companies. This raises the question whether these circumstances will ultimately lead to distortion of competition.

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Keywords: rail, liberalisation, subsidies, debt

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CONTENTS

INTRODUCTION 1

1. REASONS FOR AND OBJECTIVES OF RAILWAY REFORM 2

1. 1. REASONS BEHIND THE REFORM OF THE RAILWAYS 2
1.1.1. The decline of rail transport 2
1.1.2. The reasons for this decline 4
1.2. THE OBJECTIVES OF THE REFORM OF THE RAILWAYS 5

2. THE EUROPEAN LEGISLATIVE FRAMEWORK FOR RAIL LIBERALISATION 8

2.1. THE FIRST DIRECTIVES 8
2.2. THE FIRST RAILWAY PACKAGE 8
2.3. THE SECOND RAILWAY PACKAGE 9
2.4. THE THIRD RAILWAY PACKAGE 10
2.5. LATER DEVELOPMENTS 11
2.6. SUMMARY OF THE LEGISLATIVE FRAMEWORK IN FORCE 13

3. THEORETICAL FRAMEWORK 14

3.1. DEFINITION OF A NETWORK INDUSTRY 14
3.2. CHARACTERISTICS OF A NETWORK INDUSTRY 14
3.3. NETWORK INDUSTRIES AND NATURAL MONOPOLIES 15
3.4. REFORM OF NETWORK INDUSTRIES 19
3.5. VERTICAL STRUCTURE 20
3.6. ADVANTAGES AND DISADVANTAGES OF VERTICAL INTEGRATION IN THE RAIL INDUSTRY 23
3.6.1. Advantages of vertical integration 23
3.6.2. Disadvantages of vertical integration 24
3.7. CONCLUSION 26

4. THE REFORM OF THE RAILWAYS IN BELGIUM 27

4.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY 27
4.1.1. Background 27
4.1.2. Developments on the Belgian rail market 31
4.2. FINANCIAL ANALYSIS 37
4.2.1. Revenues and subsidies 38
4.2.2. Operating costs 46
4.2.3. Debt 48
4.2.4. Analysis of the ratios 52
4.3. CONCLUSION 56

5. THE REFORM OF THE RAILWAYS IN FRANCE 58

5.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY 58
5.1.1. Background 58
5.1.2. Development on the French rail market 61
5.2. FINANCIAL ANALYSIS 66
5.2.1. Revenues and subsidies 66
5.2.2. Operating costs 70
5.2.3. Debt 71
5.3. CONCLUSION 73

6. THE REFORM OF THE RAILWAYS IN GERMANY 74

6.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY 74
6.1.1. Background 74
6.1.2. Developments on the German rail market 80

6.1.3. Employment trends in the German railways *91*
6.2. FINANCIAL ANALYSIS 93
6.2.1. Revenues and subsidies *93*
6.2.2. Operating costs *96*
6.2.3. Debt *98*
6.2.4. Analysis of the ratios *99*
6.3. CONCLUSION 100

7. THE REFORM OF THE RAILWAYS IN THE NETHERLANDS 102

7.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY 102
7.1.1. Background *102*
7.1.2. Developments on the Dutch rail market *109*
7.1.3. Employment trends in the Dutch railways *116*
7.2. FINANCIAL ANALYSIS 117
7.2.1. Revenues and subsidies *117*
7.2.2. Operating costs *122*
7.2.3. Debt *124*
7.2.4. Analysis of the ratios *125*
7.3. CONCLUSION 125

8. GENERAL CONCLUSION 128

GLOSSARY 129

BIBLIOGRAPHY 131

ANNEXES 139

NATIONAL BANK OF BELGIUM - WORKING PAPERS SERIES 147

INTRODUCTION

This research paper falls within the scope of the Microeconomic Analysis Service project providing a description and explanation of reforms to the network industries. The European Union's liberalisation Directives are often complex and can be implemented in very specific ways in the different Member States. As a result, it is not always easy for the policy-maker or other interested parties to get a clear or accurate understanding. The analysis here endeavours to fill in this shortcoming by providing a detailed and easy-to read overview of railway liberalisation in Belgium and the three neighbouring countries. It also goes into some detail about the European Commission's underlying motives and economic theories for letting network industries, which had previously been regarded as natural monopolies, convert into competitive enterprises.

In the first part of the study, the theoretical framework surrounding the liberalisation of the rail sector is outlined for the non-specialised reader. First of all, the paper sums up the reasons behind the European policy decision and then it looks into the objectives hoped to be achieved by opening up the rail market to competition. It then goes on to give an overview of the background legislation, listing all the different EU Directives concerning liberalisation of the railways. A third chapter explains a few aspects of the economic theory of liberalisation of the network industries along with the potential advantages and disadvantages. The purpose of this chapter is to provide a brief review or introduction of the relevant economic theory surrounding concepts such as natural monopolies, cost curves, free markets, transaction costs, etc.

The second part takes a look at the impact of the European rail liberalisation Directives in Belgium and its neighbouring countries - France, Germany and the Netherlands. In each case, an overview is given of the history of their domestic rail reforms in the light of the initial position, the gradual reforms and the current situation. Developments on the national rail markets both for goods and passenger transport are then outlined, followed by an examination whether rail liberalisation has already had a positive influence or not on the performance of the railways. Finally, on the basis of a financial analysis of data from the annual accounts of the various rail companies, the study ascertains whether particular developments regarding subsidies, financial debt, corporate revenue and costs can be linked to the market reforms.

It should be pointed out that this study is intended for a wide, non-specialised public. It endeavours to explain all concepts involved in the socio-economic debate on liberalisation of the railways without however defending any particular stance.

1. REASONS FOR AND OBJECTIVES OF RAILWAY REFORM

1. 1. REASONS BEHIND THE REFORM OF THE RAILWAYS

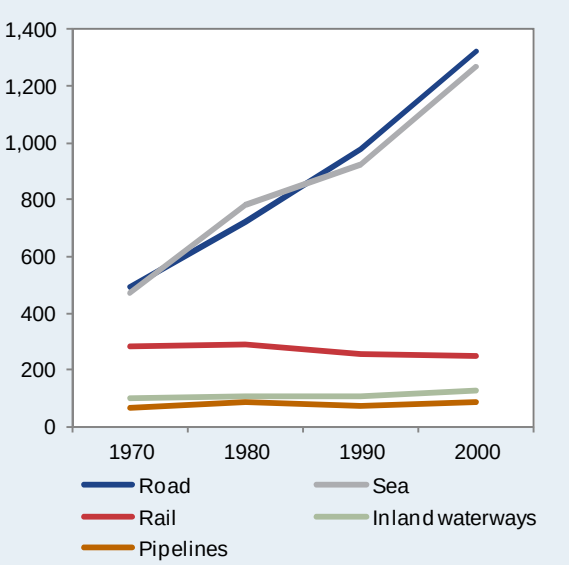
1.1.1. THE DECLINE OF RAIL TRANSPORT

For more than 30 years now, rail transport has seen its market share constantly declining in comparison with the other modes of transport, both for freight and passenger transports. Even in absolute terms, at a time when the transport sector as a whole was growing, rail transport was standing still, or even contracting in some cases.

Charts 1 and 2 show respectively how freight and passenger transport evolved, by mode, between 1970 and 2000, while charts 3 and 4 illustrate the trends in terms of market share for each mode of transport.

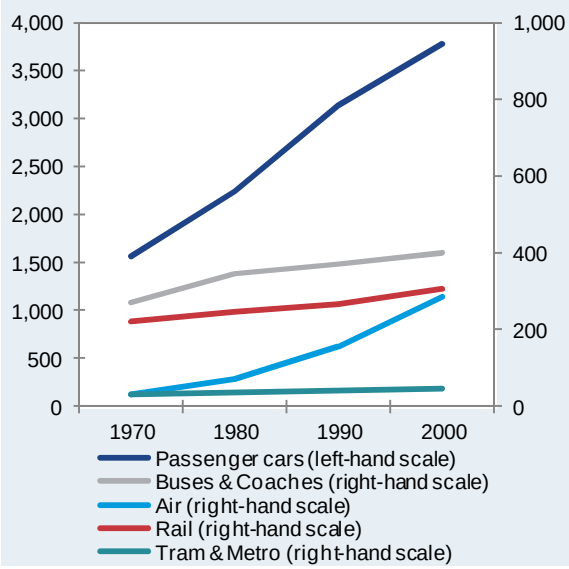
As far as freight is concerned, the boom in road and maritime transport can be noted immediately, with their respective growth rates of 170% and 169% in the space of 30 years, while growth of all five modes over the same period doubled (+116%). This development is in sharp contrast to that for rail transport which declined by 11% during this time. So, it is hardly surprising to note that the railways lost over half their market share in just three decades, down from 20% in 1970 to just over 8% in 2000.

Chart 1: Performance of freight transport by mode in the EU-15, 1970-2000, in billion tonne-kilometres



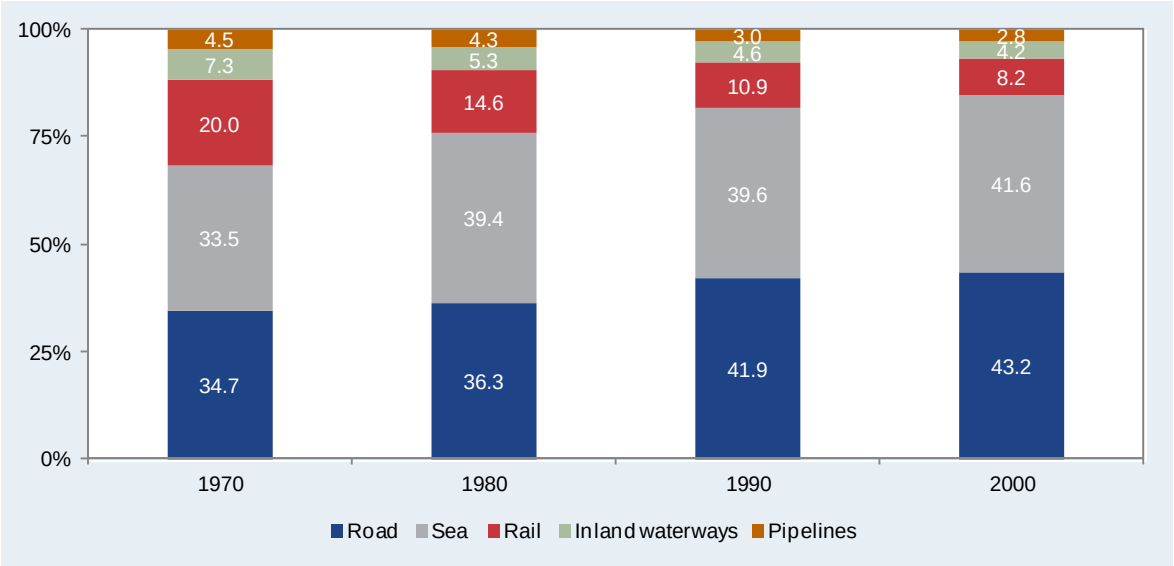
Source: EU Energy and Transport in Figures Statistical pocketbook 2004.
Notes: Road: transport on national territory.
Sea: intra-EU traffic, including domestic traffic.

Chart 2: Performance of passenger transport by mode in the EU15, 1970-2000, in billion passenger-kilometres



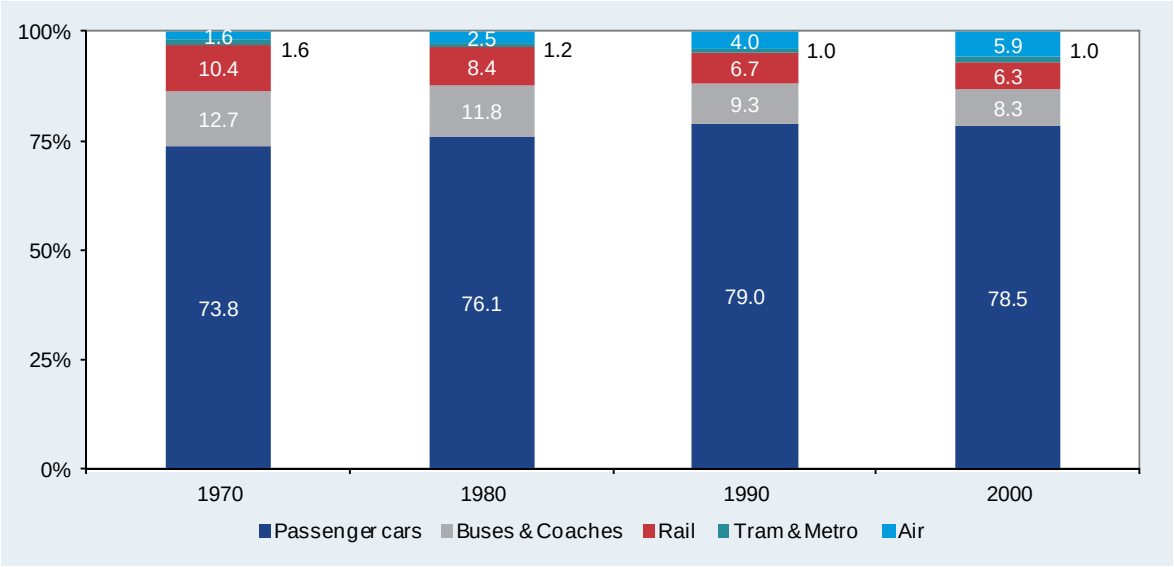
Source: EU Energy and Transport in Figures Statistical pocketbook 2004.
Note: Air: domestic flights plus intra-EU15 flights.

Chart 3: Freight transport modal split in the EU15, 1970-2000, in %



Source: EU Energy and Transport in Figures Statistical pocketbook 2004.
Notes: Road: transport on national territory.
Sea: intra-EU traffic, including domestic traffic.

Chart 4: Passenger transport modal split in the EU15, 1970-2000, in %



Source: EU Energy and Transport in Figures Statistical pocketbook 2004.
Note: Air: domestic flights plus intra-EU15 flights.

The railways' performance in passenger transport hardly fares any better, even though rail transport grew fairly steadily in absolute terms over the last 30 years of the 20th century (+39%). This growth rate is nevertheless very low when compared with that for road transport which had more than doubled over this period (+142%). But the passenger transport sector has also been marked by the exponential growth of air transport, which had expanded from 33 billion passenger-kilometres in 1970 to 284 billion passenger-kilometres by the year 2000, which is an increase of as much as 761%. This huge growth enabled this sector to edge much closer to rail transport which registered 304 billion passenger-kilometres in the year 2000. Moreover, by 2008, the aeroplane was the second most popular mode of passenger transport after the car in the EU27, having thus overtaken not only the train but also bus and coach travel (EC, 2010). So, it is mainly thanks to planes and cars that the passenger transport sector as a whole was able to post a growth rate of 128% in 30 years. The increasing importance of these sectors also contributed to bringing down the railways' market share from 10.4% in 1970 to 6.3% in 2000, not such a sharp decline as in freight, but nonetheless still just as worrying.

1.1.2. THE REASONS FOR THIS DECLINE

There are many reasons for the decline in rail transport (summarised in table 1). Some of them are exogenous to rail transport, but others are to be found within the sector itself. The European Commission (1996) gives an overview of them in its White Paper on revitalising the railways.

Table 1: Reasons for the decline of rail transport

Exogenous reasons	- Transformation of other industries • From huge-stock-based to just-in-time production processes • From low value/high volume to high value/small volume products - Policies and investment favouring road over rail
Endogenous reasons	- Limited attention to customer care - Weak reliability and punctuality of shipments - Limited flexibility in transhipments - Fragmented cross-border services with delays at frontiers (lack of interoperability) - Absence of cross-border cabotage - Lack of service integrators for optimised logistical chains - Traffic priorities allocated to passengers (unclear slot allocation management) - Lack of one-stop shop in path allocation, cargo tracing and handling - Lack of competition - Non-transparent cost structure on international corridors - Insufficient infrastructure capacity and quality (especially for high-speed passenger transport and combined goods transport on international routes) - Poorly defined public service obligations and compensation received ex post

Source: Di Pietrantonio and Pelkmans (2004, p. 4) and Nash and Rivera-Trujillo (2004, p. 4).

As shown in the previous point, one of the main causes of the decline of rail transport is the rapid expansion of other modes of transport such as air and road transport. The expansion of the aviation sector has probably been facilitated by the emergence of "low-cost" airlines, while the road transport sector has benefited from more democratic vehicle prices. The increasing use made of road transport has led to the development of road networks, thus creating a virtuous circle for this mode of transport. Moreover, road transport is generally considered to be less costly than rail. However, the external costs of transport, such as congestion, pollution and accidents, are frequently higher for road transport than for rail and are not taken into account in the price paid by individual users. Competitive conditions therefore favour road transport, to the detriment of, *inter alia*, the railways.

Another exogenous reason for the decline of the railways lies in the transformation of some industries. The traditional heavy industries, whose output was transported by rail have declined in importance (EC, 1996, p. 9). The European economy has effectively gradually been transformed from an industrial one to a service economy. Furthermore, within industry, there has been widespread adoption of "just-in-time" production processes, which require more flexible sourcing and, therefore, adaptable means of transport (Di Pietrantonio and Pelkmans, 2004, p. 3). The

railways have not been able to adapt to these developments and have not found new outlets for goods transport to make up for this loss.

The decline of the railways is also attributable to the rail sector itself. It is still organised on national bases while the transport needs of both passengers and goods are becoming increasingly internationalised. The absence of a genuine internal rail market prevents the existence of freely moving transnational rail transport services, something which on the other hand is available by road.

According to the European Commission (1996, p. 10), management of the railways is also largely responsible for their decline. Rail companies, which generally tend to be State monopolies, have not always been managed with a view to ensuring profitability and efficiency. Investment in the railways have often been inadequate or badly targeted. Governments have compensated for losses with huge subsidies devoid of any precise objectives.

Lastly, rail infrastructure has not been adapted to the expansion of traffic, while at the same time motorway networks were developing, something which exacerbated the imbalances between these two modes of transport.

1.2. THE OBJECTIVES OF THE REFORM OF THE RAILWAYS

The problems facing the railways prompted the Commission to reform the rail transport sector. The reform aims to revitalise rail so as to make this transport mode as attractive as the others for users and thus try to reverse the negative trend of its modal market share. It comprises three main objectives, which are interdependent:

- Creating a genuine internal rail market
- Improving the efficiency of rail companies
- Fostering a policy of sustainable mobility

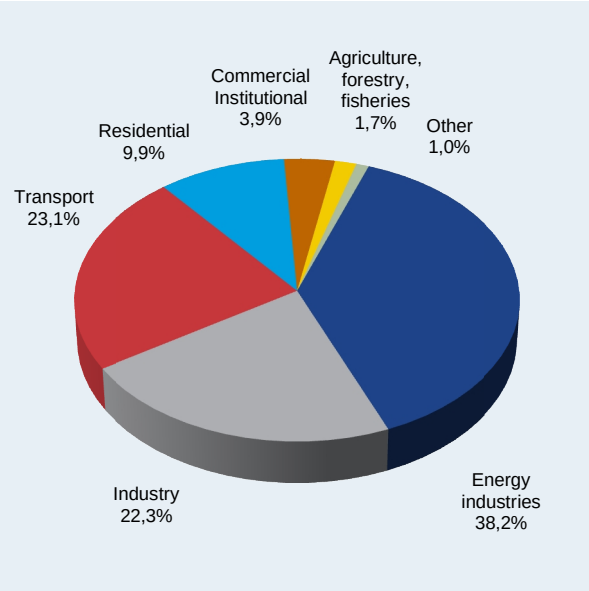
The intention to create an internal market for transport via a common transport policy was already set out in the European Community's founding Treaty, signed in Rome in 1957. The aim of this policy is "the promotion throughout the Community of a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of the standard of living and quality of life and economic and social cohesion and solidarity among Member States" (EC, 1992, p. 13).

As far as rail transport is concerned, it should be noted that this internal market has still not materialised. Numerous regulatory, technical and administrative barriers are still preventing a European rail network from being set up. The Commission wants to open up national markets and break down these barriers in order to improve both integration and interoperability of the Member States' networks. According to the Commission (2001, p. 34), it is over long distances that the rail market has the most promising growth potential. A trans-European network would therefore help make the railways more attractive in comparison to other modes of transport. But that also involves an overhaul of infrastructure, a large part of which was designed in the 19th century, from a national, or even regional, perspective by devoting international train paths to freight transport, which has fallen victim to policies that tend to give priority to passenger trains.

As mentioned in the previous point, the Commission feels that the rail sector is not efficient and profitable enough because its firms are cut off from market forces. The Commission wished to turn rail companies into "normal businesses, that endeavour to satisfy their customers' requirements in the knowledge that, if they fail to do so, some one else will and they will lose the business" (EC, 1996, p. 6). According to the Commission, opening the sector up to competition is the best way to improve efficiency on the railways and to modernise the services offered to rail users. Furthermore,

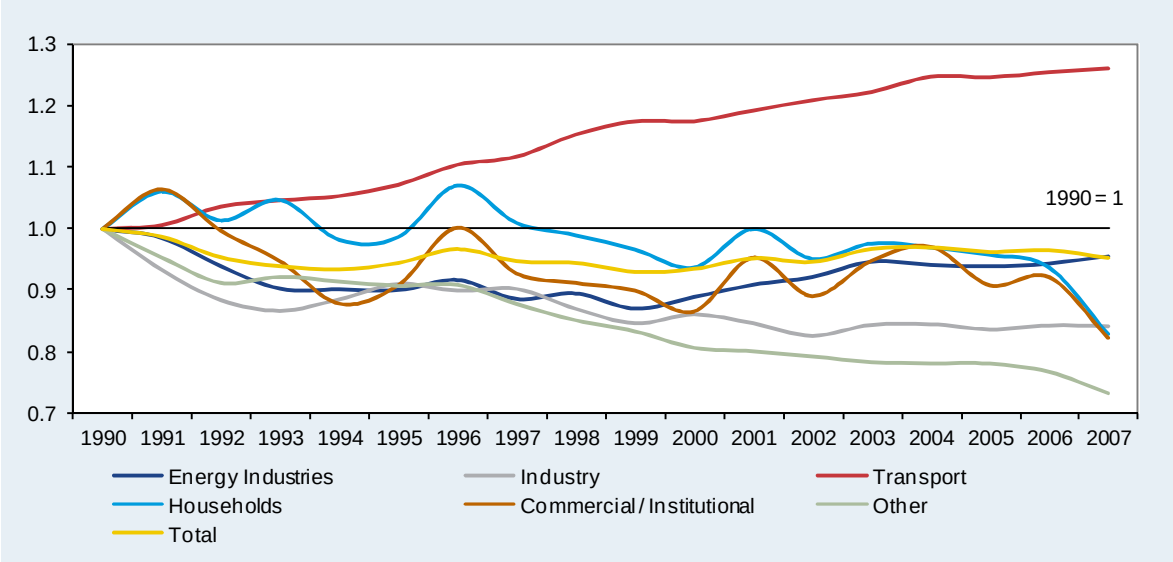
this policy must enable State subsidies to be scaled back or even scrapped altogether so as to relieve the strain on the Member States' budgets.

Chart 5: CO2 emissions by sector in the EU27 (shares of total CO2 emissions in 2007)



Source: EU Energy and Transport in Figures Statistical pocketbook 2010.

Chart 6: Changes in CO2 emissions by sector in the EU27, 1990-2007



Source: EU Energy and Transport in Figures Statistical pocketbook 2010.

Last but not least, the reform seeks to promote sustainable mobility. The strong growth of both passenger and goods transport has brought mobility problems (congestion, delays, etc.) and pollution. As chart 5 shows, in 2007, the transport sector was responsible for 23.1% of carbon dioxide emissions in the EU27 and this is the only sector to have seen an upward trend in its CO2 emissions since 1990 (chart 6). Consequently, the Commission wants to see a rebalancing of the different modes of transport. In this context, the railways have an important role to play, by virtue of their relatively low environmental impact in comparison to road transport, for instance[1]. The objective is for more long-distance road journeys and short-haul trips (less than 400 km) by aeroplane to be made by train (EC, 2003). The goods haulage sector also needs to make wider use of the railways rather than the roads. According to the Commission, better user-charging to

1 The share of the rail sector in total CO2 emissions of the transport sector was only 0.6% in the EU27 in the year 2007, if indirect emissions due to electricity consumption are excluded. By way of comparison, the road transport sector's share was 70.9% (EC, 2010).

recover costs and an improvement of connections between transport networks should also contribute to this modal rebalancing.

2. THE EUROPEAN LEGISLATIVE FRAMEWORK FOR RAIL LIBERALISATION

Since the end of the Second World War, the rail sector has been running out of steam. Its market share is falling in relation to other modes of transport (especially road transport) despite its environmental and safety credentials, to name but two. Moreover, this sector is characterised by national markets, the presence of a traditional monopolistic operator controlling the infrastructure and its operational aspects, as well as major State subsidies which, in the European Commission's view, do not encourage efficiency. It was on these grounds that the EU executive decided to gradually reform the rail sector.

2.1. THE FIRST DIRECTIVES

Directive 91/440/EC, adopted in July 1991, was the first major legislative milestone in this reform. This Directive requires rail companies' management to be independent from the State as well as the running of transport services to be separated from the rail infrastructure management, at least by unbundling their accounts. It also requires rail companies to be restored to a sound financial standing. For this purpose, a separate debt write-off service can be set up within their accounting framework.

Furthermore, the Directive authorises rail companies to form "international groupings" with rail companies from other Member States intended for cross-border transport of passengers or goods. Under the terms of the Directive, rail companies must give other Member States' railway operators access to their infrastructure for the operation of international combined goods transport services and allow international groupings access for the provision of international transport services.

This Directive, which came into force on 1 January 1993, ushered in the very first form of market opening. However, it still leaves a great deal of power in the hands of the traditional operators, since a foreign rail company needs their cooperation to form an international grouping.

In June 1995, Directives 95/18/EC and 95/19/EC padded out Directive 91/440/EC with a view to guaranteeing the effective application of rail infrastructure. The first Directive lays down the conditions for granting licences to rail companies while the second governs the allocation of network capacity to operators and the infrastructure user fees. Directive 95/19/EC stipulates that priority in rail infrastructure allocation should be given *inter alia* to rail services of general interest and that rail companies providing these services may receive compensation from the State.

In July 1996, the Council adopted Directive 96/48/EC on the interoperability of the trans-European high-speed rail system.

2.2. THE FIRST RAILWAY PACKAGE

In July 1996, the Commission put together, in the form of a White Paper[2], a strategy for revitalising the Community's railways. This strategy consists of continuing the reforms undertaken through Directive 91/440/EC (restoring sound finances, market opening, integration of national systems). The Commission also pointed out in its White Paper that Directive 91/440/EC had not been fully applied by all Member States.

Using the White Paper as a basis, the European Parliament and the Council adopted, in February 2001 a triple series of Directives that make up the first rail package (also referred to as the infrastructure package). According to the Commission, the objective of this reform is to boost competition, create better international freight transport and use the rail infrastructure more efficiently.

2 COM(96) 421.

Directive 2001/12/EC amends Directive 91/440/EC. It enables an individual operator to obtain access to the rail network of other Member States with a view to supplying all types of international freight service (no longer combined transport of goods). During a transitional period, these new measures solely concern the main European railway routes, which make up what is called the trans-European rail freight network, but from 15 March 2008 onwards they apply to the whole EU network. The Directive stipulates that the basic functions for guaranteeing fair and non-discriminatory access to the infrastructure are confined to cases where companies that do not supply rail services themselves.

In addition, the Directive requires a clear distinction for accounting purposes between passenger transport and freight transport and steps up the requirement for unbundling of accounts between train operators and rail infrastructure managers by making it compulsory to publish separate balance sheets and profit and loss accounts. Furthermore, funds paid for activities relating to the provision of passenger transport services as public-service remits must be shown separately in the relevant accounts and may not be transferred to activities relating to the provision of other transport services or any other business. The Member States were given until 15 March 2003 to transpose this Directive into national law.

Directive 2001/13/EC amends Directive 95/18/C on the granting of licences.

Directive 2001/14/EC replaced Directive 95/19/EC. It sets out the principles and procedures to follow for fixing and levying the rail infrastructure user charges and for the allocation of capacity on this infrastructure for both passenger transport and freight. Under this new Directive, the minimum access charges levied for the service infrastructure must be set at the cost that is directly incurred as a result of operating the train service. This cost may include various elements listed in the Directive.

Just like Directive 95/19/EC, Directive 2001/14/EC permits the Member States to give priority to rail services of general public interest and to compensate suppliers of these services. The Directive stipulates that the infrastructure capacity allocation procedure may not be carried out by an infrastructure manager that also acts as an operator for this infrastructure. The Directive calls for the establishment of an independent regulatory body to oversee these procedures. And, finally, it requires rail companies to obtain a safety certificate granted by the Member States.

In parallel with the first rail package, the Parliament and Council adopted, in March 2001, Directive 2001/16/EC on the interoperability of the conventional trans-European rail system.

2.3. THE SECOND RAILWAY PACKAGE

In September 2001, the Commission published a new White Paper on European transport policy for 2010[3]. In this paper, the EU executive mainly seeks to revitalise the railways by making rail transport an integral part of the Internal Market, by optimising use of infrastructure and by modernising services. The Commission also sought to strengthen the link between the different modes of transport and incorporate infrastructure costs into the price paid by users. Its White Paper pointed up the importance of a quality public (passenger) transport service and recalled that state aid to companies carrying out these missions of general economic interest are permitted, as long as they respect competition rules. This White Paper was to serve as the basis for the second railway package.

This second series was adopted in 2004. Its goal was to create an integrated European rail area at both the legal and technical level. It contains three Directives, a Regulation and a Recommendation.

3 COM(2001) 370.

Directive 2004/49/EC (the Railway Safety Directive) aimed to develop a joint approach to safety matters on the European Union's railways. It incorporates into a single document the various safety prescriptions that featured in Directives 95/18/EC and 2001/14/EC, while adding some new elements. It determines the procedure to be followed for granting safety certificates that every rail company must have before it can operate on the European network. This piece of legislation also sets the requirements that infrastructure managers must meet in order to be approved in terms of safety. It was updated by Directive 2008/110/EC.

Directive 2004/50/EC amends Directives 96/48/EC and 2001/16/EC on the interoperability of trans-European high-speed and conventional rail systems, respectively. It harmonises and clarifies interoperability requirements. Directive 2008/57/EC then consolidated these Directives within a single text while adding some new, mostly technical, amendments. In October 2009, Annex VII of Directive 2008/57/EC was amended by Directive 2009/131/EC.

Directive 2004/51/EC amends Directive 91/440/EC. It brought forward to 1 January 2006 the opening of the Member States' whole network for international rail freight services. Moreover, from 1 January 2007 onwards, the Directive grants rail companies access rights for all kinds of rail freight services (no longer just international services) on the whole EU network.

Regulation 881/2004 establishes the European Railway Agency whose main role is to make a technical contribution to the integration of the European railway area by improving the interoperability of the different networks and developing a common approach to safety on the European rail system. It was amended by Regulation 1135/2008.

Finally, the second railway package includes a Recommendation aimed at the accession of the European Community to the Convention on International Carriage by Rail (COTIF).

2.4. THE THIRD RAILWAY PACKAGE

In 2006, the Commission carried out a review of the 2001 White Paper[4] which notably concluded that there was a need to sharpen the railways' competitive edge and reinforce their integration as well as to encourage environmentally friendly transport. Following this review, the Parliament and the Council adopted, in 2007, the third railway package with the objective of opening up to competition international passenger transport in the European Union in 2010. This third package comprises two Directives and a Regulation.

Directive 2007/58/EC amends Directives 91/440/EC and 2001/14/EC. It provides for the opening up of the international passenger transport market by 1 January 2010. The right of access to the network applies to all stations located along an international transport route, including stations in the same Member State. The Directive therefore allows cabotage, that is, stopping off and picking up passengers on an international journey in several stations within the same country. The Directive nevertheless does not concern rail companies that make only one transit journey on European Union territory. The Member States where international passenger transport by train accounts for more than half of the turnover earned by their rail companies from carrying passengers were given extra time – until 1 January 2012 to open up their networks to competition. In addition, the Directive provides for an assessment by the Commission, for 31 December 2012 at the latest, of the measures designed to open up the network for international passenger transport and, if necessary, proposals for further rail network liberalisation.

Directive 2007/59/EC harmonises the conditions and procedures for the certification of train drivers operating locomotives and trains on the railway system in the Community.

Regulation 1371/2007 determines rail passengers' rights and obligations. For example, it creates a system of compensation in the case of train delays, rules to follow for guaranteeing access for

4 COM(2006) 314.

disabled travellers and the procedures for the handling of complaints. This Regulation came into force on 3 December 2009.

Alongside the third railway package, and in line with the 2001 White Paper's recommendations, the Parliament and the Council adopted Regulation 1370/2007 on public passenger transport services by rail and by road. This Regulation sets out the conditions under which compensation or exclusive rights may be granted by the competent authorities to rail companies for the provision of services of general interest.

2.5. LATER DEVELOPMENTS

In December 2008, the Commission tabled a proposal for a Regulation designed to make rail freight more competitive[5]. In doing so, it noted how far behind integration of rail transport had fallen in comparison to air and road transport while meeting sustainable mobility requirements. It felt that the establishment of international rail corridors giving priority to freight would make a substantial contribution to improving competitiveness of the railways. This Regulation was adopted by the Parliament and the Council in September 2010[6]. Most notably, it compiled a list of rail freight corridors that should make it possible to link up Europe's main industrial regions by November 2015. The Regulation calls for closer cooperation between infrastructure managers at the operating level as well as setting up one-stop shops for loaders.

The year 2009 saw the ten-year period covered by the 2001 White Paper draw to an end, so the Commission started the process that was to culminate in the publication, in 2010, of a new White Paper on the future of transport. This was finally published in March 2011 (see below). In June 2009, the Commission set out its vision for the future of transport[7] and put it out to public consultation. It main aim was to promote the development of sustainable mobility. On the legislative front, the Commission regards the completion of the Internal Market and strict application of competition rules as absolutely essential. It feels that new market-opening rules associated with effective application of the legislation in force are of particular importance for the rail sector. In this White Paper, the EU executive also envisaged the establishment of transnational infrastructure operators in order to guarantee full third-party access to infrastructures. Moreover, it wants to further develop the legislative framework so as to ensure fair and equal competition conditions and also to make sure that safety and security standards, working conditions and consumer rights are not sacrificed, with particular attention being paid to people with reduced mobility and those with specific needs.

The Commission's 2006 report on the implementation of the first railway package[8] noted an unfavourable trend on the railways in recent years, in particular a decline in the railway's modal share in comparison to other modes of transport between 1995 and 2004 for the carriage of both goods and passengers. It attributes this poor performance to bad transposition and incorrect implementation of the first railway package. As a result, the Commission announced that it intended to overhaul this legislative package in order to simplify, clarify and modernise the rules applicable to the rail sector. On 17 September 2010, it adopted a proposal to reform the first railway package bringing together the three Directives from this package and their later amendments in one single text, while adding further modifications. The reform proposal seeks to boost competition on the rail transport market, give more power to national regulators and improve the framework for investment in the rail sector[9]. The proposed overhaul calls for clarification of account unbundling and the existing provisions on independence of infrastructure operators without, however, involving any major change to the content. It nevertheless stipulates that public

5 COM(2008) 852.
6 Regulation (EU) N° 913/2010 of 22 September 2010.
7 COM(2009) 279.
8 COM(2006) 189.
9 European Commission (2010), "Commission sets out measures to improve rail services", press release IP/10/1139, 17 September.

funds paid out to a rail operator for its public service transport missions should be mentioned separately for each public service contract. The proposal also requires operators of services indispensable for access to the rail infrastructure (stations, ports, locomotive maintenance sheds, etc.), and for electricity and fuel supply to be kept independent from rail transport operators. As regards the relationship between the Member States and their traditional rail company, the proposal for a Directive stipulates that if the State is a shareholder, it may not be given more rights in the management of the rail company than shareholders in ordinary private companies under the national company law currently in force. Management contracts concluded between the State and the rail company must be of a general nature and may not interfere with specific corporate decisions.

In its first reading on 16 November 2011, the European Parliament approved an amended version of the reform proposal, which requires neither full unbundling between the infrastructure manager and the rail operator nor liberalisation of national passenger traffic. However, the Parliament asked the Commission to come forward with a proposal, by 31 December 2012 at the latest, for a Directive setting out provisions on the separation of infrastructure management and transport operations, as well as a proposal seeking to open up the internal rail passenger transport market.

The text adopted by the Parliament was then sent on to the EU Council of Transport Ministers which endorsed a political agreement on it on 12 December 2011, thus officially launching the second reading with the Parliament.

Alongside the reform proposal, the Commission published a Communication[10] presenting its strategy with a view to further boosting the development of the single European railway area and setting out complementary initiatives that it could take in the coming five years. Among these initiatives is a cost-benefit analysis of opening up the internal passenger transport market to competition which the Commission intended to propose in 2011 and then an initiative to be adopted by 2012 at the latest to expand the opening of the network, as provided for under Directive 2007/58/EC. However, the Communication does not mention any date for opening up the internal passenger travel market to. The Commission also intends to look into the possibility of tightening up the requirements for institutional unbundling between network managers and rail operators. It plans to launch a consultation based on this Communication, so as to give interested parties a chance to air their views.

In March 2011, the Commission published its White Paper on European transport policy[11]. In this paper, it confirms its desire to encourage the emergence of multinational and multimodal operators. Pointing out that is on the internal rail services market where there is still the most evidence of bottlenecks, the Commission set as a priority action to break down any technical, administrative and legal barriers that are still preventing entry to national markets in order to create a single European railway area without frontiers. Without giving any precise date, it said it intended to ensure, *inter alia*, the "structural" separation of infrastructure management from provision of services, something that could put an end to holding-company structures.

On the other hand, in a bid to contribute towards the objective of reducing greenhouse gas emissions from transport, the White Paper puts forward ambitious targets for transport of passengers and goods by rail. Above all, the Commission recommends a tripling the length of high-speed rail network by the year 2030 and hopes that, by 2050, the bulk of medium-haul passenger transport will be by train. As for goods transport, it has set a target of shifting 30% of road cargo over distances of more than 300 kilometres over to the railways or inland waterways by 2030 and 50% by 2050, thanks partly to putting multimodal freight corridors in place.

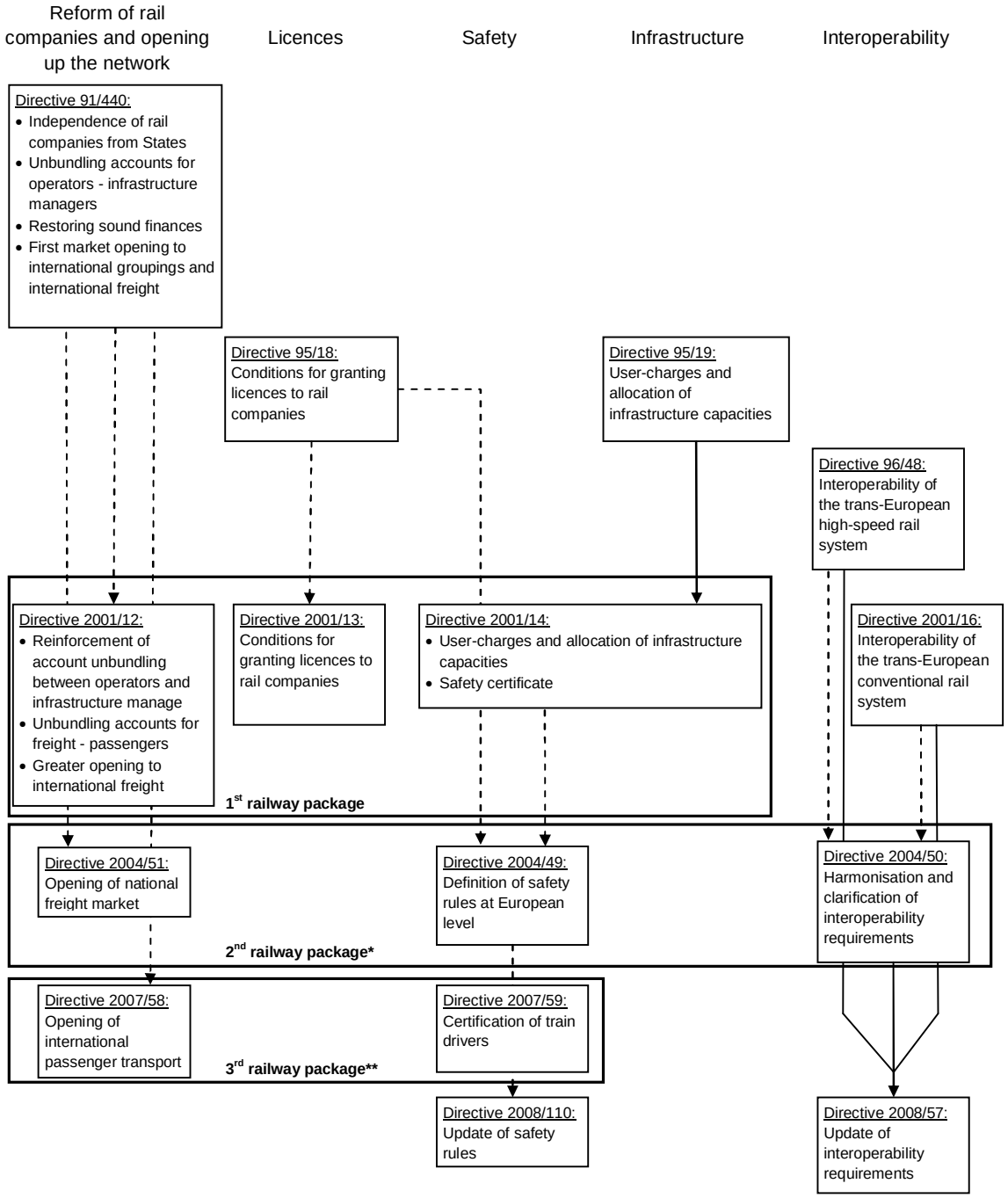
10 COM(2010) 475.
11 COM(2011) 144.

The Commission also hopes to have reached by 2020 full and compulsory internalisation of external transport costs. In the case of rail transport, that comprises most notably noise, pollution and wear-and-tear costs.

2.6. SUMMARY OF THE LEGISLATIVE FRAMEWORK IN FORCE

The diagram below summarises the main elements of the European legislative framework for rail liberalisation currently in force and shows, in a nutshell, how it has developed.

Figure 1: Summary of the European legislative framework for rail liberalisation



* The 2nd railway package also includes Regulation 881/2004 establishing the European Railway Agency and a Recommendation for the accession of the European Community to COTIF.

** The 3rd railway package also includes Regulation 1371/2007 on rail passengers' rights and obligations.

Source: NBB.

3. THEORETICAL FRAMEWORK

3.1. DEFINITION OF A NETWORK INDUSTRY

There is no single unambiguous and widely accepted definition of a network industry because the population of so-called network industries is heterogeneous and the distinction from other types of industry not always clear. The fact that the railways, electricity or postal services belong to the network industries is not being contested. But the distributive trades or insurance sector are never labelled as network industries, even though they exhibit similar characteristics.

The simplest definition of a network lies in a number of points that are linked up to each other in order to transport along the way flows of energy (electricity or gas), information (sound, images or data) or goods (water, freight or passengers). A typical feature is that goods and/or services are provided to end users through the use of a network infrastructure which links the upstream supply with downstream customers. The emphasis here is on the network which in the case of the railways is a transport network (rail infrastructure).

Within such a network industry, at least two vertical levels can be distinguished, on the one hand there are activities involving installation or construction, maintenance and management of the network infrastructure itself and, on the other hand, there is the downstream business of provision of services to the end user. In the case of the railways, this involves the supply of train services. In a vertically integrated firm, both activities are carried out by the same producer. The activities can also be provided under a vertically disintegrated structure where the firm that is responsible for the infrastructure is not active in the downstream business. Mixtures of the two are also possible: a vertically integrated firm which allows competition in the downstream activity or several vertically integrated enterprises that compete with each other.

3.2. CHARACTERISTICS OF A NETWORK INDUSTRY

A network industry has a number of basic characteristics related to the presence of an infrastructure and which distinguish it from the other sectors. These features have an influence on the way in which a network industry can be organised.

A first characteristic is the presence of *externalities*. These are undesirable side effects of a transaction, decision or action taken by a market party in the course of which no account is taken of its influence on another market party that is not concerned by the decision-making process. Externalities are positive or negative effects that are not included in the cost price of a good or a service. A positive network externality arises when the utility of one user depends on the total number of connected users. This mainly applies to communication networks (such as the telephone or an online social network) where each additional user raises the value of the system for all users already present (or connected). Then again, a negative network externality occurs when aggregate demand, which is the result of the various individual decisions of the end users, overloads the system to such an extent that supply cannot keep up with demand, as a result of which the balance of the system is disrupted. In the case of the railways, this happens during peak hours when demand largely exceeds available capacity so people are faced with overcrowded trains.

Within a network industry, the infrastructure is *necessary equipment* and a supplementary production factor that downstream services must allow end users to access. Train operators inevitably need tracks to be able to supply transport services. The extent to which the equipment is regarded as necessary depends heavily on the local outlook. It is of course quite possible to bridge certain distances in places where there are no rail tracks by means of other modes of transport (by bus, for instance).

The development of a network requires huge prior investment in well-defined assets with a long lifespan. These investments in a network infrastructure go hand in hand with "sunk costs", that is, costs which cannot be cashed in for other purposes. High fixed costs, as a result of which it is not efficient to duplicate a network, and the much lower variable costs associated with the provision of services over the network lead to considerable *economies of scale* in network industries. Economies of scale play an important role in the rail industry in particular because the proportion of fixed costs here is noticeably higher than in other network industries. This makes it especially difficult to generate competition within a network industry.

In addition, network industries also enjoy *economies of scope* which arise on account of the joint supply of two services being provided at a lower cost than when each service is offered separately. In the case of the railways, the economies of scope frequently refer to the combined supply of freight and passenger transport within one single enterprise. Providing various types of services on a common network enables the marginal costs of adding an extra service to be kept much lower. But economies of scope can also arise between freight and passenger transport on the one hand and maintenance of the railway infrastructure on the other hand. These economies of scope can be explained simply by the fact that integrated decisions lead to more efficient results than decisions that are taken separately and without consultation.

Alongside economies of scale and scope, networks, and the rail industry in particular, are subject to "*diseconomies of density*". This phenomenon is related to both the infrastructure and the rolling stock. Diseconomies of density come into play when average costs rise faster than the revenues when increasing use is made of the network. Increasing demand for transport means that greater use will be made of both the infrastructure and the rolling stock as a result of which average costs tend to rise. This is perfectly possible up to a certain level where diseconomies of density arise. The ideal level of use for the infrastructure mainly depends on the various characteristics of the rolling stock (number of carriages, average speed, etc.). The presence of economies of density in the rail industry has a negative influence on the feasibility of allowing competition in this sector. Even when the network's infrastructure is thrown open to competition and rival train operators can make use of it, the operator that has a "first mover advantage" will probably also be able to preserve this advantage by setting its fares/rates at a specific level and possibly adjusting them so that the development of further competition is hindered (Pittman 2005).

Finally, *services of general economic interest* are provided by network industries. These differ from other services because of the existence of public interests regarding quality, accessibility and security of supply. These are services where a public interest is involved and which are either supplied through the market and in conditions of competition or not.

Furthermore, network industries that perform well bring economic, social and ecological progress. Well-functioning railways provide a solution for congestion and environmental problems on the roads. Generally speaking, governments do not leave services of general economic interest exclusively at the mercy of market forces and endeavour to regulate and control them to a certain extent.

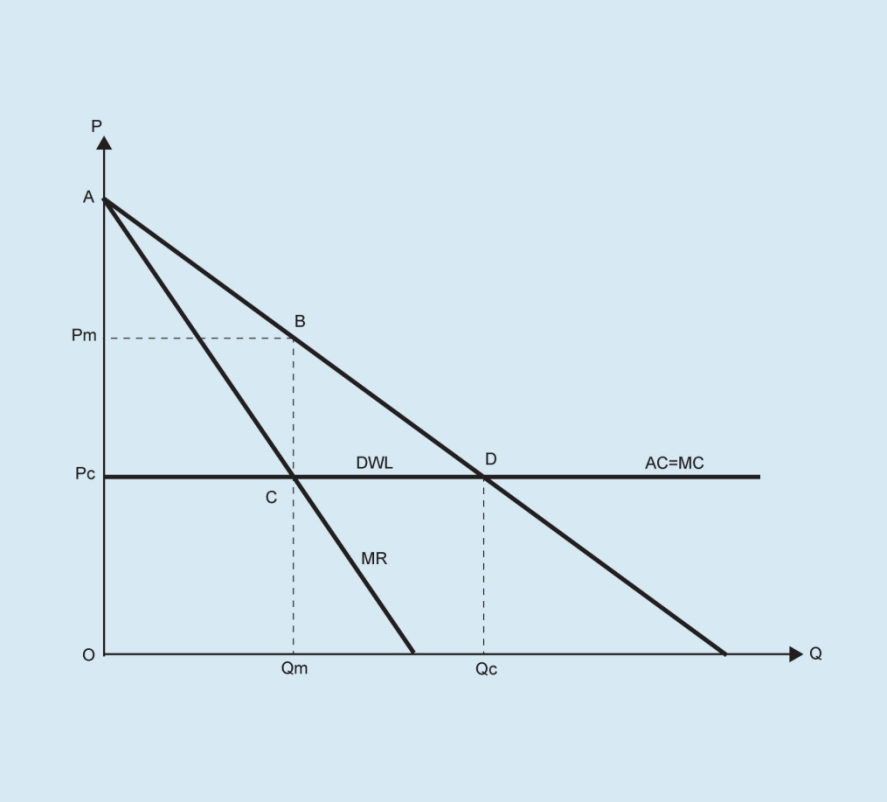
3.3. NETWORK INDUSTRIES AND NATURAL MONOPOLIES

As mentioned above, network infrastructure requires particularly high setting-up and maintenance costs. Owing to these high fixed costs, doubling the size or the disintegration of a network industry is not usually economical. It reduces the flexibility of the system and hinders the exploitation of economies of scale. So, natural monopolies also form an essential part of network industries.

Before broaching the characteristics of a natural monopoly, a monopoly itself needs to be discussed. A pure monopoly is a market form where only one single enterprise sells to many potential customers. There are no good substitution opportunities for buyers so, in the short term, no new company can undermine the monopoly. Since the monopolist is not at the mercy of

influence from competing firms, he has a certain market power that allows him to set his prices higher than the marginal cost[12]. Because of the monopolist's profit-maximising behaviour, consumers are charged a higher price and a lower production level is supplied. This price-setting enables a transfer of wealth from the consumer to the producer as a result of which a certain group of consumers are excluded because they cannot afford the (artificially) higher price. Furthermore, a monopolist makes inefficient use of his means of production because he limits his supply. A situation of this kind is called **allocative inefficiency** and is illustrated in chart 7.

Chart 7 Allocative inefficiency with a monopoly



For simplicity, it is assumed that constant average costs are the same as the marginal cost (AC=MC). The monopolist who wants to maximise his profits sells quantity P_m for a price Q_m. With this output, the monopolist's marginal revenue (MR) is equal to the marginal cost (MC). The producer surplus is equal to P_mBCP_c, the consumer surplus to AP_mB and the total wealth equal to AP_cCB. In a markt where there is perfect competition, the allocative optimum lies in D with quantity Q_c for price P_c. The total wealth is equal to the consumer surplus AP_cD and the producer surplus is nil owing to the competition. In this way, the loss of wealth that occurs with a monopoly (namely BCD or the deadweight loss) is prevented.

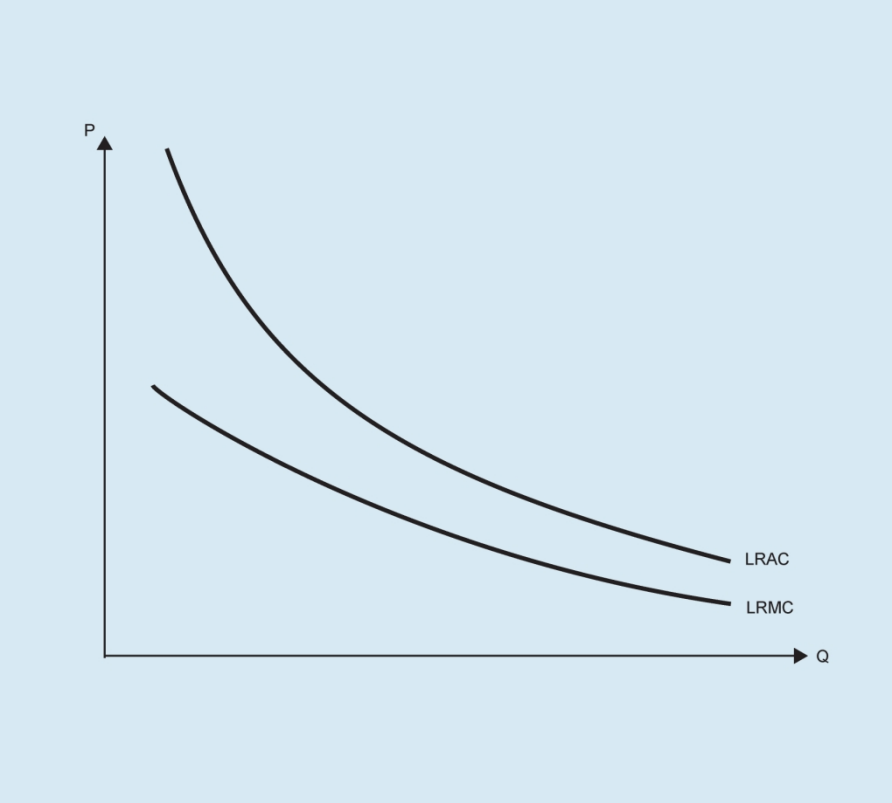
Besides the "deadweight loss", additional losses can arise because, in the absence of competition, the monopolist is less inclined to work efficiently and control costs. The term "**x-inefficiency**" (Liebenstein, 1966) indicates the internal waste that occurs when a firm acquires a monopoly and is consequently no longer put under pressure to contain its costs to a competitive minimum. This can result from paying too much for inputs, the wrong combination of factors of production (e.g. too many or too few workers) or the waste of resources (De Bondt, 2006). A monopolist has less motivation to bring down production costs through innovation so the long-run average cost curve is higher.

A natural monopoly is the market form where one single firm can produce the entire market supply at lower unit cost than can a combination of several firms. When a firm has a long-run average cost

12 On a market where there is perfect competition, the market price is equal to the marginal cost.

curve (LRAC) that remains on a downward path regardless of the size of market demand (see chart 8), one refers to a permanent natural monopoly (Viscusi, Harrington et al., 2005). This is the case for network industries that enjoy economies of scale through the high fixed cost of investment in the infrastructure which means that they can always produce at the lowest cost.

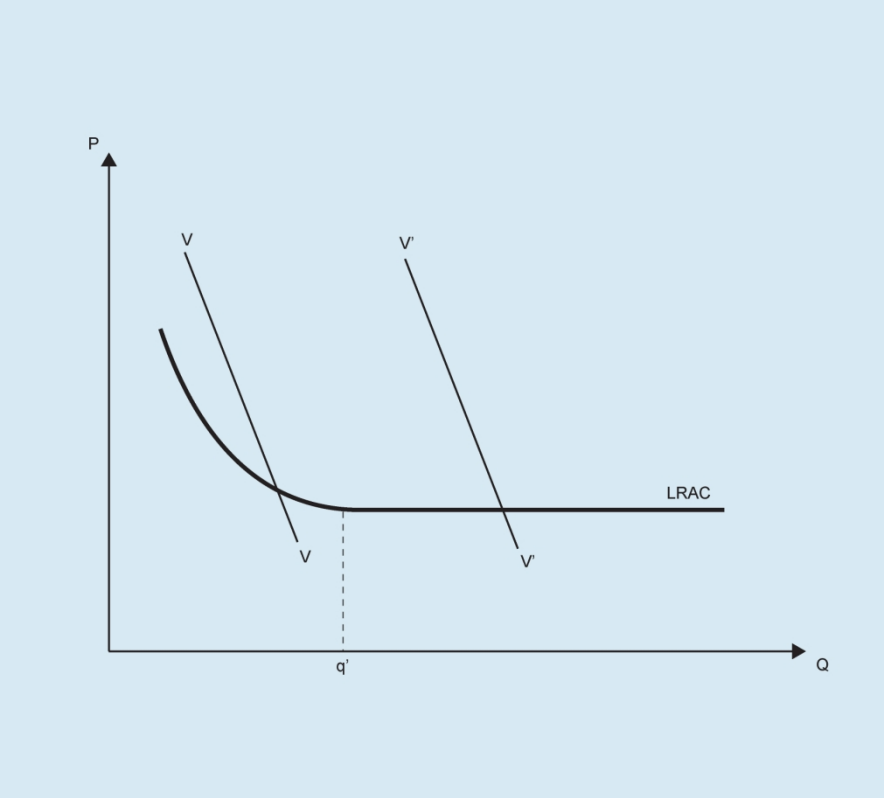
Chart 8 Cost curve of a permanent natural monopoly



A temporary natural monopoly has a long-run average cost curve that declines until cut-off point q' only to become constant from then on (see chart 9). This can arise when demand rises sharply so that the initial fixed costs become negligible and only marginal costs are the determining factor. In this way, a situation of a natural monopoly with demand VV develops into a market with perfect competition where demand V'V' applies.

Another possibility is that the cost curve changes through technological innovations that cause the natural monopoly to disappear by itself. This is what happened in the telecommunications sector, which until the end of the 1980s was regarded as a natural monopoly. The fixed network infrastructure costs were so high that it was more efficient to let all telecommunications services be supplied by just one company. From the beginning of the 1990s, a significant change has occurred in the telecommunications sector which can be entirely attributed to technological developments (switchover from analogue to digital telecommunications technology, mobile technology, increasing speed of computer processors and network). This has enabled a sharp fall in the cost of supplying these services and led to a huge increase in demand for telecommunications services. Both developments have put an end to the natural monopoly in the telecommunications sector .

Chart 9 Cost curve of a temporary natural monopoly

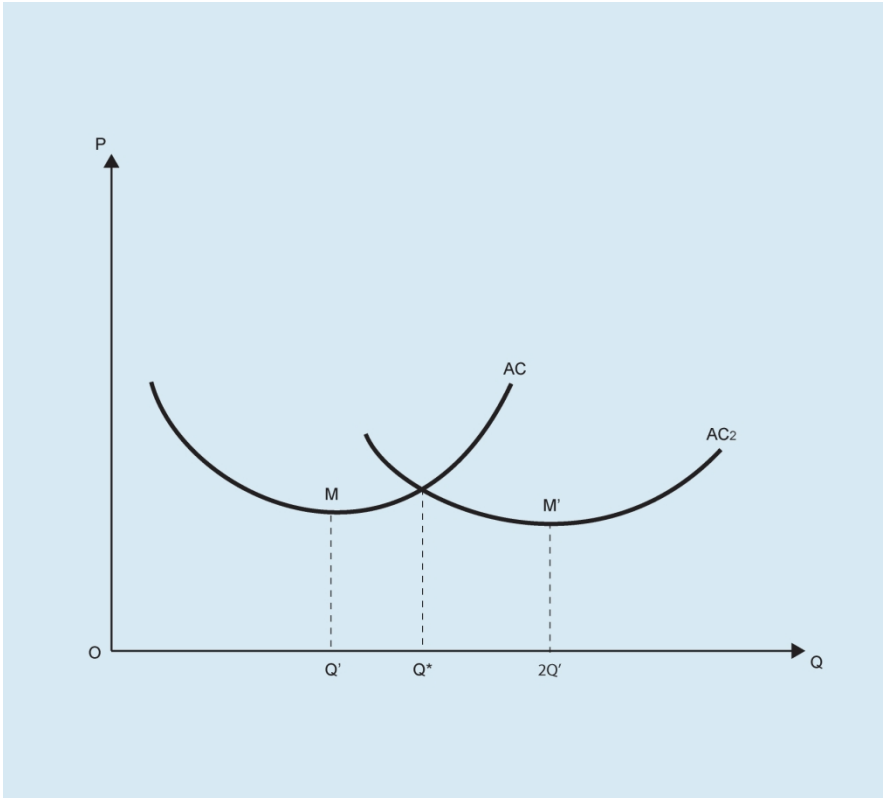


The definition of a natural monopoly was introduced by William J. Baumol (1977). In his view, economies of scale on their own are not sufficient to speak of a natural monopoly and the only necessary, but also adequate, condition is the presence of a subadditive cost function. This means that all possible output combinations can always be produced at the lowest cost by one single firm.

$$C\left(\sum_{i=1}^{n} y_i\right) < \sum_{i=1}^{n} C(y_i)$$

Economies of scale are not indispensable for a firm with only one single product on the market, but they are enough to able to refer to it as a natural monopoly. This is illustrated in chart 10 where the average costs (AC) of a firm decrease until cut-off point Q' only to start rising again from then on. As a result, this firm reaps economies of scale for all possible production volumes that come to less than Q' and the cost function is subadditive. On the same chart, the average cost curve for two firms (AC_2) is also plotted. Production volume Q* at the intersection between AC and AC_2 is the maximum output that one single firm can produce at the lowest cost. The cost function is subadditive for all possible output combinations smaller than Q*. Despite the firm reaping no economies of scale for production volumes between Q' and Q*, from a cost perspective it is most economical for just one firm to do the supplying.

Chart 10 Subadditivity



In the case of firms that have several products on the market, economies of scale are neither indispensable nor sufficient to have a subadditive cost function. The reason for this is that when several goods and/or services are produced/provided in one and the same firm, the different outputs are mutually interdependent. The subadditivity is then determined entirely through economies of scope. Disadvantages of scope can even cancel out economies of scale so that no subadditivity occurs.

Network industries are not just a natural monopoly on account of their economies of scale, but more particularly through technical reasons that obstruct competition within their domain: management of the network, the heavy investment and coordination between infrastructure and provision of services to the customer. The natural monopoly is more a result of the conditions associated with the management and maintenance of a unique network infrastructure than just because of the economies of scale it can reap. Competition within a network industry is consequently no obvious matter.

3.4. REFORM OF NETWORK INDUSTRIES

Taking the economic characteristics of network industries as a basis, the natural monopoly seems to be the only possible form of organisation. Yet, this organisational form is not regarded as optimal and the absence of competition makes it difficult to encourage efficiency and productivity within the network industry. In order to tackle these inefficiencies, there is a need for adequate regulation and this is where the government must intervene. For some network industries (i.e. electricity, telecommunication, the railways, water), a government will often opt for providing the production itself by means of a state enterprise. In this way, the management of the public enterprise can automatically look after the public interest. Critics of state enterprises point out that the management can come under potential political influence. Typical of such circumstances are decisions which are aimed at short-term vote winning and giving preference to political partners (Rothengatter, 2010). Such concern, together with an initiative from the European Union, that heavily subsidised monopolies do not fit in with an integrated European market, has resulted in

political support for liberalisation. There are also quite a few technological developments that lie behind the reform of specific network industries.

3.5. VERTICAL STRUCTURE

European legislation has resulted in thorough reform within the network industries. In cases where a network industry had originally operated under the form of a *de jure* monopoly, the enforcement of a vertical division between the network management and the provision of customer services was recommended. The reason for splitting up the operational section's infrastructure is to attain a liberalised market and a more competitive network industry.

However, network industries are traditionally vertically integrated so that they can reap substantial economies of scale and scope through lower transaction costs. The term transaction costs was introduced by Ronald Coase (1937), who noted that a sound explanation for the existence of an enterprise was lacking. His answer was that there are considerable transaction costs attached to use of market mechanisms: costs for obtaining information (prospecting), communication (bargaining) and processing information (decision-making). In his view, the explanation behind the creation of economic institutions (i.e. ownership, the market, the firm, and also the State or the law) lay in attempts to reduce transaction costs.

When a product has to be manufactured entirely through market transactions, each owner of a production factor should have entered into a contract with one or more of the other owners. And for each contract, the prices must be worked out, negotiations must be pursued and arrangements made. In each case, this must be repeated for every production process. The associated transaction costs can nevertheless be limited by concluding just one contract with one single firm, as a result of which there is no longer any need to conclude separate contracts with other production factor owners. The entrepreneur provides the necessary coordination and works out whether the costs of coordination within the firm are lower than the transaction costs of outsourcing to the market. A firm's existence is explained as a solution for avoiding costs linked to the price mechanism.

In the context of transaction cost economics, Oliver Williamson (1985) developed a model with which he can specify the optimal size or boundaries of a firm which can then ensure that the sum of production- and transaction costs is kept to a minimum. When a firm makes a transaction within its own boundaries by means of bureaucratic control and coordination, it is said to have a "hierarchical internal structure" (which brings with it vertical integration). A firm that carries out transactions outside its own boundaries by means of market coordination and outsourcing has a "market structure" (which brings with it vertical disintegration). Transaction costs are determined by the decision to execute a production process within or outside an enterprise and, because of this, are relevant for the extent to which a firm is vertically integrated.

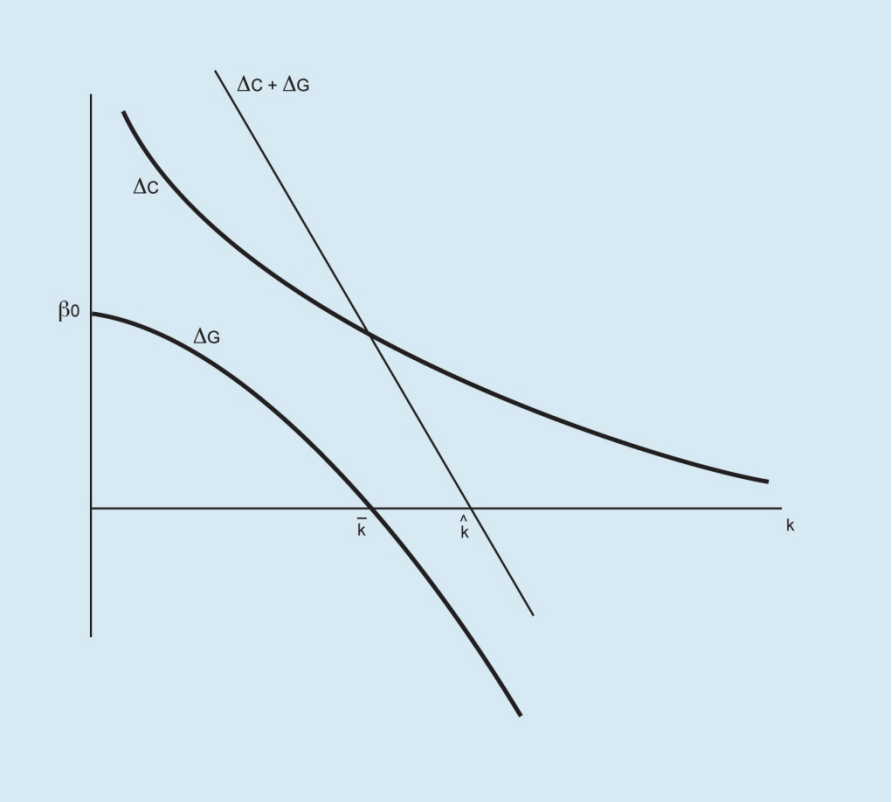
According to Williamson, production- and transaction costs are mainly influenced by the presence of transaction-specific investments[13]. By this, he means tailor-made investment for one particular purpose that can only be shifted with difficulty and for which no alternative use is possible. When there are no transaction-specific investments at all in a firm, it is more advantageous to make use

[13] Williamson (1985) identifies four reasons for the presence of transaction-specific investment: site specificities, physical asset specificity, dedicated assets and human asset specificity. Site specificities refer to the decision by a supplier and a customer to set up their business activities close to each other. Physical asset specificity relates to investment in particular goods or facilities that only have limited value outside the transaction context. Dedicated assets refer to general investment made by a supplier with which it is hoped that a substantial volume of transactions with a particular client can be carried out. Human asset specificity denotes very specific skills that an individual can acquire by working for a particular firm.

of the market as far as consecutive production stages are concerned. The greater the increase in transaction-specific investments, the more preference should be given to internal organisation.

In order to prove this, it is assumed that, in an initial phase, a firm has constant production and no economies of scale or scope at all. This firm's choice between internal production (where *β(k)* = management costs using internal organisation) or buying through the market (where *M(k)* = management costs using market organisation) is determined entirely by production cost control and the possibility of interim adjustments in the event of difficulties. The market allows tighter control of production costs but, with an increasing degree of dependence between both parties, it prevents the possibility of making adjustments. This latter fact is a direct consequence of the change in relationship with increased transaction-linked investments (where *k* is a measure of the degree of transaction-linked investments). This is illustrated in chart 11 where ΔG corresponds to the difference between *β(k)* and *M(k)*. When the level of transaction-specific investments comes to more than the value $\bar{k}$, preference is given to internal production because, in these circumstances, there is a high degree of mutual dependence.

Chart 11 Management and production costs



Source: Williamson, 1985.

In a second phase, the impact of economies of scale and scope is recognised as a result of which differences in production costs are taken into account too. For the sake of convenience, constant production is assumed. The difference between production costs associated with internal production (which involves vertical integration) and costs associated with procurement on the market of the same product (which involves vertical separation) are defined as ΔC (see chart 3). When ΔC is expressed as a function of the transaction-specific investments (*k*), it can be assumed that ΔC remains positive but decreases because the impact of economies of scale and scope between firms declines as the transaction-specific investments increase. In cases where particular goods or services are virtually unique (*k* is very high), not a single aggregate benefit can be reaped by outsourcing production and ΔC will be close to the asymptotic zero value.

Consequently, the vertical sum $\Delta G + \Delta C$ makes it possible to determine the optimum level of transaction-specific investments at which the differences in production and transaction costs are

minimal. For all levels of transaction-specific investments that lie to the left of value $\hat{k}$, vertical separation is the most advantageous, while to the right of this value the preference would be for vertical integration or in-house production. However, there is no simple answer to the question whereabouts the network industries lie with regard to value $\hat{k}$.

In order to answer the question of which organisation model allows as low transaction costs as possible and as much competition as possible, transaction costs must be able to be quantified. This is an arduous process and most models only make it possible to give an indirect indication of total transaction costs (Allen, 2006). Besides, very little systematic work on measuring transaction costs in the rail sector has been done. Merkert demonstrates in his study for the first time that this calculation is indeed possible for the rail sector (Merkert, 2010). He developed a methodology that enables total production costs to be distinguished from total transaction costs for both train operators and firm(s) responsible for the infrastructure in a given country. With this methodology, he makes a distinction between production elements and transaction elements in a firm's staff costs. The most important variable is the cost price of management and administrative staff (so-called "transaction jobs") employed by train operators or companies in charge of the train infrastructure. This involves personnel not directly concerned by operational activities (e.g. train drivers or maintenance staff) but belonging to the financial, marketing, human resources or similar divisions. In Merkert's study, transaction costs are calculated on the basis of annual accounts data from each train operator and infrastructure company in three European countries (Great Britain, Sweden and Germany). Because different currencies are used in these countries, the purchasing power parity (PPP) method is applied so that the figures can be compared with each other. To be able to estimate the magnitude of these costs for all firms within one country, the transaction costs per firm are added up and extrapolated to the full market by scaling up the results to the total number of train-kilometres[14] travelled. Table 2 reproduces the results of the sample under study.

Table 2 Results of the transaction cost model

Country	Total staff FTE	Total staff (mill. tkm[15])	Mgmt[16] and admin. staff	Mgmt and admin. staff (mill. tkm)	Mgmt	Mgmt (mill. tkm)	TC[17] (mill. PPP €)	TC (per tkm)	% TC in relation to total cost
Great Britain	90,260	184.79	18,634	38.15	242.4	0.50	13,682.02	2.80	9.26
Germany	110,815	110.19	13,252	13.08	178.1	0.18	838	0.83	4.12
Sweden	14,749	112.89	4,622.8	35.38	104	0.80	244.51	1.87	10.63

Source: Merkert, 2010.

From this comparison, it appears that the level of transaction costs in relation to total operating costs is relatively limited both in the case of fully vertically disintegrated rail companies (as is the case for the British and Swedish railways) and for rail enterprises that operate in the form of a holding company (such as the German railways). On average, transaction costs come to 10% of total operating costs[18]. Although the total level of transaction costs is relatively low, there are major

14 Train-kilometres correspond to a distance travelled by a train in kilometres. This measurement unit is used for both goods transport and passenger transport.

15 Train-kilometre (tkm)

16 Management (Mgmt)

17 Transaction costs (TC) are expressed in million PPP euro for the financial year 2006-2007.

18 This appears to be an upper limit. Another research paper on the British railways written by Merkert concludes that transaction costs come to a maximum of 4.7% of total operating costs (Merkert, 2010). In Belgium, the chairman of the NMBS Holding Jannie Haek informed the board of directors at the end of February 2011 that the vertical break-up of the NMBS corresponds to €50 to100 million of additional costs on a yearly basis for IT, communication and legal services, among other things. This amount of transaction costs is equivalent to around 1% of the NMBS group's running costs.

differences depending on the degree of vertical integration within a company (the infrastructure and operational services completely separated, specific functions hived off to a separate entity such as slot allocation or infrastructure user charging, the holding-company model). Full vertical disintegration tends to drive the transaction costs up. When looking at the different European rail operators, one can see that the Germain rail operators, and in particular Deutsche Bahn, have the lowest transaction costs per train-kilometre and the best ratio of transaction costs to operating costs.

It is worth noting that, on the British railways, transaction costs were initially very high immediately after the railways were opened up to competition and infrastructure and rail operators split up completely (Merkert, 2010). In the following years, transaction costs per train-kilometre declined as the learning effect came into play and confidence increased between the various parties. After the fatal train crash in Hatfield[19], transaction costs went up again to a much greater extent than operating costs. As a result of the accident, a lot of extra staff were taken on by all train operators and employed in non-operational functions. Furthermore, the results must be a little nuanced since one has no idea as to how the quality of the services offered will evolve (in terms of punctuality, frequency, safety, etc.).

3.6. ADVANTAGES AND DISADVANTAGES OF VERTICAL INTEGRATION IN THE RAIL INDUSTRY

The literature carries a heated debate about the optimal vertical structure of a network industry (Ksoll 2004, Preston 2002, Pittman 2001, Seabright 2003). In the context of this study, a number of advantages and disadvantages of vertical integration in the rail industry are discussed.

3.6.1. ADVANTAGES OF VERTICAL INTEGRATION

The railways are a complex organisation where coordination is essential because there is strong technological dependence between the infrastructure and operational decisions. This includes not just capacity allocation in the long term, management of safety measures, coordination of scheduling, and investment planning but also day-to-day operational decisions such as train length and speed, number of stops, size and type of vehicle. Within a vertically integrated organisation, these processes can be managed at much lower transaction costs than with two separate enterprises. Integration not only simplifies the operational coordination but also enables faster decision-making during disruptions and disputes. It ensures that the operational process does not constantly have to go hand in hand with legal considerations and contractual negotiations.

Besides higher transaction costs, vertical separation can also be a source of less efficient investment decisions. Investment in the rail industry is characterised by long run-in-, application- and write-off periods. Moreover, it is highly capital-intensive and destined for a specific purpose. Owing to this, the costs of such investment cannot be recovered when the contract between two separated firms is terminated. There is in fact not another single party that has a stake in this investement. Since the risk is high for the firm that takes the initiative to go into a transaction-specific investment, a "hold-up" problem arises (Buehler et al., 2002, Ivaldi 2005). The investor is vulnerable to the behaviour of the buyer who can put pressure on him to lower his price. Fear of this kind of scenario can cause companies to delay investment. One possible solution lies in drawing up lengthy and for the most part impracticable long-term contracts between both parties or through vertical integration.

An infrastructure and an operational division integrated within one single enterprise strengthens employees' sense of identifying with a full system (Ksoll 2004). This has a positive influence on

[19] The train crash in Hatfield on 17 October 2000 exposed the shortcomings of the privatised infrastructure company Railtrack as well as the lack of regulatory supervision. The cause of the accident was put down to rolling contact fatigue that the company had known about beforehand.

various levels of the enterprise; it strengthens cooperation between different functions and ensures a thorough knowledge of all aspects within the railways, consistent safety- and quality control and an overall awareness as regards obsolescence and maintenance. This not only ensures better safety and quality standards but also exerts downward pressure on maintenance costs. Vertical separation has a weakening effect on the business culture. This can be illustrated by the case of British Rail (BR) which was fully privatised in 1993 and split up into more than a hundred different firms. Before privatisation, the prevailing business culture at BR was one in which safety was regarded as of utmost importance. The last train disaster as a result of a broken track dates back to 1967 when BR was still in charge of the network (Murray 2001). After liberalisation, Railtrack[20] was responsible for monitoring compliance with safety rules by all other companies in the railway industry. Railtrack appeared to be in a very awkward position because safety was controlled by laborious procedures and standards that were open to interpretation. Moreover, Railtrack had no real authority to enforce the standards that it had to monitor (Wolmar 2001). So, the liberalisation of the British railways also coincided with a series of train disasters (Southall (1997), Ladbroke Grove (1999), Hatfield (2000) and Potter's Bar (2002)[21]) in which a clear causal link with the splitting up of the network industry could be found.

3.6.2. DISADVANTAGES OF VERTICAL INTEGRATION

Bringing the whole production chain under the umbrella of one sole firm gives the integrated enterprise the possibility of putting competitors at a disadvantage where access to the infrastructure is concerned. Such anti-competitive behaviour can manifest itself in various different forms, ranging from withholding necessary information and charging excessive access fees to setting up complicated procedures for granting permits for access to the tracks. Splitting up an integrated enterprise into an independent transport and infrastructure concern must ensure that suppliers and buyers are put on an equal footing. This ensures an increasing degree of competition. In promoting vertical separation in order to bring market forces into play within a network industry, there is one important question to be asked and that is whether the infrastructure firm can or cannot compete and consequently whether it can remain vertically integrated. When the infrastructure company offers transport services and in this way competes with firms that are trying to gain access to the infrastructure it manages, it actually has a motive for abusing its dominant position and limiting this access. According to the OECD (OECD, 2005), experience with liberalised network industries has shown that it is often very difficult for regulators and/or anti-trust authorities to keep discriminatory behaviour under control[22]. In Europe's view, full vertical separation where the infrastructure firm is not allowed to supply operational services as well offers the most potential

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20 Railtrack is the company that owns the railways infrastructure and is responsible for its maintenance and further development. In exchange for fee, Railtrack grants access rights to the tracks and leases out stations and depots to the rail operators on a long-term basis.

21 The Southall and Ladbroke Grove train crashes were deemed to have resulted from the splitting-up of responsibilities for safety, from poor training and sloppy procedures during the first few years of liberalisation. The direct cause of the Hatfield disaster was metal fatigue on the track as a result of the liberalisation of the management and the breaking-up of responsibilities for safety. This train disaster was the immediate cause of the decision to shut down Railtrack Plc. which was then replaced by Network Rail (a private enterprise that was financed by commercial banks with a State guarantee instead of private investors via a stock market listing). And lastly, the Potter's Bar was found to have been caused by the outsourcing of infrastructure maintenance.

22 Several competition authorities in Europe have received complaints from new entrants to the railways about discriminatory behaviour by the former monopolist (OECD, 2005). In February 2003, the German anti-trust authority began an inquiry into Deutsche Bahn's refusal to include in its systems information on scheduling and pricing from a competing passenger transport operator (Connex). In its turn, the Italian competition authority expressed its concern in a parliamentary opinion over discriminatory practices with respect to gaining access to stations, depots and maintenance services. And in Sweden, the competition authority in 1996 took legal action against Stätens Järnvägar (SJ) because of the extent to which it applied low prices for certain regional services where revenues were not sufficient to cover average marginal costs in an attempt to drive a rival private company (BK Tag, a private enterprise owned by the KarlssonGruppen) out of the market.

to achieve completely free competition. Certain counter-measures such as applying a uniform fare-setting system or the political threat to switch over to a full vertical separation of the former monopolist (not just the principle of unbundled accounting but an infrastructure manager that is completely independent from a legal, organisational and institutional point of view) can contain discriminatory behaviour (Ksoll, 2004).

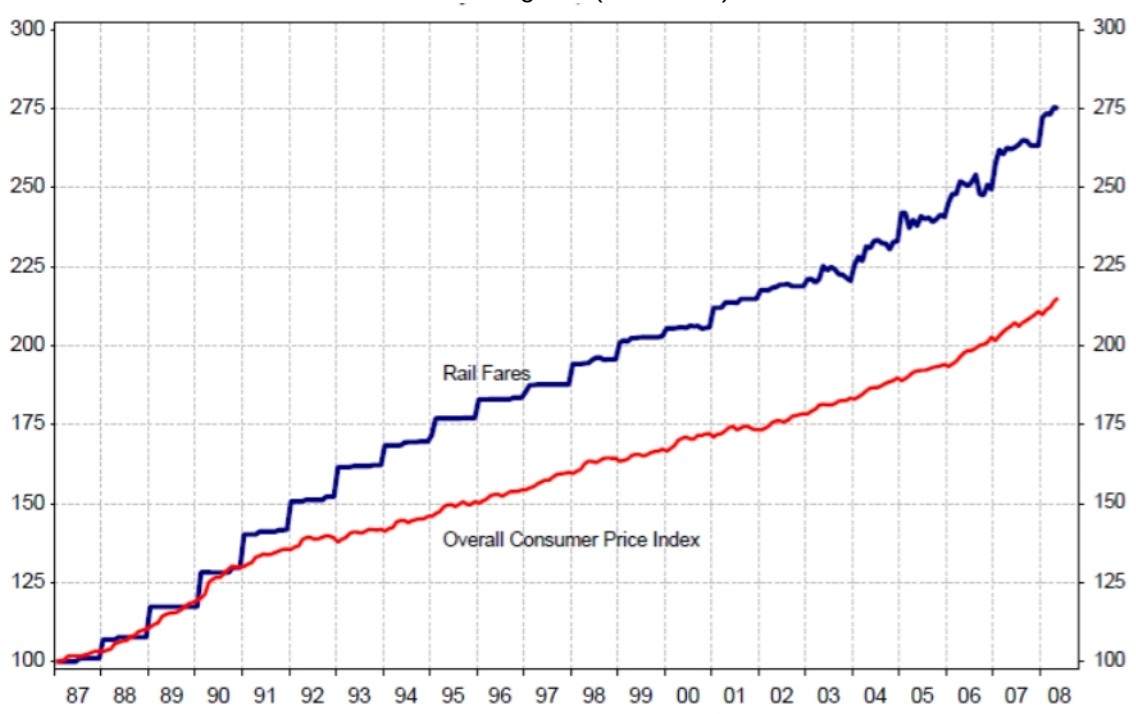
The integration of infrastructure and the provision of services affords very little transparency when it comes to the cost price for the construction and maintenance of infrastructure and the infrastructure capacity allocation. This makes it possible to have cross-subsidisation whereby the loss-making activities are financed by the profitable business. For the railways, this means, for example, that passengers who use a profitable route subsidise those on loss-making routes. The price charged in the profitable segment is too high and in the subsidised segment it is too low, something which leads to allocative inefficiency. The number of passengers who are treated unfairly because they must pay too much for the profitable route will be higher than the number of passengers who can be gained for the loss-making route. The reason for this is that the cost per extra passenger on the profitable route is lower than the cost per additional passenger on the loss-making route (Birch, Arup et al.,1998). In addition, cross-subsidisation leads to "cream skimming" whereby with market opening, a new entrant will only gear itself towards that part of the market where production costs are lowest and profits highest. By doing so, the vertically integrated firm can get into difficulty by taking on a section of the market that was intended to be able to bear the costs of the loss-making segments.

The organisational structure of an enterprise has a clear impact on the intensity of performance-based incentives and the type of contract law that is applied when concluding deals (Williamson, 1991). Generally speaking, weaker performance incentives are associated with a transaction that is concluded inside an integrated enterprise than is the case with free market transactions. Indeed, when concluding outside contracts, much more attention is paid to profitability and result-based rewards than with internal transactions. In the latter case, an atmosphere of tolerance and patience prevails, which must be a plus point for cooperation. In comparison with the free market, incentives within an integrated enterprise are rather limited and have no direct influence on pay. Market transactions are subject to classic contract law where the identity of the various parties is irrelevant and the individual transactions are set out very clearly. Furthermore, when a dispute arises over the price or when losses are incurred as a result of delays, disruptions or the quality delivered, it is almost always decided to refer the case to court. In an integrated enterprise, the dispute has to be settled internally by the parties concerned. When applied to the liberalised railways, this means for example that a train operator can let the service level agreement be enforced by the law courts. However, when the infrastructure is a sub-division of an integrated enterprise, the focus of those in charge can extend not so much to punctual provision of services as to towards personal interests such as career and internal status, for instance (Ksoll, 2004).

Vertical separation and the opening of the rail market to free and fair competition should eventually lead to a better provision of services at lower prices and with increasing customer satisfaction. Whether liberalisation really does bring advantages for the consumer is obviously not fully measurable and is something that is hard to prove. An inquiry into customer satisfaction among travellers in the Netherlands reveals that the general customer opinion has been improving over the years. In 2005, 67% of passengers gave a score of 7 or more as a general opinion of the Nederlandse Spoorwegen and, by 2010, this figure had risen to 75% of all travellers surveyed (Kennisplatform Verkeer en Vervoer, 2010). Upon closer inspection, most components of general customer opinion (information and safety, comfort, punctuality and connections) seem to get a better appreciation than the "fare" component that in 2010 came down to its 2005 level (opinion of the price component: 6.0). According to economic theory, competition necessarily leads to a more efficient allocation of resources and therefore to a lower price, which does not turn out to be the case in reality. In the United Kingdom, where liberalisation of the railways is the furthest advanced, fares rise faster than inflation on an annual basis (see chart 12). Commuters pay one of the highest

season-ticket prices in Europe[23]. The government permits an annual change in fares to the price index figure plus 3%. Due to this mechanism, the price of a train ticket in 2012 costs 8% more than in the previous year[24]. Furthermore, this is just an average which gives train operators the flexibility to let fares for specific rail routes rise even further with a maximum of 5% above the price index. In the past, on some railway lines fares have been raised by 10% or 11%. In Germany, too, the rise in Deutsche Bahn AG's revenue is mainly attributed to an increase in rail fares and to a much lesser extent to the growth in passenger numbers. A German consumer organisation has carried out an analysis of a tariff system that was introduced in December 2002 and shown that this has led to drastic price increases for the vast majority of travellers (Link H., 2003).

Chart 12 Index of rail fares in the United Kingdom (1987=100)



Source: Reuters EcoWin.

3.7. CONCLUSION

The theoretical overview shows that the liberalisation of the railways is no simple matter. On balance, it can even be hard to prove whether breaking up the vertically integrated enterprise is actually advantageous. Merkert's calculations suggest that, all in all, the transaction costs in the case of a split-up company turn out better than expected, but, for one thing, the assessment was only made for a few countries and, for another, they are all very different.

Moreover, there is no hint of any potential quality loss/gain for the consumer. To put it briefly, despite extensive theoretical research, it has not yet been proved in practice that the consumer surplus increases or decreases when the vertical (monopolistic) enterprise is split up.

23 The Guardian (2010), "Rail fares could rise by 10% following latest inflation figures", 17 August.
24 The Guardian (2011), "Inflation could push up rail season tickets by 8%", 16 August.

4. THE REFORM OF THE RAILWAYS IN BELGIUM

4.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY

4.1.1. BACKGROUND

In Belgium, the incumbent national railway company, Société nationale des Chemins de fer belges (SNCB), has undergone significant changes in recent years, chiefly in response to European Directives.

In 1991, SNCB/NMBS, which until then had been a State-run company, became an autonomous public enterprise with the passage of the Law of 21 March 1991 reforming certain public businesses and became a limited liability company under public law (*société anonyme de droit public*). The law granted SNCB managerial autonomy vis-à-vis the government for those of its activities not considered public services. With this law, Belgium thus sought to anticipate a portion of the requirements of Directive 91/440/EC of July 1991. Public service obligations are defined in a management contract between SNCB and the State for a 3- to 5-year period; the contract is evaluated annually. These obligations include ensuring a minimum level of passenger service for the entire domestic rail network; acquiring, building, maintaining, managing and operating the rail infrastructure; investing in rolling stock; and a public service obligation to meet the needs of the nation (notably in matters of defence). These obligations are paired with goals that are regularly evaluated, and penalties may be imposed if the goals are not met. The management contract also determines the subsidies paid by the State as compensation for public service activities. In addition, the law requires SNCB to keep separate accounts for its public service activities and its other business activities. Since passage of the Law of 22 March 2002, amending the Law of 21 March 1991, SNCB has also been required to keep separate accounts for each business segment.

On 1 January 2005, SNCB was split into three distinct entities, each with equal standing in terms of authority: Infrabel, SNCB and SNCB-Holding[25]. Each of these entities is an autonomous public enterprise with the status of limited liability company under public law (*société anonyme de droit public*). Figure 2, which presents the structure and ownership of the group, shows that the three constituent companies are almost entirely owned by the Belgian State, either directly or indirectly. Only the Holding company, for historical reasons[26], has a few private shareholders who own around 0.1% of voting rights, but whose ownership of share capital is insignificant[27].

As autonomous public enterprises, each of the three companies individually reaches a multi-year management contract with the State, as the unified SNCB did previously. These contracts contain goals to be met in a variety of areas, such as growth, safety, service quality, intermodality, accessibility, respect for the environment, and investment. These goals are reviewed at least once a year by a working group made up of representatives of the company, the relevant government ministries, and the General Directorate of Land transportation of the Federal Government Service Mobility and Transports Utility. If the goals are not met, the company must determine the reasons for the shortfall and inform the State what steps will be taken to correct the problem. Infrabel's operating subsidy is adjusted upwards or downwards each year according to a formula in its management contract and depending on its performance in terms of punctuality[28].

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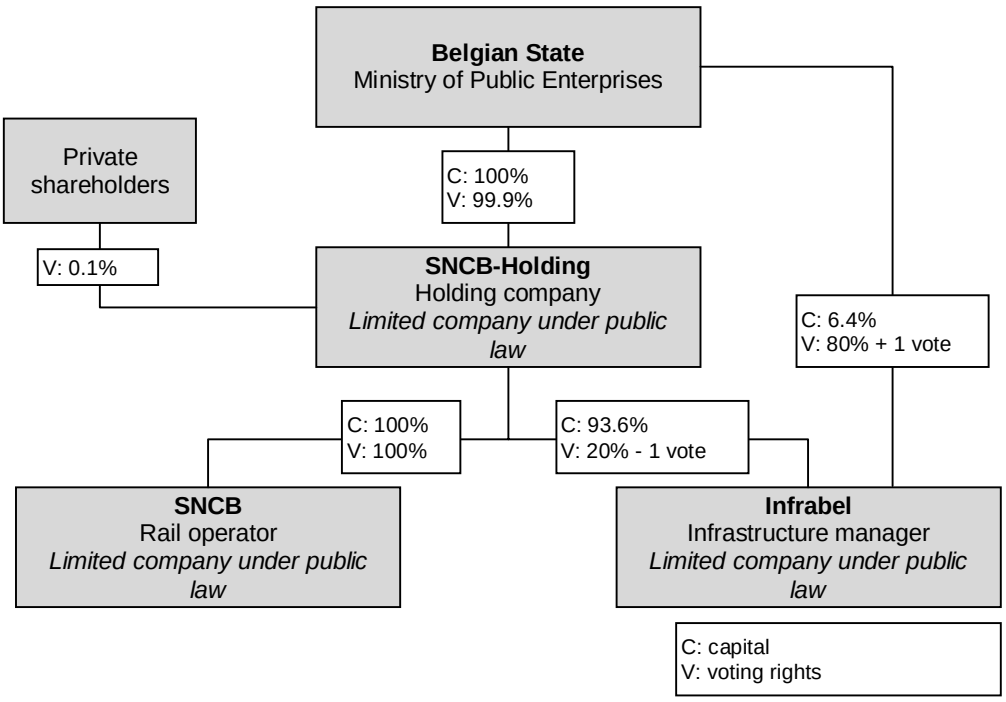
25 In addition to these three entities, the Railway Infrastructure Fund (RIF) was set up to house a portion of SNCB's historical debt (see section 4.2.3).

26 When it was created, SNCB-Holding took over the company number of the formerly unified SNCB. The Holding company is thus the official "successor" of the old SNCB, which explains the continued presence of shareholders in its capital.

27 There are discrepancies regarding data on the voting rights of Holding company minority shareholders. The SNCB-Holding 2009 annual report (2010, p. 4) cites voting rights of 0.1% held by the private shareholders, whereas a report by the SNCB Group (2010, p. 62) indicates that 0.01% of voting rights are held by "holders of participation certificates".

28 Article 74 of the 2008-2012 management contract.

Figure 2: Structure and share ownership of the SNCB Group



Source: adapted from SNCB-Holding (2010, p. 4).

Infrabel is the company that manages the railway infrastructure. In this capacity, it is responsible for the management, upkeep, replacement and development of railway infrastructure, as well as for management of the systems for the regulation and safety of this infrastructure. Infrabel is also in change of granting licences and train path user rights to Belgian and foreign rail operators, and for invoicing and collecting the associated payments. All of Infrabel's activities are public service obligations (Infrabel, 2008, p. 12; Court of Audit, 2008, p. 32, p. 56)[29].

The new SNCB is the rail operator. It performs both public service activities and commercial activities. Its public service activities include principally domestic passenger transport and the acquisition, construction and maintenance of rolling stock for passenger transport. Its other activities, such as international passenger transport and freight transport, are commercial activities. SNCB is organised into separate divisions for domestic passenger transport (SNCB Mobility), international passenger transport (SNCB Europe), and freight transport (SNCB Logistics). On 1 February 2011, SNCB Logistics became an autonomous rail operator, taking the form of a private limited liability company owned 93.14% by SNCB and 6.86% by SNCB-Holding. SNCB Logistics relies upon SNCB for certain services, such as train station operations, train driving, and equipment maintenance[30]. According to the European Commission, which authorised the deal in 2010, this restructuring will lead to a substantial reduction in the capacity of SNCB's freight activities[31].

SNCB-Holding is the parent company of Infrabel and SNCB. It owns 100% of SNCB's capital and 93.6% of Infrabel's capital (the rest is owned by the State, which nevertheless has 80% of voting rights plus one vote). It performs almost entirely public service activities. These include ownership and management of its stakes in the capital of Infrabel and SNCB, ensuring railway safety and security, and the acquisition, construction, maintenance and management of most of Belgium's

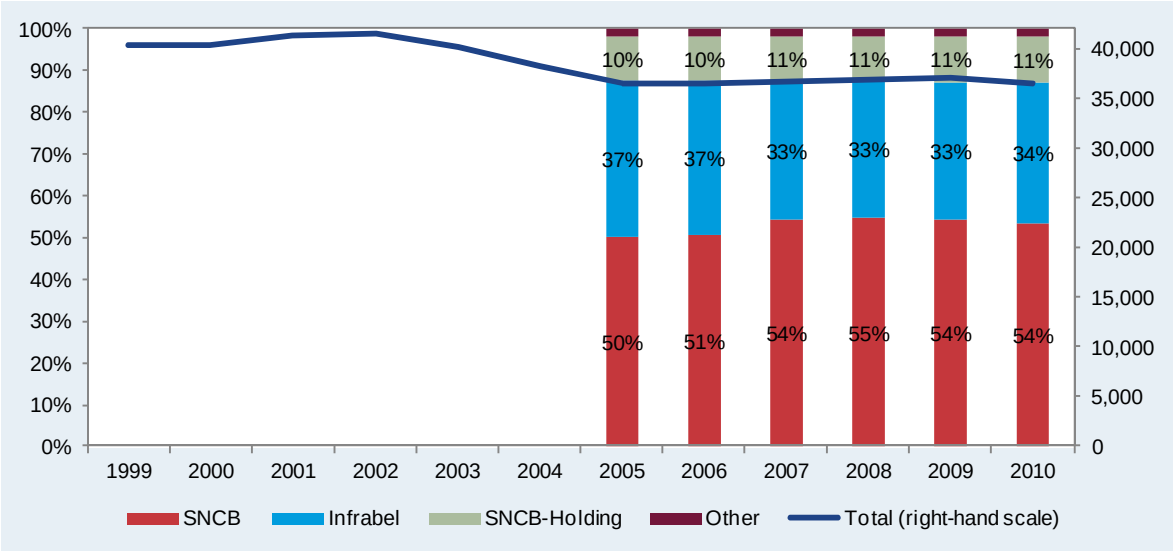
29 Details of the public service obligations of the three group companies are listed in Table 5 below.

30 Lloyd (2011), "NMBS Logistics uit de startblokken", 2 February.

31 European Commission (2010), "State aid: Commission approves restructuring of SNCB's freight activities", Press Release IP/10/615, 26 May.

train stations[32], as well as the conservation of historical properties related to railway operation. Furthermore, the Holding company is in charge of coordinating efforts among the three group companies related notably to investments and IT networks. SNCB-Holding is also the employer for all group personnel, which it provides to its subsidiaries. In 2010, the Holding company employed 36,500 staff (full-time equivalent), of which 54% worked for the operator, SNCB (chart 13). In addition to its public service activities, the Holding company performs certain commercial activities, such as leasing land and buildings, and managing concessions awarded in the railway sector (Court of Audit, 2008, p. 62).

Chart 13: Change in the number of SNCB Group workers (FTE) and allocation by company following the restructuring (percentages)



Source: SNCB-Holding annual reports.
Note: "Other" workers include seconded employees and the personnel of the group health insurance provider.

SNCB's new structure was not unanimously accepted. In 2004, the Council of State issued an opinion in which it held that the new structure, as envisaged, would not correspond to the EU Directives[33]. In March 2008, an external study on the SNCB Group's operations, carried out at the request of the then Minister for Public Enterprises, Inge Vervotte, recommended a clarification of the group's structure and governance model, among other things[34]. In January 2011, Minister Vervotte declared that the SNCB Group's structure should be revised[35] and that the structure and coordination among the three group entities contributed significantly to the poor punctuality performances in 2010[36]. On 28 June 2011, following a series of network incidents in the preceding days[37], the Minister announced that she would begin discussions in September aimed at reforming the Group's structure. While acknowledging that statements by SNCB were overly defensive, she said that she believed that the Belgian railways' principal problem was network saturation[38].

The restructuring has also been criticized within the SNCB Group. In February 2011, Jannie Haek, chairman of the SNCB Holding, said that splitting SNCB into three entities was costing the group

32 SNCB-Holding manages 37 major Belgian train stations, representing 70% of the clientele. SNCB manages 94 smaller stations, while Infrabel is responsible for 414 stopping points where no tickets are sold (L'Echo online, 2010, "Gare du Nord: cinq ans de travaux", 19 May, p. 2).

33 Le Vif online (2008), "La SNCB dans le collimateur de l'Europe", 11 July.

34 Le Soir online (2008), "Une structure à clarifier", 14 mai.

35 "Toespraak minister Vervotte op nieuwjaarsreceptie NMBS-Holding", 21 January 2011, http://www.ingevervotte.be.

36 "Réaction d'Inge Vervotte sur les chiffres de ponctualité", 25 January 2011, http://www.ingevervotte.be.

37 On 27 June, rolling stock and infrastructure malfunctions left thousands of passengers stranded for several hours. Additional malfunctions occurred the following day.

38 De Standaard (2001), "Vervotte wil structuur NMBS-Groep aanpakken", 29 June, p. 5.

€50-100 million every year due to the increased cost of IT services, communications and legal services, but that the break-up had not increased competition on the network. Furthermore, according to the group's Strategy and Coordination Director, Alex Migom, the SNCB break-up was one of the principal causes of the drop in punctuality after 2005 due to a dispersal of passenger traffic expertise across multiple divisions and multiple companies[39]. Note that this estimate of €50-100 million in annual transaction costs represents around 1% of the SNCB Group's annual operating costs (see below).

The railway group's structure is also an issue at the European level. Along with Germany, Italy, Austria and Poland, Belgium is one of the few Member States to have opted for a holding company model[40]. In 2007, the European Commission asked Belgium for more details regarding SNCB's reorganisation and, when the Belgium government's responses were deemed inadequate, sent it formal notice on 26 June 2008. In the view of the Commission, Belgium had not completely and correctly transposed the Directives from the first railway package. It criticised notably the lack of institutional independence for "essential functions" (granting licences to rail companies, allocating train paths, infrastructure pricing and controlling the performance of public service obligations). In its August 2008 response to the Commission, Belgium indicated that a legislative initiative would be taken to fix the problem[41].

Seeing that the situation was not progressing adequately, the Commission sent a reasoned opinion to Belgium regarding, among other things, this same point: the fact that the existing structure did not provide the infrastructure manager with sufficient independence from the operator and the holding company[42]. According to the director of the Belgian railways regulatory department, the Commission appears to want to use infringement proceedings to make Member States dismantle the holding company model without formally requiring such in a Directive[43]. In March 2010, the Belgian government responded by approving, by Royal Decree, a change in the bylaws of Infrabel[44]. Under the new bylaws, individuals are not allowed to serve on the board of directors or the executive committee of Infrabel if they hold a position at SNCB, SNCB-Holding, or another railway company.

In June 2010, the European Parliament adopted a Resolution on the implementation of the first railway package[45]. In this Resolution, the Parliament denounced the fact that 22 Member States, including Belgium, had still not completely transposed the Directives from the first railway package and urged the Commission to take immediate legal action against the Member States in question. The Commission responded, referring 13 Member States to the European Court of Justice for inadequate implementation of the first railway package, notably a lack of independence for the infrastructure manager[46]. The group of 13 included France, Germany and Spain, but not Belgium. Thus, it appears that Belgium's transposition of the first railway package was satisfactory in the eyes of the Commission.

39 De Standaard (2011), "Splitsing spoorwegen kost alleen maar geld", 27 April, p. 44.

40 European Commission (2009, p. 19), Commission staff working document accompanying document to the report from the Commission to the Council and the European Parliament on monitoring development of the rail market, SEC(2009) 1687.

41 Schouppe, E., (2008), "La mise en demeure de la Commission européenne relative au premier paquet ferroviaire", 26 August, accessible at http://www.etienneschouppe.be/index.php?id=80&L=1.

42 European Commission (2009), "Commission warns Member States over lack of implementation of the 'first rail package'", press release IP/09/1438, 8 October.

43 De Tijd (2009), "Spoorliberalisering scoort goed", 10 October, p. 5.

44 Royal Decree of 15 March 2010.

45 European Parliament Committee on Transport and Tourism (2010), "Adoptions in plenary 14-17 June 2010, Strasbourg", TraNNews no. 70, 23 June.

46 European Commission (2010), "Rail services: Commission legal action against 13 Member States for failing to fully implement first railway package", press release IP/10/807, 24 June.

On 17 September 2010, the Commission adopted a proposal to overhaul the first railway package[47] (see section 2). The proposal did not condemn the holding company model, despite the reservations expressed by the then European Commissioner for Transport Siim Kallas. Mr Kallas had stated in July 2010 that the Commission had problems with the corporate structure of Deutsche Bahn (which, like SNCB, has a holding company model) because, in his opinion, it did not guarantee the independence of the DB Netz infrastructure manager vis-à-vis the other subsidiaries within the holding company[48]. The press release[49] issued by the Commission at the time of the overhaul proposal, however, said that it plans to look into the possibility of strengthening the requirements for institutional separation between infrastructure managers and railway operators. Thus, the holding company model could be called into question in the future.

4.1.2. DEVELOPMENTS ON THE BELGIAN RAIL MARKET

In Belgium, the rail market has opened up progressively, nudged along by the various EU Directives targeting the sector (Table 3). The rail freight market was completely liberalised on 1 January 2007; by contrast, with respect to passengers, only the international passenger transport market has been liberalised, since 1 January 2010.

Table 3: Belgian rail market liberalisation

Date	Market liberalisation	Belgian legal basis	European legal basis
1997	• International groupings including a Belgian railway company for providing international transport services (freight and passengers) • International combined transport of goods	RD of 5/2/1997	Directive 91/440/EC
15/03/2003	International freight transport on the Trans-European network	RD of 12/3/2003	Directive 2001/12/EC
01/01/2006	International freight transport on the entire European rail network	Law of 4/12/2006	Directive 2004/51/EC
01/01/2007	All freight, including domestic	Law of 4/12/2006	Directive 2004/51/EC
01/01/2010	International passenger transport	RD of 19/5/2009	Directive 2007/58/EC

Source: NBB.

To operate in the Belgian market, a railway company must meet several conditions[50]. To begin with, it must be recognised as a railway company, which means it must have a railway licence. These licences are valid throughout the European Union. In Belgium, licences are granted by the Mobility Ministry (in practice, by the Directorate for Rail Transport of the Directorate General for Road Transport). Then, the railway company must have a safety certificate issued by the national safety authority (in Belgium, the Department for Railway Safety and Interoperability). This certificate contains two parts: a general part (Part A) valid throughout the European Union, and a specific part (Part B) valid in the Member State. Furthermore, the railway company must have rail capacity (train paths) allocated by Infrabel's Rail Access Directorate. Lastly, to ensure efficient use of the network, the railway company must sign a user agreement with the Rail Access Directorate. The national railway regulator, whose creation is mandated by the first railway package (see section 2.2), is the Regulatory Service for Railway Transport and for Brussels Airport Operations, created in 2004. It is under the direct administrative authority of the Minister (or Secretary of State) for Mobility, but the minister does not exert direct line authority over the regulator.

Until 2003, SNCB was the only rail operator active in Belgium. In 2004, one year after the liberalisation of international freight on the Trans-European network, Dillen & Le Jeune Cargo

47 COM(2010) 475.

48 Le Lloyd (2010), "'Le secteur ferroviaire doit renoncer à ses privilèges'", 22 July, p. 12.

49 COM(2010) 474.

50 Website of the Regulatory Service for Railway Transport and for Brussels Airport Operations, accessible at http://www.regul.be/fr/content/march%C3%A9-0.

(DLC, now Crossrail) became the first rail operator to challenge the incumbent operator (Descheemaecker, 2010). Since then, other operators have entered the Belgian market.

At 1 January 2011, in addition to SNCB, Belgium counted 13 recognised rail operators, all operating in freight transport, with the exception of Eurostar. However, this does not mean that there are that many players in the Belgian market, because not every company with a licence to operate in Belgium is actually active there, as shown in Table 4.

Table 4: Railway companies with a licence to operate on the Belgian network (at 01/01/2011)

Company	Safety certificate	Actually operating on the Belgian network	Shareholders	Nationality
SNCB	yes	yes	Belgian State	BE
Crossrail Benelux	yes	yes	Crossrail AG (100%), but with private Belgain shareholders	CH/BE
Captrain Benelux*	yes	yes	SNCF (French State)	FR
Trainsport AG	yes	yes	Two private shareholders (50%) and Rurtalbahn GmbH (50%)	BE/DE
ERS Railways	yes	yes	AP Möller - Maersk Group	DK
Eurostar International Ltd	yes	yes**	SNCB, SNCF and L&C Railways	BE/FR/UK
Euro Cargo Rail	yes	no	Deutsche Bahn AG	DE
Railtraxx	yes	no	Private	BE
DB Schenker Rail Nederland	yes	yes	Deutsche Bahn AG	DE
Rail Feeding	yes	yes	Genesee & Wyoming Inc	US
SNCB Logistics	yes	yes***	SNCB and SNCB-Holding***	BE
ACTS Nederland	no	no	Husa Capital	NL
CFL Cargo	no	no	Joint venture between CFL (Luxembourg State) and Arcelor Mittal	LU
CMI Traction	no	no	Cockerill Maintenance & Ingénierie	BE

Source: FPS Economy (2010), Railway regulator.

* Since January 2010, Captrain Benelux has comprised the freight subsidiaries of SNCF operating in Benelux (SNCF Fret Benelux, Veolia Cargo Belgium, Veolia Nederland and ITL Benelux).

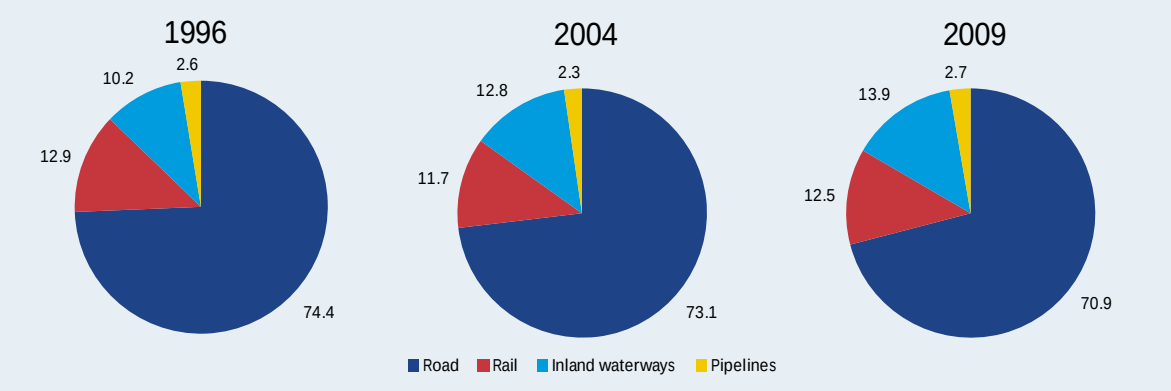
** Since 1 September 2010, Eurostar has been a standalone railway company (see below).

*** Since 1 February 2011, SNCB Logistics has been an autonomous rail operator owned 93.14% by the SNCB and 6.86% by SNCB-Holding.

4.1.2.1. Freight

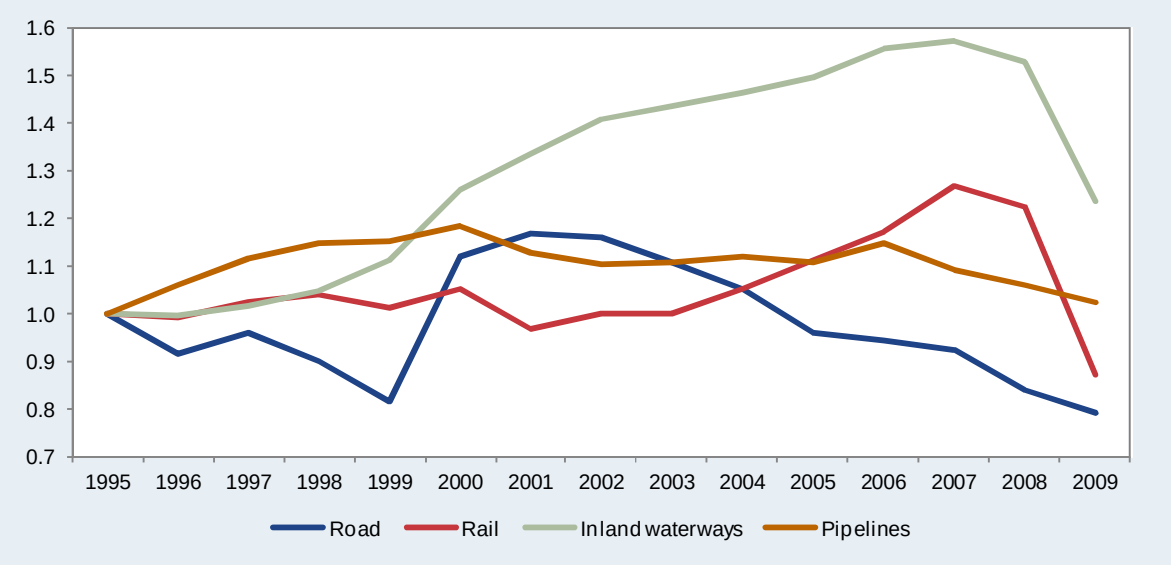
Rail is the third most widely used transport method for freight in Belgium, far behind road haulage and just after river transport. In 2009, 12.5% of goods were transported by rail, compared with 12.9% in 1996 (chart 14), a year in which rail was the second most widely used transport mode. Subsequently, volumes transported by rail stagnated until 2003, whereas inland waterway transport grew briskly, doing a better job than rail transport of taking volumes away from road transport, which has been declining steadily since 2001 (chart 15).

Chart 14: Breakdown of freight transport modes in Belgium (percentages based on tonne-kilometres)



Source: European Commission (2011).

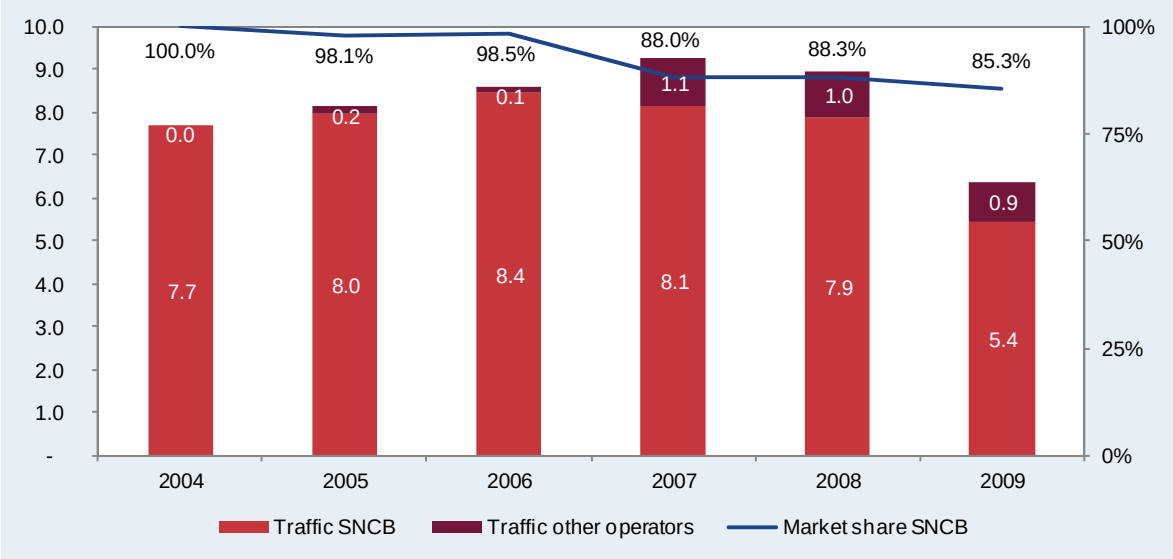
Chart 15: Freight transport trends in Belgium (index based on tkm, 1995 = 100)



Source: European Commission (2011).
Note: statistical change in 2000 for road.

From 2004, one year after the start of the market liberalisation process, rail transport of goods began to experience strong growth which culminated in 2007, a year in which transport volumes represented 9.3 billion tonne-kilometres; volumes then plunged in 2009 due to the economic crisis. The year 2007 also saw the first significant volumes transported by new entrants, at 1.1 billion tonne-kilometres, or 12% of the market (chart 16). The volumes transported by alternative operators did not contract by as much as those transported by the incumbent operator (-16% against -33% between 2007 and 2009), which allowed them to boost their market share to 14.7% in 2009 (in tkm).

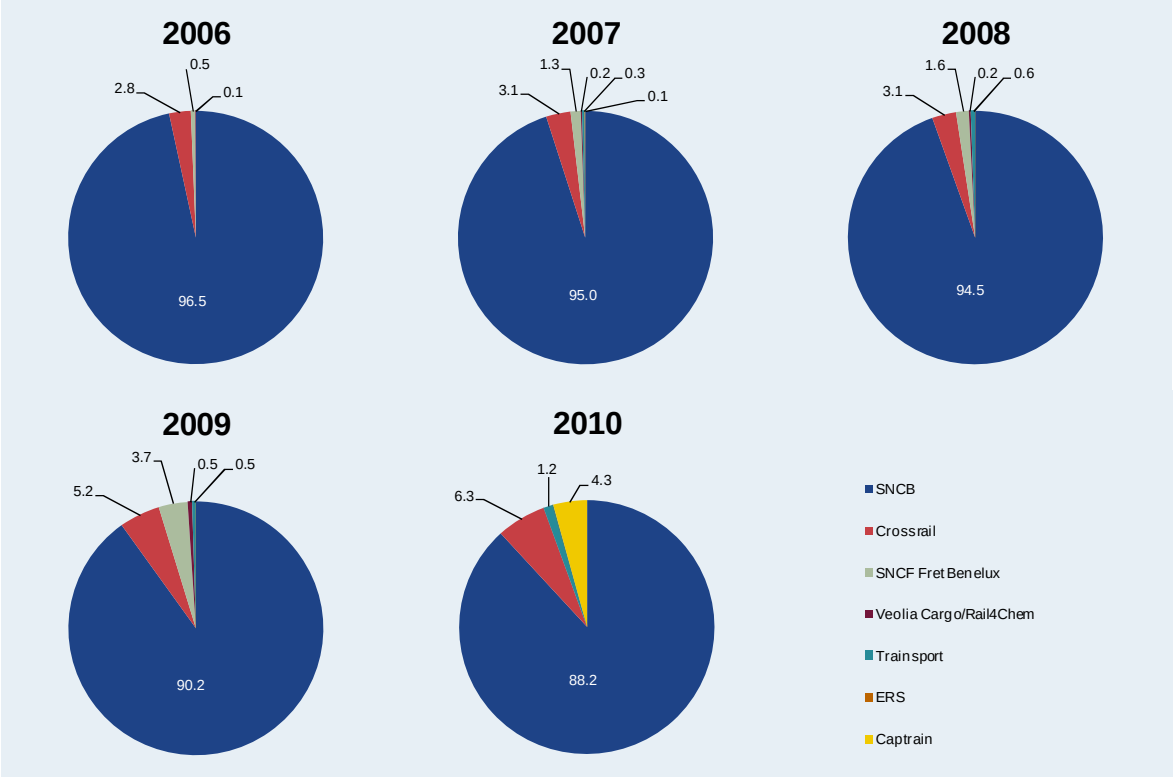
Chart 16: SNCB freight traffic (tkm bn) and market share trends (percentages based on tkm)



Source: European Commission (2011), SNCB annual reports, own calculations.

Despite the drop in its market share, SNCB remains by far the dominant player. Chart 17 shows the trend in market share among the various railway freight operators active in Belgium based on train-kilometres. In 2010, the incumbent operator held 88.2% of the market. The two biggest alternative operators in terms of market share were Crossrail (6.3% in 2010) and Captrain (4.3% in 2010).

Chart 17: Railway freight market share in Belgium (based on royalties paid for actual train-kilometres travelled)



Source: The Regulatory Service for Railway Transport and for Brussels Airport Operations (2009), and its website for 2009 and 2010 data.

Note: In January 2010, SNCF Fret Benelux, Veolia Cargo and R4Chem, all three subsidiaries of the SNCF, were combined under the name Captrain.

Some perspective is needed on the current importance of new rail operator entrants. Not all of the companies authorised to operate on the Belgian network actually do so, and most active companies have a very modest market share. Some are only active in niche segments of the

freight market. For example, the Trainsport company operates almost exclusively on the Aix-la-Chapelle to Antwerp line. The Rail Feeding company operates in Belgium only along short distances to and from the port of Antwerp[51].

According to the FPS Economy (2010), the market share of the incumbent operator in Belgium[52] is comparable to that of the incumbent operator in France (90%), where liberalisation began at the same time as in Belgium[53]. By contrast, it is higher than that of the incumbent operator in neighbouring countries, where the liberalisation process began much earlier, such as the Netherlands (75%), Germany (78%) and the UK (55.8%).

Crossrail and Captrain, SNCB's biggest rivals in terms of market share, are international railway companies with subsidiaries in several European countries. As shown in table 7, Crossrail Benelux and Captrain actually belong to Crossrail AG and SNCF respectively. Crossrail AG focuses on the Alpine corridor, linking Belgium and the Netherlands to Italy via Germany and Switzerland. SNCF is Europe's second-largest freight transporter[54] and has locomotives operating in France, Spain, Benelux, Germany and Italy, among others[55]. On 17 April 2010, DB Schenker Rail Nederland operated its first train on the Belgian network (Infrabel, 2011). This signals the arrival of a heavyweight, because the company is a subsidiary of Germany's incumbent operator, Deutsche Bahn, the European leader in rail freight[56].

It should therefore be noted that in Belgium, the competition brought about by rail market liberalisation is coming principally from major international rail groups. As such, rail market liberalisation could transition the rail freight market from a situation of multiple national monopolies to a European oligopoly. Moreover, in its 2006-08 trading report, the Belgian railway regulator raised questions about the competition implications of the trend towards consolidation among railway companies in Europe[57].

However, the opening of the Belgian rail freight market to competition does not mean that all of the barriers to entry have been lifted. According to the FPS Economy (2010), while the situation has been improving for several years and Infrabel's allocation of rail capacity is more unbiased than before, certain obstacles remain in practice. The FPS Economy (2010, pp. 33-34) summarised them in a recent report, drawing on interviews with sector stakeholders.

With respect to train path allocation, it appears that passenger transport takes priority over freight in Belgium, which is causing problems on certain stretches due to a lack of train paths.

There is also a shortage of train drivers and, according to sector stakeholders, public authorities have not made any effort to encourage workers to adopt the profession, as they have in other critical professions, such as lorry driving. In addition, there is little incentive for SNCB drivers to transfer to a private sector rail operator because SNCB personnel enjoy an advantageous employment status. Furthermore, language barriers remain a problem for train drivers, and sometimes force a change of driver when crossing borders.

The FPS Economy (2010, pp. 33-34) also points out several barriers to entry with respect to rolling stock. For example, it notes that there is no market for used rolling stock and that SNCB apparently

51 Havenvanantwerpen.be (2011), "Antwerp Rail Feeding rijdt 'last mile' in Antwerpse haven", Nieuwsbrief #24.

52 Based on royalty payments for train-kilometres actually travelled.

53 See section 5.

54 http://fret.sncf.com.

55 SNCF (2010), "Captrain, la nouvelle marque européenne des activités ferroviaires de la branche SNCF Geodis", Perspectives Fret, no. 16, March, pp. 8-9.

56 http://www.dbschenker.com.

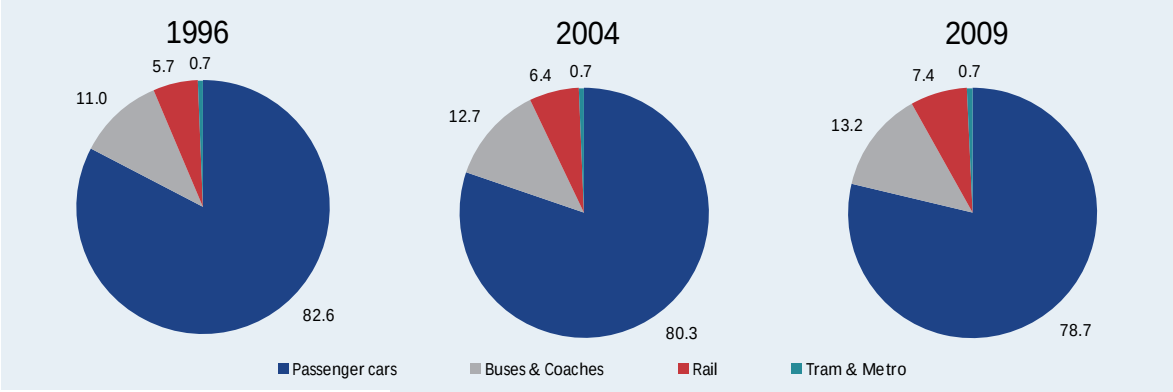
57 Regulatory Service for Railway Transport and for Brussels Airport Operations (2009, p. 12).

will not sell rolling stock it is no longer using to its competitors. In addition, the rolling stock approval process in Belgium is not without encumbrances. According to the FPS Economy, there are problems with the price, procedures and timeframe of the approval process. Lastly, diesel refuelling stations are controlled by SNCB and are not available to new rail operators, which makes it hard for competitors to refuel their diesel locomotives. Private rail operators thus get their fuel from Rail Service Net (a Crossrail company) or other suppliers, who bring fuel to the tracks in tanker trucks. At present, both Infrabel and Havenbedrijf Antwerpen are looking for solutions to this problem.

4.1.2.2. Passenger transport

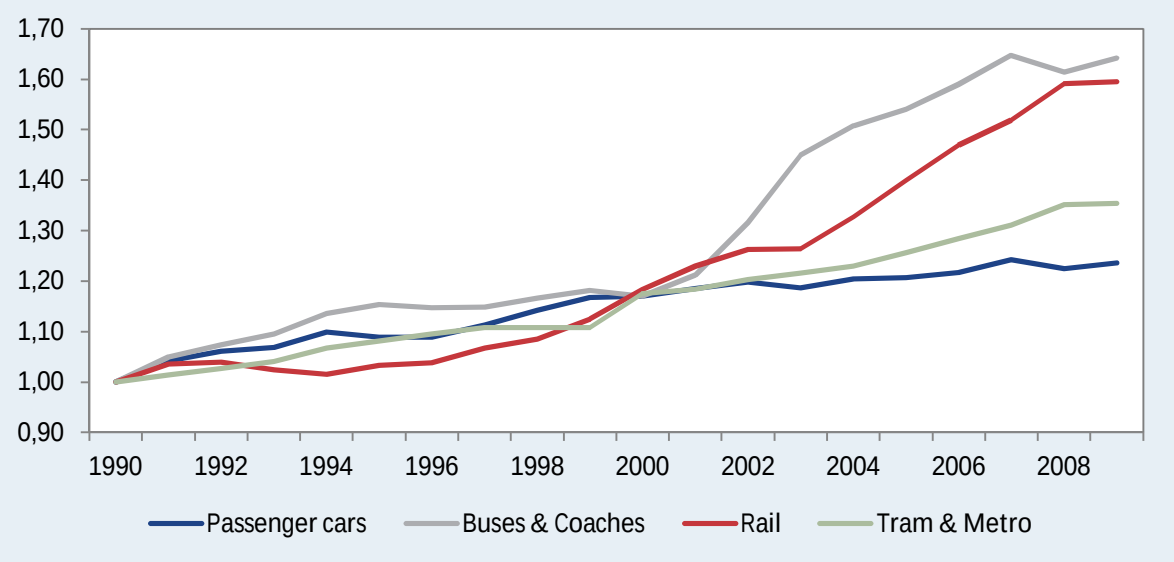
Unlike for freight, the modal portion of rail passenger transport has been growing steadily since 1996. In 2009, 7.4% of passenger-kilometres in Belgium were travelled via rail, putting it third behind car and bus (chart 18). Over the past 20 years, the train and bus are the two forms of transport with the strongest growth in terms of passenger-kilometres, with respectively +59% and +64% (chart 19). While car passenger-kilometres have also risen, its modal share has fallen over the same period, to 78.7% in 2009.

Chart 18: Modal breakdown of passenger transport in Belgium (percentages based on pkm)



Source: European Commission (2011).

Chart 19: Passenger transport trends in Belgium (index based on pkm, 1990 = 100)



Source: European Commission (2011).

Even though the international passenger transport market has been liberalised since 1 January 2010, no rail operator has yet tried to compete with SNCB in Belgium. Rail operators appear to favour cross-border alliances over head-on competition. As such, international passenger transport through Belgium is still done principally via two joint ventures: Eurostar Group Ltd and Thalys International SCRL. Eurostar Group is a partnership between Belgium (SNCB owns a 5% stake),

France (SNCF owns 55%) and the UK (London & Continental Railways owns 40%)[58]. Until 31 August 2010, Eurostar Group Ltd marketed Eurostar trains on behalf of the three partners, which financed the operating costs of Eurostar Group Ltd (SNCB 2010b, p. 98). On 1 September 2010, Eurostar became a standalone railway company, christened Eurostar International Ltd[59]. The Eurostar network links Belgium, France and the UK, passing through the Channel Tunnel.

The German operator Deutsche Bahn (DB) is also interested in the Channel Tunnel rail link and could use it for a Frankfurt-London line with its high-speed ICE trains by the end of 2012, which would be a departure from the system of partnerships currently in place. On 13 October 2010, DB performed a test run using an ICE3 train in the Channel Tunnel. This was the first time one of the German operator's trains had passed through the tunnel[60].

Thalys International SCRL is an alliance between the incumbent operators in Belgium (SNCB, 28%), France (SNCF, 62%) and Germany (DB, 10%)[61]. Thalys International provides commercial rail transport for passengers on behalf of SNCB, SNCF and DB between Paris, Brussels, Amsterdam and Cologne.

SNCB also has bilateral agreements with foreign operators covering the operation of cross-border routes, such as those signed with the SNCF for TGV lines into France and Dutch operator NS High Speed for a new Fyra high-speed line to the Netherlands[62], for which commercial service was expected to start in late 2011[63]. A partnership with the Deutsche Bahn also lets the SNCB offer tickets for ICE trains linking Belgium and Germany.

In 2009, Thalys and Eurostar accounted for respectively 66% and 21% of revenues for SNCB Europe (SNCB's international passenger transport division), compared with 7% from TGV (SNCB 2010b, p. 137).

In addition to these partnerships, the Railteam project was launched on 2 July 2007. Railteam is a joint effort by the incumbent operators in Germany, France, Belgium, the UK, the Netherlands, Austria and Switzerland. The goal of the alliance is to facilitate high-speed train travel in Europe and to ensure uniform standards of service and quality throughout the network[64].

4.2. FINANCIAL ANALYSIS

The goal of this section is two-fold. First, it aims to assess the impact that reorganisation of the incumbent railway company has had on its financial structure. Second, it analyses the extent to which the incumbent operator is equipped to deal with the sector's liberalisation, considering the strengths and weaknesses of the company's financial situation.

The indicators used for the analysis include, in addition to the group's revenues and results, the trend in total debt and operating costs, as well as selected financial ratios. These data are taken from the annual accounts and begin prior to the 1 January 2005 restructuring. Past and expected changes in subsidies are also analysed on the basis of management contracts signed between the SNCB Group companies and the State. These last data are available from 1992 and include forecasts for 2008 to 2012.

58 SNCF (2010, p. 5).

59 La Libre.be (2010), "Avec son nouveau statut, Eurostar veut s'attaquer à de nouveaux marchés", 1 September.

60 Treinreiziger.nl (2010), "ICE voor het eerst door kanaaltunnel", 13 October.

61 Thalys International (2010, pp. 16-17).

62 La Libre.be (2010), "La SNCB et la grande vitesse à l'international, une stratégie en mode mineur", 29 January.

63 http://www.b-europe.com/Voyager/Trains/Fyra/En%20g%C3%A9n%C3%A9ral.

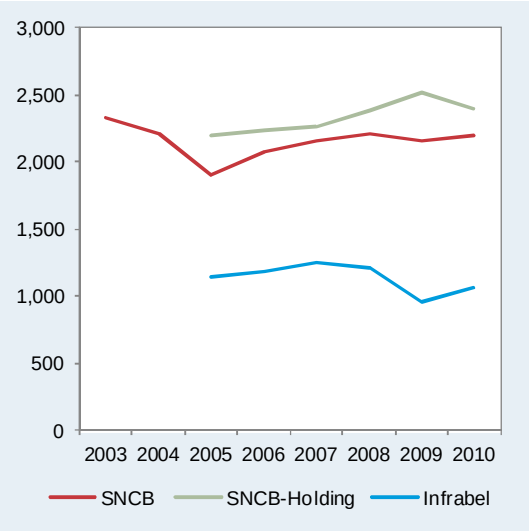
64 http://www.railteam.fr/a-propos-de-nous/notre-alliance/.

4.2.1. REVENUES AND SUBSIDIES

4.2.1.1. Revenues and results

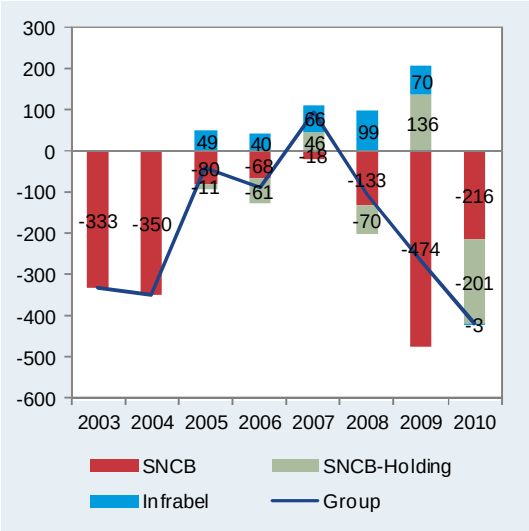
Splitting up the unified SNCB into three separate legal entities boosted the group's revenues from €2.2 billion in 2004 to €5.2 billion after the split-up in 2005. As shown in chart 20, the Holding company is the company with the highest revenues (€2.4 billion in 2010), followed by SNCB the operator (€2.2 billion) and Infrabel (€1.1 billion).

Chart 20: SNCB Group company revenues (€ million)



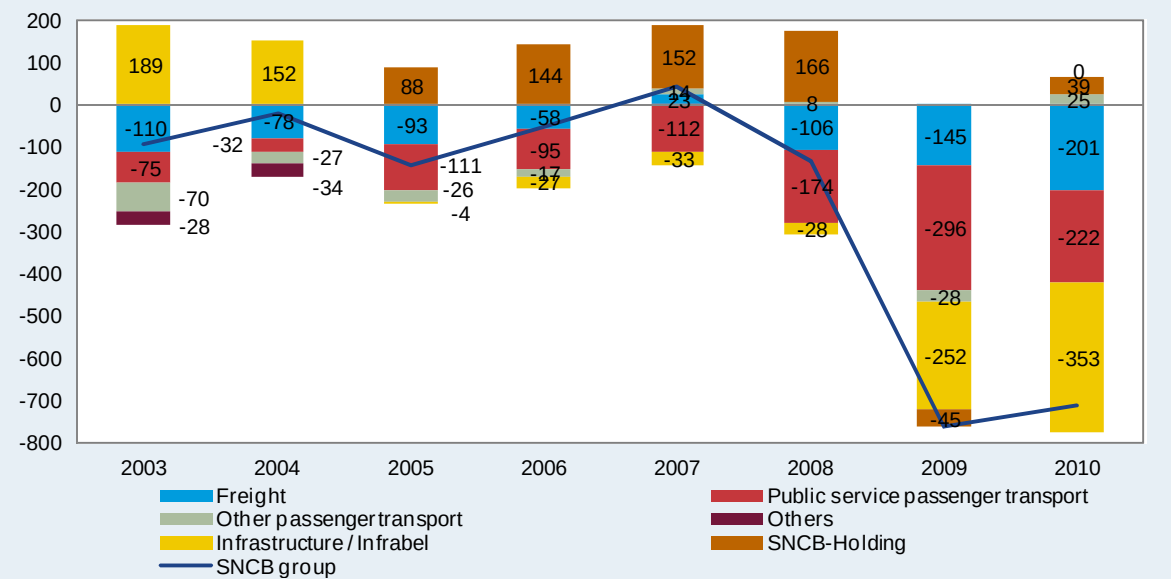
Source: NBB (Central Balance Sheet Office).

Chart 21: Net results of SNCB Group companies (€ million)



Source: NBB (Central Balance Sheet Office).

Chart 22: Operating results of the SNCB Group by division (€ million)



Source: NBB (Central Balance Sheet Office).

Infrabel is the only company in the group that has earned a net profit every year, apart from a €3 million loss in 2010 (chart 21). SNCB the operator, by contrast, has earned a net loss every year. In 2010, the loss amounted to €216 million. In 2010, the cumulative losses of the three group companies totalled €420 million, by far the largest loss since the group's creation in 2005. The operating result by business sector (chart 22) shows that SNCB freight transport is the principal source of the group's poor result. Unlike the losses posted by Infrabel and by the SNCB public

service arm, the €201 million loss by the freight activity cannot be offset by subsidies (see below), so the operating loss is directly reflected in the net result.

4.2.1.2. Subsidies

In the European Union, public subsidies to companies are governed by Community law. Article 87, paragraph 1, of the Treaty of Rome states that in principle, State subsidies are considered incompatible with the common market because they can result in unfair competition. However, certain exceptions are possible, and Article 73 of the Treaty even explicitly provides an exception for subsidies that "meet the needs of co-ordination of transport or if they represent reimbursement for the discharge of certain obligations inherent in the concept of a public service".

As a result, the subsidies paid to the SNCB Group must be used exclusively for public service activities, while any other State aid must be explicitly approved by the European Commission. In practice, however, the SNCB Group's current structure does not permit complete transparency regarding intragroup financial flows, and certain subsidies that cross between public service activities and commercial activities have been condemned by the Court of Audit and by the SNCB Board of Auditors[65]. The restructuring of SNCB's freight division (see above) is likely to improve transparency. Note that the restructuring calls for financial support measures by the State, virtually all of which will go to finance the surcharge related to the employment of the permanent staff and taking on the past debt. This State assistance was approved by the Commission[66].

The subsidies paid to SNCB are cited, along with the public service activities they are intended to fund, in the management contracts signed with the State. The first management contract between the State and the SNCB was signed in 1992, the year after the SNCB was made an autonomous public enterprise. Since 2005, the State has signed a separate management contract with each of the SNCB Group companies. In addition to this assistance, subsidies were paid to the Railway Infrastructure Fund (RIF) between 2005 and 2008[67] that were to be used, along with the Fund's other revenues, to repay the principal and interest of debt that was transferred to the Fund before being transferred back into the State's accounts. All together, the subsidies paid to the railway sector amounted to €1.5 billion annually on average between 1992 and 2004, and to €3 billion annually on average since the reorganisation of sector institutions[68] (chart 23). Between 1992 and 2012, assistance increased by an average of 4.5% annually.

The sector's restructuring has thus been accompanied by a significant increase in the subsidies it receives. In 2005, RIF received more than €2 billion in subsidies to repay debts falling due during that year and pay interest on other debt. Splitting the SNCB into three entities also contributed to the rise in subsidies. Whereas the unified SNCB received €1.7 billion in subsidies in 2004, that amount increased to €2.6 billion in 2005 for the group as a whole, a 52% increase. Subsequently,

65 The Court of Audit (2008) has noted that public financing was not spent entirely or exclusively on public service activities by the companies of the SNCB Group during the period 2005-2007. For 2008 and 2009, see the respective reports of the Board of Statutory Auditors (SNCB 2009b and SNCB 2010a).

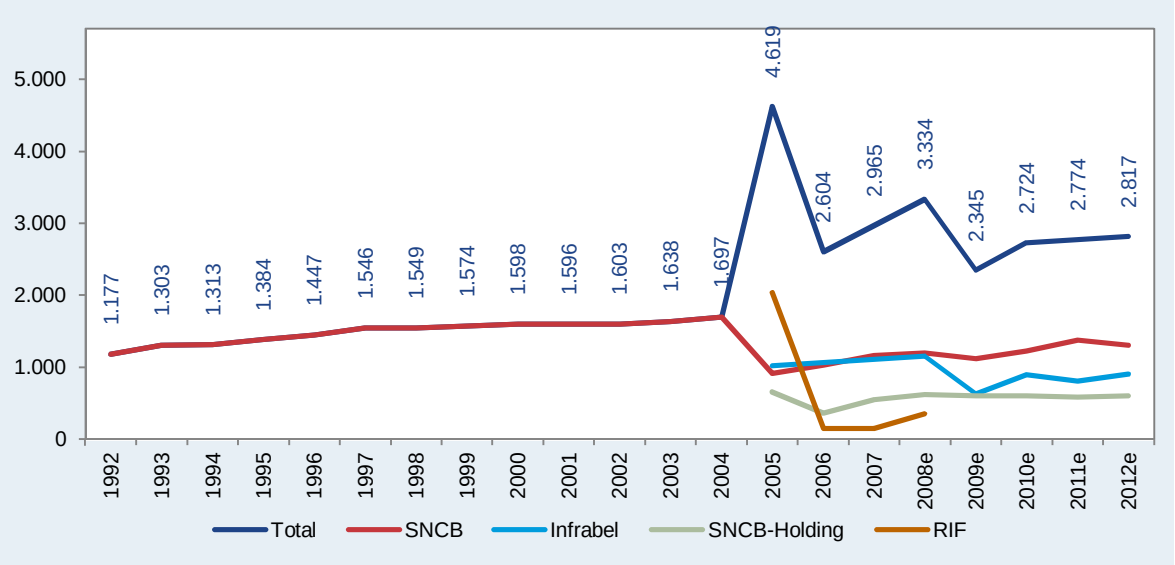
66 European Commission (2010), "State aid: Commission approves restructuring of SNCB's freight activities", press release IP/10/615, 26 May.

67 For lack of a management contract (which should have been signed between the State and the Railway Infrastructure Fund because of its status as an autonomous public company), amounts for the subsidies paid to the Fund are taken from its annual accounts.

68 Not counting the amounts paid by the State for pensions and work-related accidents (around €550 million each year, of which less than €1 million for work-related accidents). In 2005, all of the costs of the SNCB Group's pension fund were transferred to the State, which pledged to fund them (royal decree of 28 December 2005) in exchange for a one-time payment of €295 million to cover sums not paid by the State for which the SNCB Group was responsible each year. The amounts related to financial obligations of the State linked to alternative financing operations stipulated in the first and second management contracts were not assumed either. For information, these obligations represented €22 million in 1996 and €13 million in 1999, to give just two examples (Court of Audit 2001, p. 193).

RIF's subsidy payments decreased substantially (to €150 million in 2006 and 2007 and €358 billion in 2008) before being eliminated entirely when its debt was transferred back to the State.

Chart 23: Past and future estimated State subsidies to the SNCB Group and Railway Infrastructure Fund (in millions of current euro, and in millions of 2008 euro from 2008)



Source: management contracts, RIF annual accounts, Court of Audit (2001), own calculations.
Note: Amounts paid by the State for pensions and work-related accidents, as well as for the alternative financing operations stipulated in the first and second management contracts, are not included.

An examination of the trend in subsidies by category (chart 24) shows that over the years there has been a relative decrease in operating subsidies for infrastructure in favour of investment and other operating subsidies. Since the creation of Infrabel, operating subsidies for infrastructure have actually declined in absolute terms, from €680 million in 2004 to €457 million in 2005 (-33%). Furthermore, between 2005 and 2008, a portion of these operating subsidies (some €300 million) was paid to RIF each year as compensation for usage of the infrastructure owned by the Fund (see above) and thus was not spent on infrastructure operations per se, because those operations were not a part of RIF's remit. In 2009, when the Fund was restructured, the annual rent paid by Infrabel to RIF was halted; Infrabel became the network owner, and the subsidy paid to Infrabel was reduced by an equivalent amount (-€332 million). Infrabel also receives royalty payments from rail operators who use the network, and these are its principal source of income. They amounted to €491 million in 2005 and €627 million in 2009[69], and increased each year (+28% over the period). In keeping with the spirit of the applicable European regulatory framework[70], the State is thus gradually withdrawing from funding infrastructure operations, giving the manager greater financial autonomy. Whereas rail infrastructure operating subsidies made up the majority of subsidies (51%) in 1992, they will represent only 6% in 2012 according to forecasts.

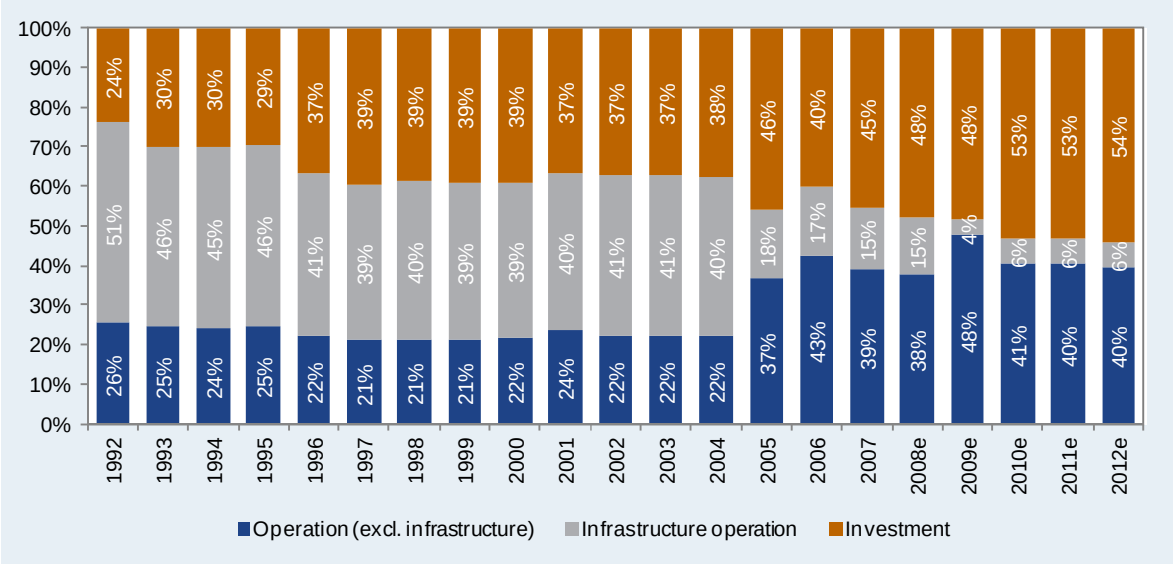
Since its restructuring, the SNCB Group has received between €2 billion and €3 billion in subsidies each year (chart 25). On average, over the period 2005-2012, 43% of subsidies have gone to SNCB the operator, 35% to Infrabel and 21% to SNCB-Holding.

In addition to these subsidies, the federal State has created a system of financial assistance for rail freight operators, approved by Europe[71], to promote combined transport by rail. This assistance

69 See Infrabel (2006, 2008 and 2010).
70 Notably Directive 2001/14/EC (see section 2.1.).
71 State Assistance no. N 249/2004, OJ 2005 C280/9; State Assistance no. 656/07, OJ 2008 C43/2; State Assistance no. N 571/08, OJ 2009 C164/1.

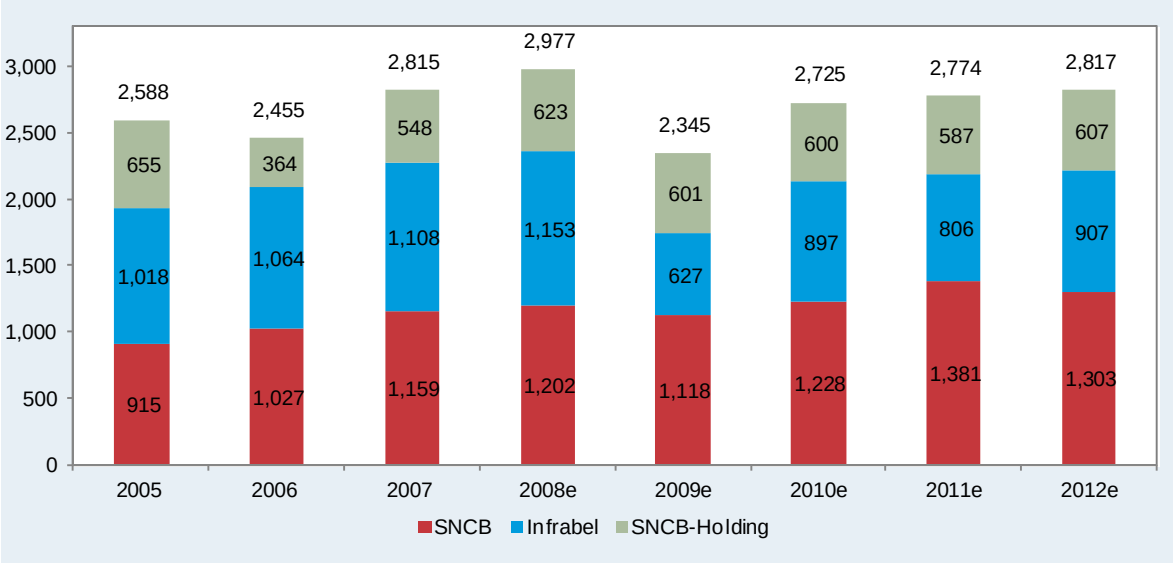
has been available since 2005 and is expected to continue until 2012, and has an annual budget of €30 million (€15 million in 2005)[72].

Chart 24: Past and future estimated State subsidies to the SNCB Group by category (percentages)



Source: management contracts, Court of Audit (2001), own calculations.
Note 1: Amounts paid by the State for pensions and work-related accidents, as well as for the alternative financing operations stipulated in the first and second management contracts, are not included.
Note 2: Excluding subsidies paid to RIF.
Note 3: From 2005, infrastructure operating subsidies are the operating subsidies paid to Infrabel.

Chart 25: Past and future estimated State subsidies to the SNCB Group companies (in millions of current euro, and in millions of 2008 euro from 2008)

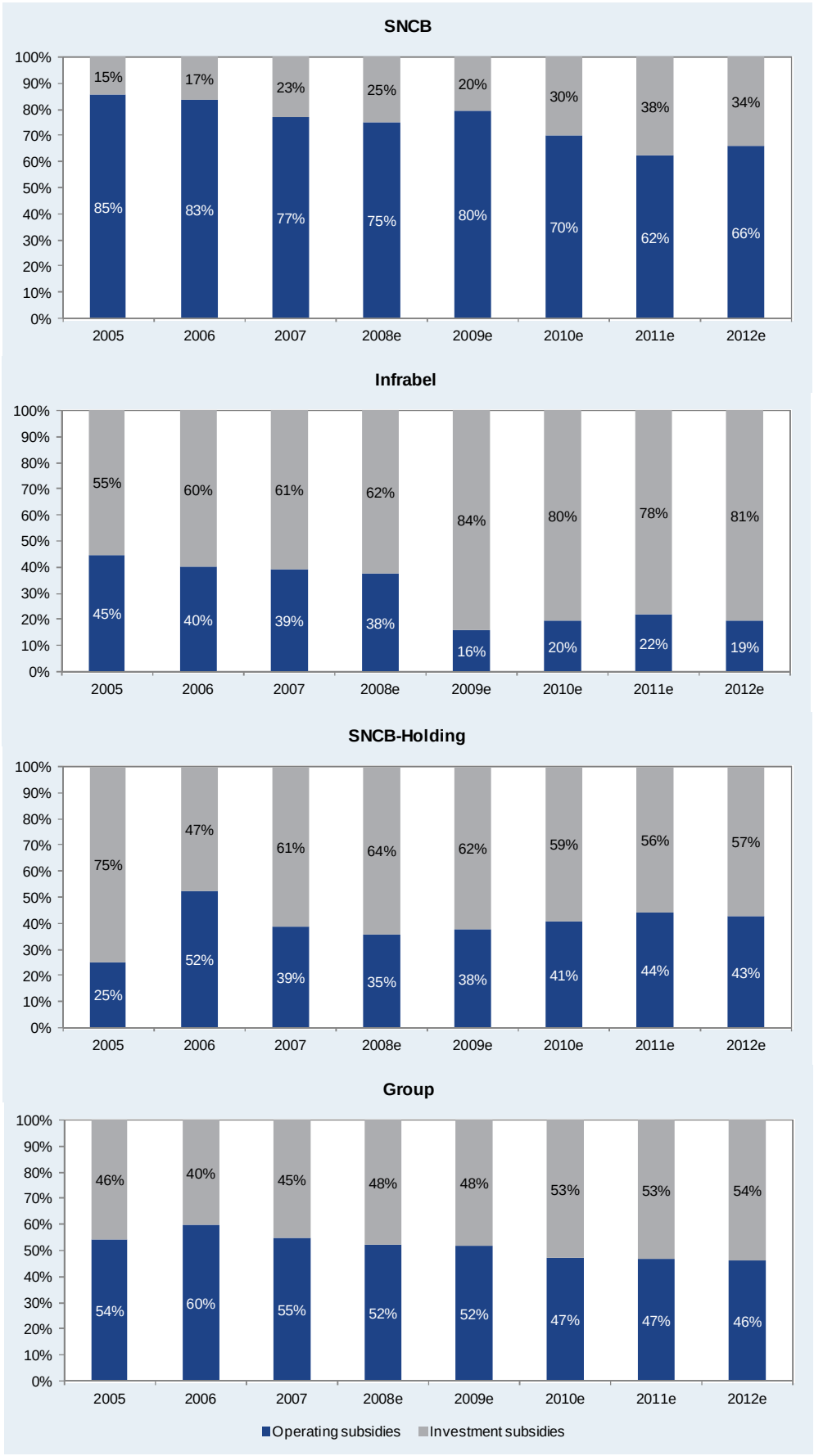


Source: 2008-2012 management contracts.

State subsidies are split between operating subsidies and investment subsidies. The breakdown differs for each group company, as shown in chart 26. SNCB receives principally operating subsidies, whereas Infrabel receives principally investment subsidies. The breakdown for the Holding company is more balanced. According to forecasts, we note that at the overall group level there has been a relative increase in investment subsidies, which became a majority in 2010.

72 This assistance for combined rail-road freight transport is not new. Between 1993 and 2004, State assistance to SNCB already included similar assistance of around €250,000 almost every year.

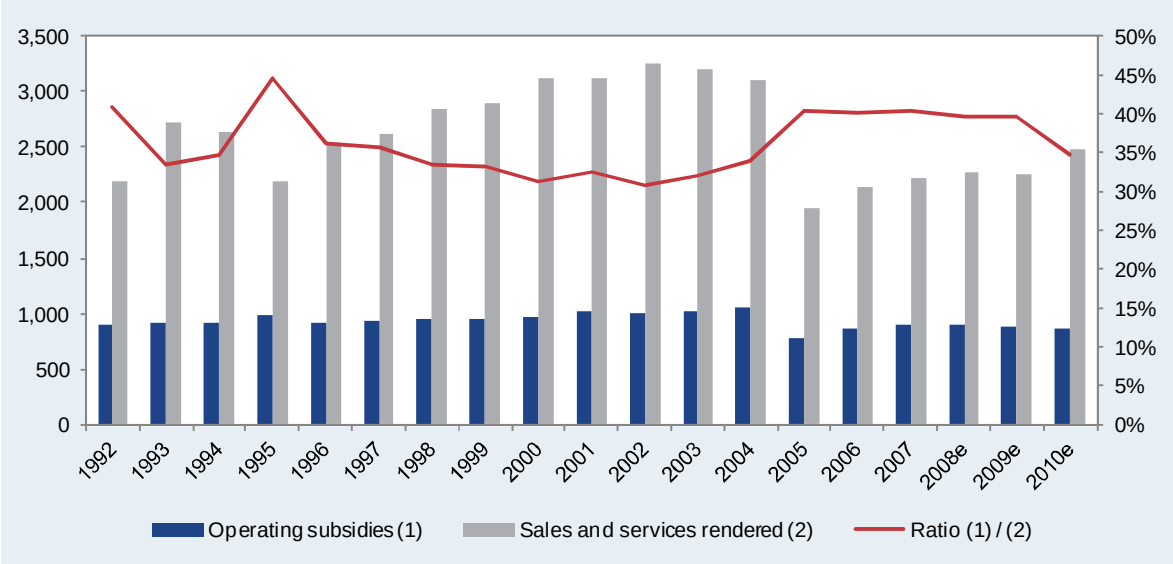
Chart 26: Past and future estimated State subsidies to the SNCB Group by category (percentages)



Source: 2008-2012 management contracts.
Note: Figures for the individual group companies are added together to produce group figures.

Since SNCB was split up, the operating subsidies paid to SNCB the operator have averaged 39% of its revenues, close to the 1992 level of 41% (chart 27). The percentage fell to 35% in 2010 following an increase in the rail company's revenues, in line with the average percentage from before SNCB was split up (34%).

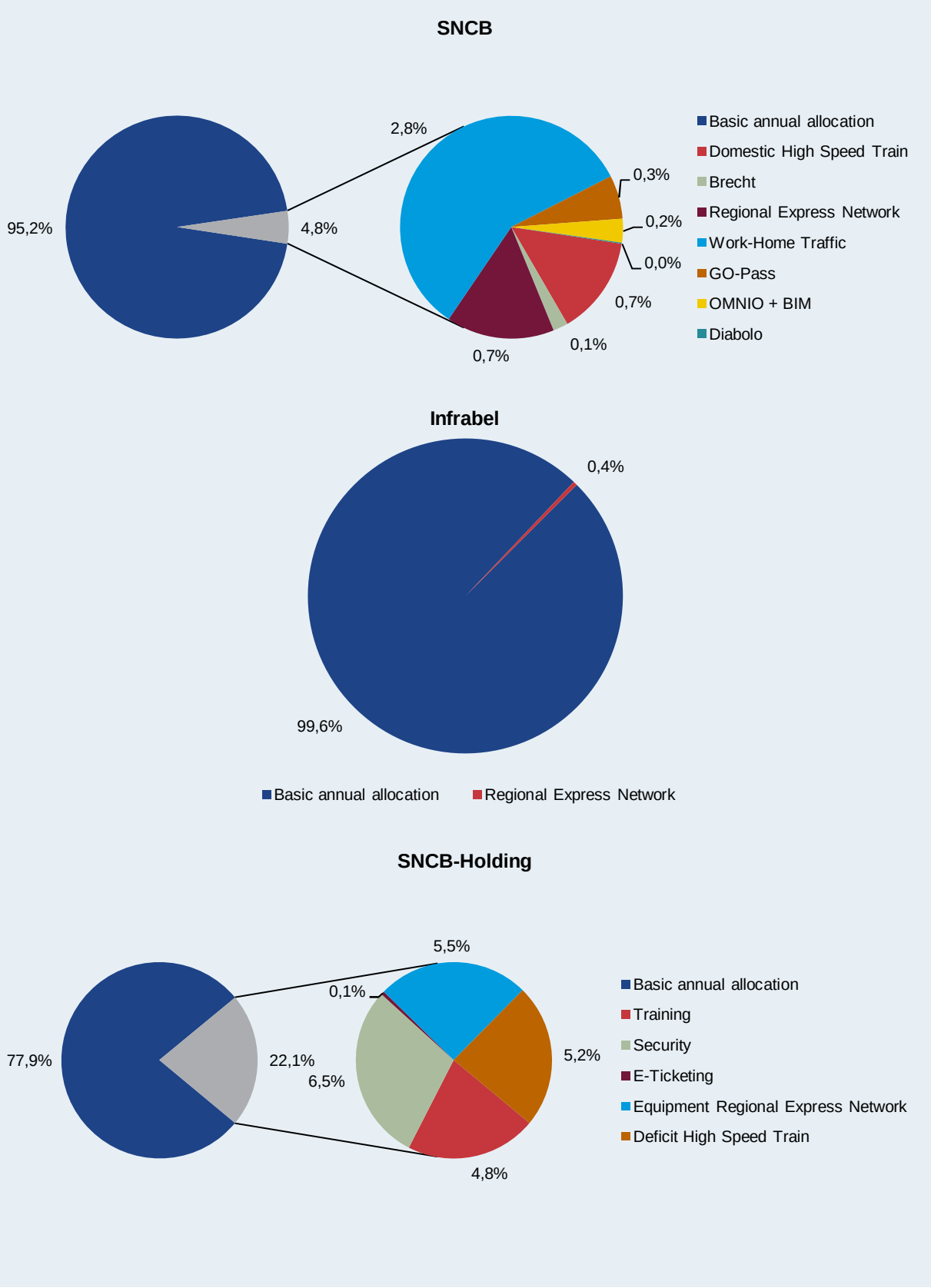
Chart 27: Operating subsidies and revenues of SNCB the operator (€ million)



Source: NBB (Central Balance Sheet Office), SNCB management contracts, Court of Audit (2001), own calculations.

Chart 28 shows how the operating subsidies are used. For each of the three group companies, the lion's share of the operating subsidy is made up of the annual base subsidy intended to offset the costs of the companies' basic public service activities. On top of the base subsidy are additional operating subsidies used to cover specific public service activities. The basic public service activities of each of the three companies are listed in Table 5.

Chart 28: Past and estimated future usage of operating subsidies over the period 2005-2012 (percentages)



Source: 2008-2012 management contracts.

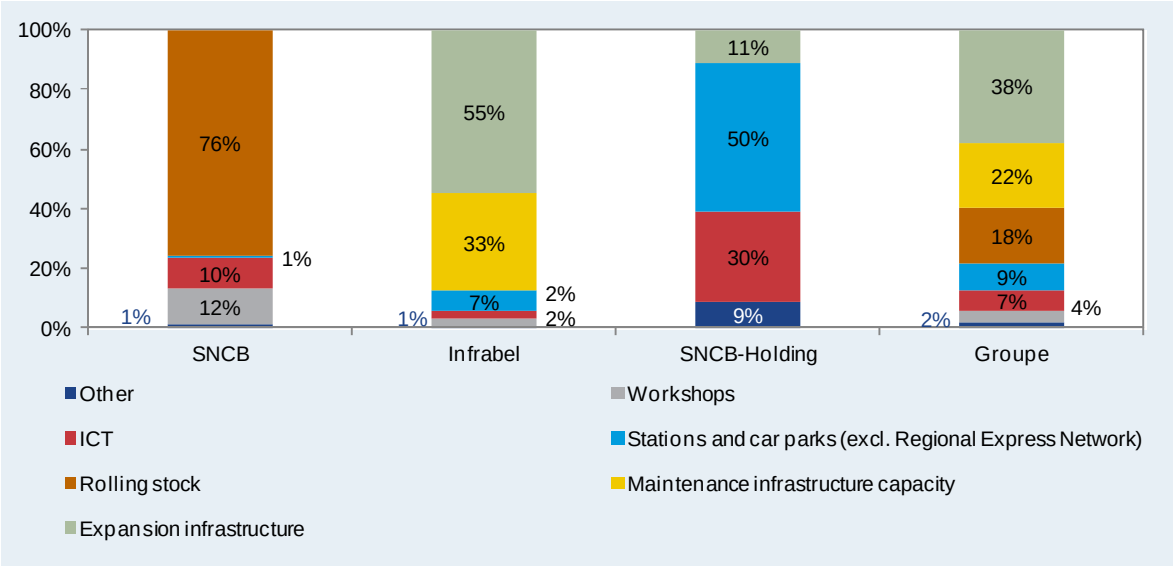
Table 5: Basic public service activities of the three SNCB Group companies.

Company	Basic public service activities (according to the management contracts)
SNCB	• Supplying ordinary domestic and cross-border passenger trains • Reduced tariffs for domestic passenger transport and discounts for persons qualifying as beneficiaries for reasons of social security, national service, profession and Europe (listed in the management contract)
Infrabel	• Acquiring, building, replacing, maintaining and managing railway infrastructure • Managing systems for infrastructure regulation and safety • Supplying rail operators with services as defined in the Law on infrastructure* • Pricing, invoicing and collecting royalties for rail infrastructure usage and services provided to rail operators • Allocating available rail infrastructure capacity in accordance with the principles and procedures set out in the Law on infrastructure* and its implementation decrees
SNCB-Holding	• Ownership and management of its stakes in the capital of SNCB and Infrabel • Safety and security in the rail sector • Acquiring, building, maintaining and managing rail stations and surrounding buildings • Conservation of historically important assets related to the railway network • Coordination among the three group companies • Providing personnel to the two other SNCB Group companies, as SNCB-Holding remains the sole employer to ensure employees a single status and a focal point for labour relations • Meeting the needs of the Nation (listed in the management contract)

Source: 2008-2012 management contracts.
* Law of 4 December 2006 on rail infrastructure usage.

Investment subsidies are granted based on a multi-year investment plan corresponding to the period covered by the management contract. Details regarding the usage of these subsidies for the period 2008-2012 are shown in chart 29. SNCB principally uses its investment subsidies to acquire rolling stock (76% of the planned use of these investment subsidies), whereas Infrabel uses them mostly to expand network infrastructure (55%). The Holding company uses them chiefly for train stations and parking areas (50%). For the group as a whole, infrastructure expansion is the biggest use of investment subsidies, at an estimated 38% for the period 2008-2012.

Chart 29: Planned use of investment subsidies over the period 2008-2012 (percentages)

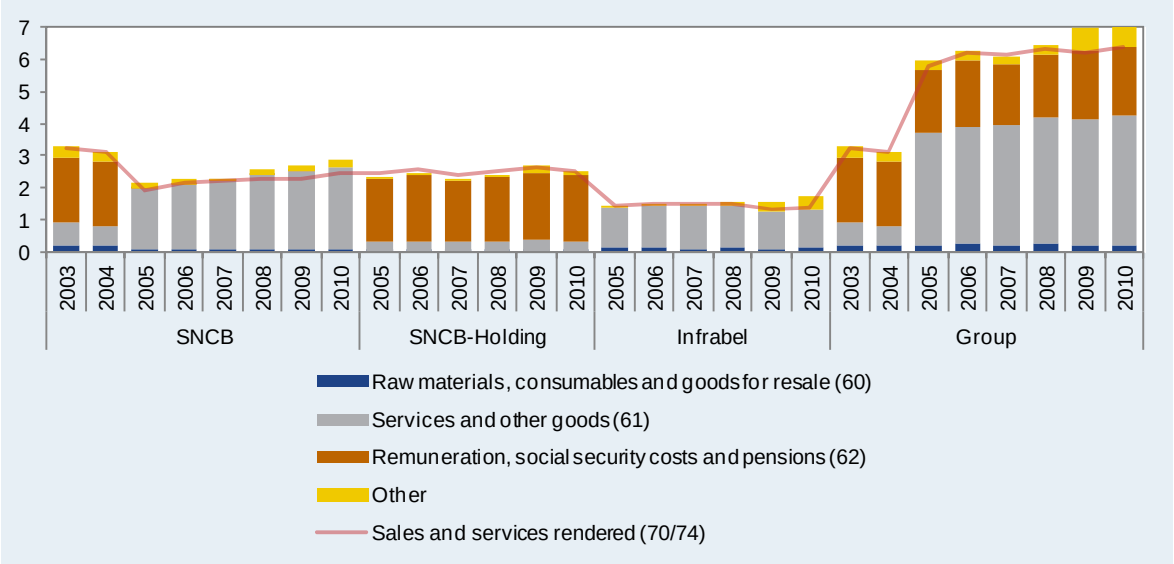


Source: 2008-2012 management contracts, own calculations.
Note: Figures for the individual group companies are added together to produce group figures.

4.2.2. OPERATING COSTS

Chart 30 shows the trend in the SNCB Group companies' operating costs. To put these costs into perspective, the trend in the associated revenue level is also included.

Chart 30: Operating costs of the SNCB Group companies and associated revenues (€ billions)

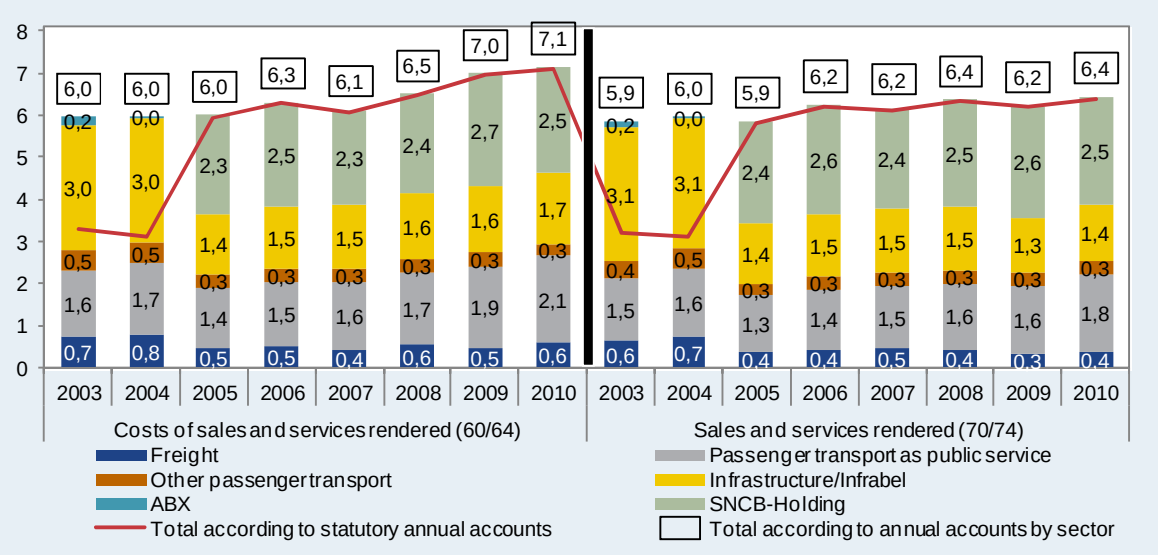


Source: NBB (Central Balance Sheet Office).
Note: Figures for the individual group companies are added together to produce group figures.

As already mentioned, all SNCB Group personnel are employed by SNCB-Holding. Thus, it is not surprising to note that personnel costs are the principal component of that company's operating costs. Services and other goods represent virtually all of the costs of SNCB and Infrabel. At the group level, personnel costs were stable after the restructuring, but the cost of services and other goods increased sharply (+479%) following the creation of the new SNCB and Infrabel, which resulted in invoicing between companies for services that had previously been performed internally (see below). As a result, the proportion of these two items in total costs was reversed from 2005. Whereas personnel costs represented 63% of SNCB operating costs in 2004, they represented only 33% in 2005, whereas the share of services and other goods rose from 19% in 2004 to 59% in 2005.

Consolidated group figures allow us to see that costs rose sharply from 2005, from €3.1 billion to €6 billion, a 90% increase. The costs of the unified SNCB, now SNCB the operator, admittedly fell by €0.96 billion, or 31%, but it makes sense to add in the costs of SNCB-Holding and Infrabel, which jointly amounted to €3.8 billion in 2005. The cost increase, however, was accompanied by a proportional increase in associated revenues (+87%). Thus, it appears that the restructuring of the SNCB resulted in a significant increase in the group's activities in terms of both income and expenses. Moreover, it appears that the two items moved generally in line with each other from one year to the next at the group level. For SNCB, by contrast, costs tended to rise faster than revenues, particularly from 2008 (increase in services and other goods). At Infrabel, operating income and costs were roughly balanced until 2008. In 2009 and 2010, income fell due to weaker sales, whereas operating costs rose due to depreciation and impairments on fixed assets (line 630), resulting in a negative operating result. This increase in operating costs at Infrabel is reflected at the group level, where other costs were higher in 2009 and 2010.

Chart 31: Operating costs of the SNCB Group by business segment and associated revenues (€ billions)



Source: NBB (Central Balance Sheet Office).

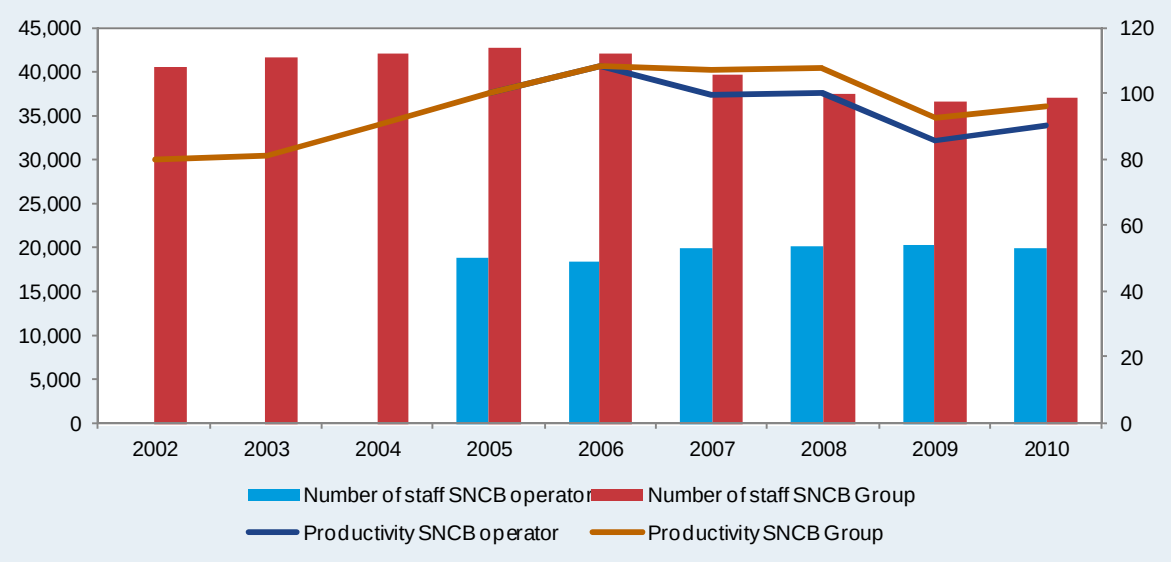
An analysis of annual accounts by business segment (chart 31), however, gives a completely different picture of the costs and revenues of the SNCB Group before and after restructuring[73]. We note that the totals gleaned from the statutory annual accounts (by line) are smaller than the sum of the segments in the annual accounts by business segment (by column), particularly in 2003 and 2004. One possible explanation for this discrepancy may be that the statutory annual accounts indicate consolidated figures for the business segments, thus stripping out services internal to the company. Operating costs remained stable between 2004 and 2005, in contrast to the preceding chart. Consolidated operating costs of the SNCB Group companies thus appear to be comparable to costs under the unified SNCB, when internal costs between business segments are taken into account.

73 In an analysis of the SNCB annual accounts by business segment from 2003 and 2004, it may come as a surprise that there is no "support activities" sector in the income statement, even though this sector does appear on the balance sheet. The Board of Auditors reports for the annual accounts of 2003 and 2004, however, state that with respect to the accounts by business segment, "together, the income statements of the five client business segments [Domestic passengers, Infrastructure, International passengers, Freight and ABX] encompass all of the income and expenses of SNCB" (see respectively SNCB 2004, p. 25 and SNCB 2005, p. 19). This means that all of the income and expenses of the support activities are spread among the five activity segments included in the income statement. As a result, for the purposes of comparing 2003 and 2004 figures with those from after the SNCB's restructuring, it makes sense, from 2005, to consolidate the figures of SNCB the operator with those of Infrabel and the Holding company.

Chart 31 also allows us to break down by business segment the discrepancy between operating income and charges of the SNCB rail operator shown in chart 30. While the three activity segments mostly show a negative operating result, it is the freight sector, the market for which is liberalised, that has the biggest deficit each year in relative terms (with the exception of 2007). Over the entire period under revue, the sector exhibits average operating costs 20% higher than its income, compared with 9% and 5% respectively for domestic and international passenger transport. This imbalance widened after the restructuring, up from 14% on average in 2003-04 to 24% in 2005-10. The operating deficit in freight was particularly severe in 2009, with charges exceeding income by 45% compared with 18% for domestic passenger transport and 9% for international passenger transport. The situation worsened again in 2010, when freight operating costs exceeded operating income by 51%.

The SNCB rail operator's productivity, expressed as the ratio between the number of workers (FTE) and the number of passenger-tonne-kilometres (ptkm) travelled[74], has been falling since 2008 due to the drop in SNCB traffic while headcount has been stable[75] (chart 32). The difference in headcount trends between the operator and the group as a whole is responsible for the slightly more pronounced drop in productivity at the railway company compared with the group.

Chart 32: Number of workers (FTE) and productivity (index, 2005 = 100) at SNCB the operator and the SNCB Group



Source: NBB (Central Balance Sheet Office), SNCB annual reports and own calculations.

4.2.3. DEBT[76]

SNCB's restructuring provided an opportunity to clean up the incumbent railway company's finances, as required by the European Commission[77]. Part of the historical financial debt of the former SNCB was transferred to an entity separate from the SNCB Group created for this purpose with autonomous public enterprise status, the Railway Infrastructure Fund (RIF). In exchange, this entity was given ownership of some of the land and rail network of the former SNCB as it existed at

74 Passenger-tonne-kilometres are the sum of passenger-kilometres and tonne-kilometres. They are used to measure total traffic, by adding together passenger traffic and freight traffic.

75 While all SNCB Group personnel are included in the annual accounts of the Holding company, which is the Group's sole employer, it is possible to determine the number of workers assigned to SNCB the operator in that company's annual reports.

76 Unless otherwise stated, the debt used is the total debt, line 17/49 on the balance sheet. The Group's debt is obtained by adding together the debts of the individual companies and so is not equal to the consolidated net debt as defined in the management contracts.

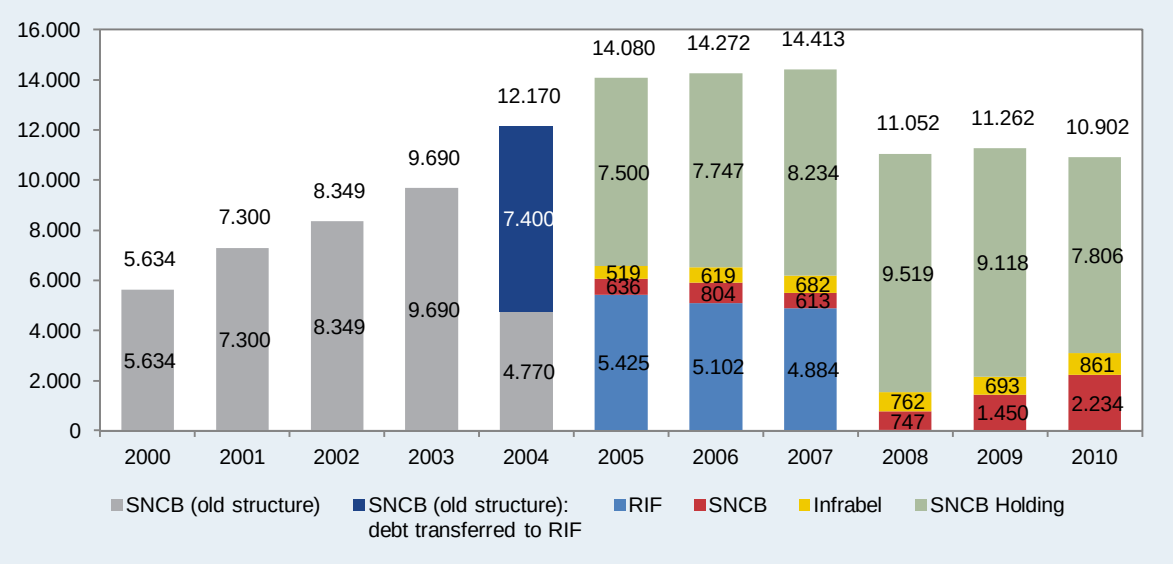
77 As indicated in the section on the European legal framework, European directives allow the creation of a separate debt amortisation unit for the purposes of cleaning up incumbent railway company finances.

the time of the split. This part of the network was made available to Infrabel in exchange for an annual rent payment.

In July 2008, three months after the RIF debt was reclassified in the national accounts[78], the State decided to take over the Fund's long-term debt to rationalise its management by pooling it with the rest of the public debt[79]. The railway infrastructure that belonged to RIF was transferred to Infrabel on 31 December 2008, and the Fund was transformed into a limited company charged with managing the land that had been transferred to it. All of the shares of the Fund issued at this time went to the State, who transferred them to the Federal Holding and Investment Company, a limited liability company (SA/NV) under public law.

The SNCB Group's total debt (line 17/49) experienced a structural increase during the period under review (chart 33). Between 2000 and 2005, it rose by an average of 20% per year (including RIF debt), including a spike in 2004 (+26%) due to the 1 January 2004 absorption of Financière TGV, a financing vehicle used to fund the TGV high-speed train project in Belgium.

Chart 33: Debt* of SNCB Group companies and RIF (€ millions)



Source: NBB (Central Balance Sheet Office).
* Total debt = balance sheet line 17/49.

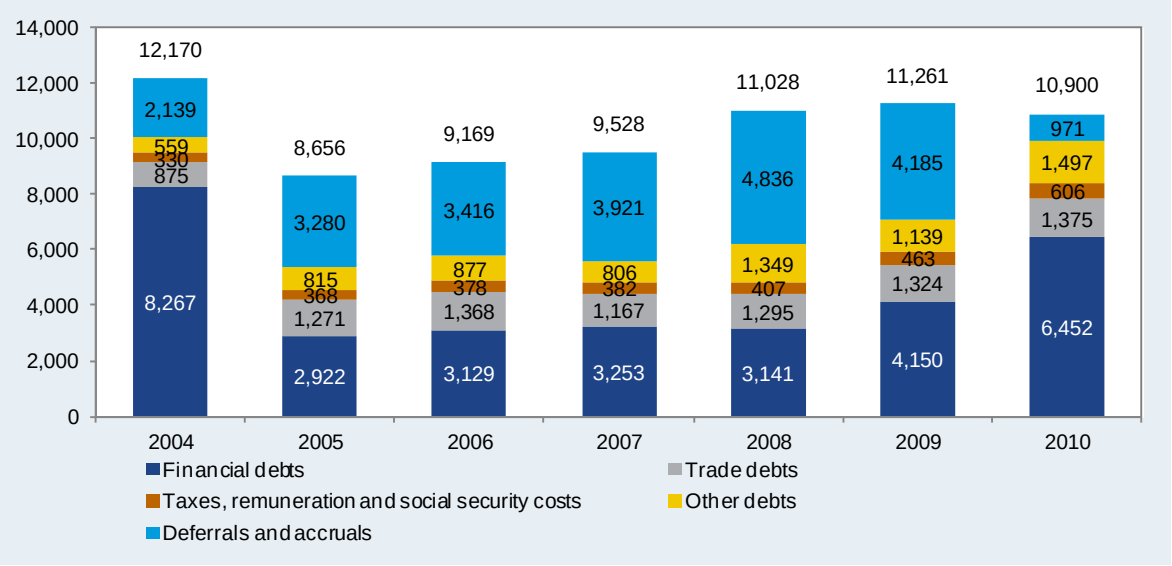
The portion transferred to RIF was €7.4 billion, or 60.8% of the €12.2 billion in pre-restructuring SNCB debt. This transfer made it possible to stabilise the overall debt level of the SNCB Group and RIF (+1% per year in 2006 and 2007) due to a clean-up of the debt transferred to the Fund. In 2008, the transfer of RIF's long-term debt back to the State (RIF kept only its short-term debt, which amounted to €24 million) resulted – for the first time in the period under review – in a drop in the total debt of the SNCB Group and RIF, which fell to €11.1 billion at 31 December. The debt then increased slightly in 2009 (+2%) due to the substantial increase in debt at SNCB the operator (+94%), even though debt fell at Infrabel and the Holding company. The second decrease in debt, observed in 2010, was due to a change in accounting methods at the Holding company as a result of which the alternative financing operations that had previously been included in liability adjustment accounts disappeared from the balance sheet. In 2009, these operations amounted to €3.2 billion.

78 According to Belgian national accounting methods, the RIF debt was not initially considered public debt in the sense of Maastricht, and so the transfer did not have an impact on Belgian public debt. However, in April 2008, this methodology had to be adapted to comply with Eurostat's interpretation and the debt transfer to RIF had to be booked as a public expense. This change resulted in the Belgian public deficit in 2005 being restated from 0.2% of GDP to 2.6%, and the public debt from 90.4% of GDP to 92.1% (Institute of National Accounts, 2008, pp. 97-98).

79 Council of Ministers press release of 25 July 2008.

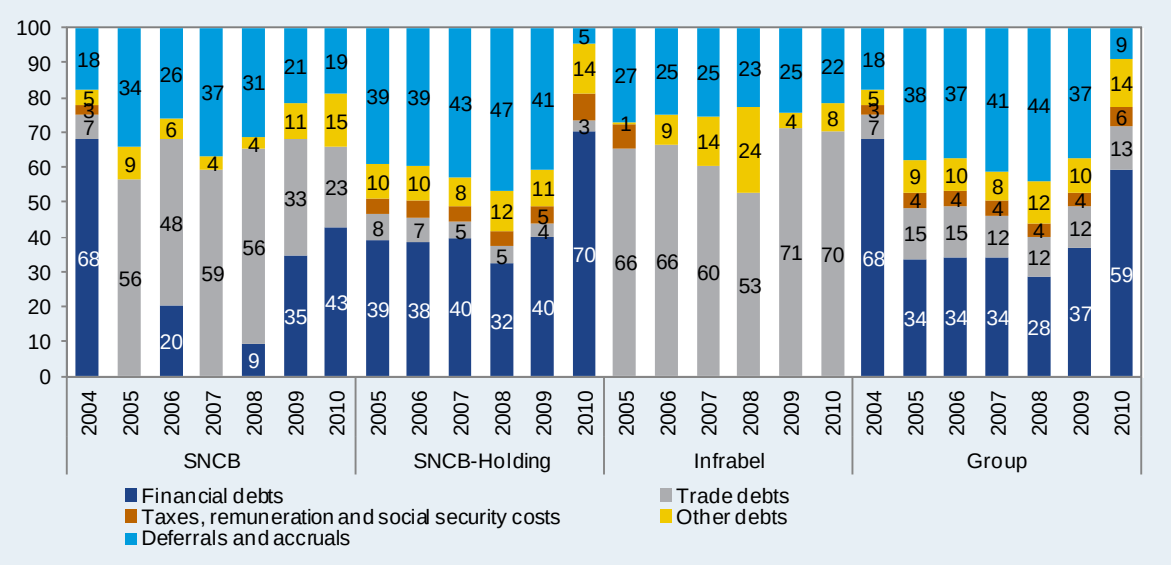
A breakdown of the SNCB Group's debt by source (charts 34 and 35) clearly shows the decrease in the group's financial debt following the restructuring. It also shows, in chart 35, that the Holding company took in the balance of the financial debt, such that SNCB and Infrabel were able to get off the ground without any financial debt.

Chart 34: Debt* of the SNCB Group by source (€ millions)



Source: NBB (Central Balance Sheet Office).
* Total debt = balance sheet line 17/49.
Note: Figures for the individual group companies are added together to produce group figures.

Chart 35: Debt* of the SNCB Group by source (percentages)



Source: NBB (Central Balance Sheet Office).
* Total debt = balance sheet line 17/49.
Note: Figures for the individual group companies are added together to produce group figures.

At the group level, most of the debt stems from financial debt and, through 2009, liability adjustment accounts[80], which principally include the alternative financing operations with the Holding company. As we mentioned above, the debts related to these operations were no longer included in the Holding company's balance sheet in 2010 following a change in accounting methods. Accounting method changes also explain much of the increase in the Holding company's

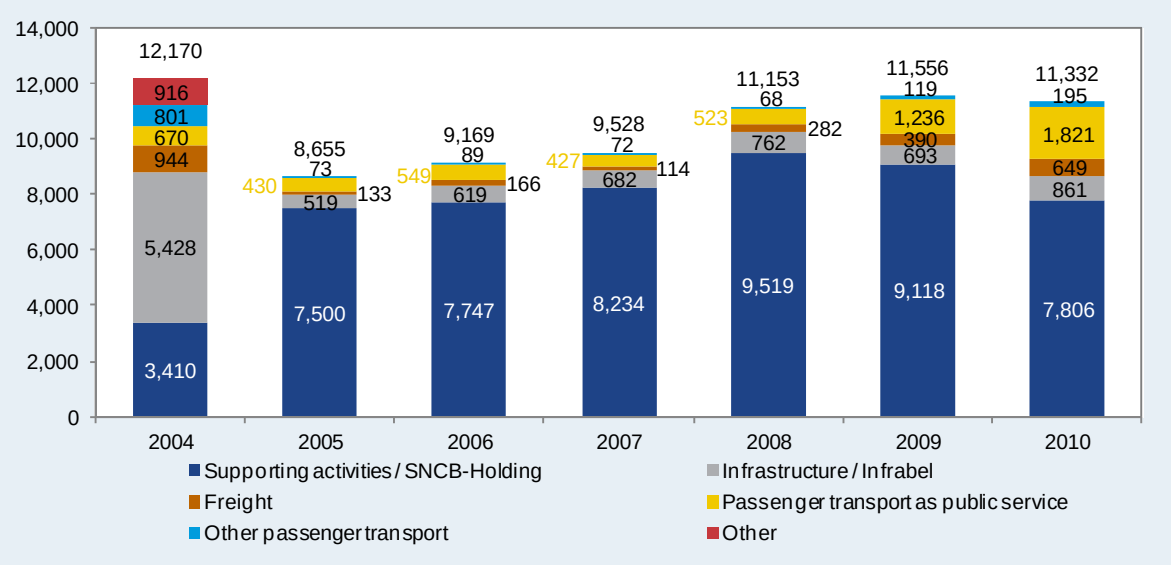
80 The adjustment accounts on the asset and liability sides of the balance sheet include income and charges booked during the financial year in respect of a subsequent financial year. These are generally charges that are spread over several financial years, as well as deferred income and charges.

financial debt, and thus that of the group, in 2010. The increase in the group's financial debts in 2010 is also attributable to SNCB the operator, whose financial debts have risen sharply since 2008 (+1,265%), to the point where they became the principal type of debt in 2010, ahead of trade debts. The latter remain the principal type of debt at Infrabel.

The charts below show the breakdown of SNCB Group debt by business segment, first in absolute terms (chart 36), then in relative terms for the SNCB Group (chart 37) and SNCB the operator (chart 38). In 2004, when SNCB was a unified entity, most of the debt was split between infrastructure (45%) and support activities (28%). These two sectors together totalled €8.8 billion of debt. In 2005, the company's reorganisation and the transfer to RIF significantly altered the breakdown of debt among the group's various business segments. For example, the portion of debt related to infrastructure fell to 6% of total debt with the creation of Infrabel, whereas debt stemming from support activities jumped to 87% if we include the debt of SNCB-Holding[81]. Debt related to transport (passengers and freight) has fallen considerably under the new structure, from €2.4 billion to €0.6 billion (-74%).

However, the reduction was not accomplished to the same extent for all three of the operator's business segments. Whereas the debt of the freight transport segment and that of the international passenger transport segment fell by respectively 86% and 91% between 2004 and 2005, that of the public service passenger transport activity fell by only 36%. As a result, debt related to the public service activity has taken on much greater importance in the overall debt of SNCB the operator, climbing from 28% in 2004 to 68% in 2005 (chart 38). In light of these figures, we can assume that when SNCB was restructured, it sought to reduce the debt burdens of the segments whose markets were to be liberalised by more than that of the segment that would remain a public service.

Chart 36: Debt* of the SNCB Group by business segment (€ millions)



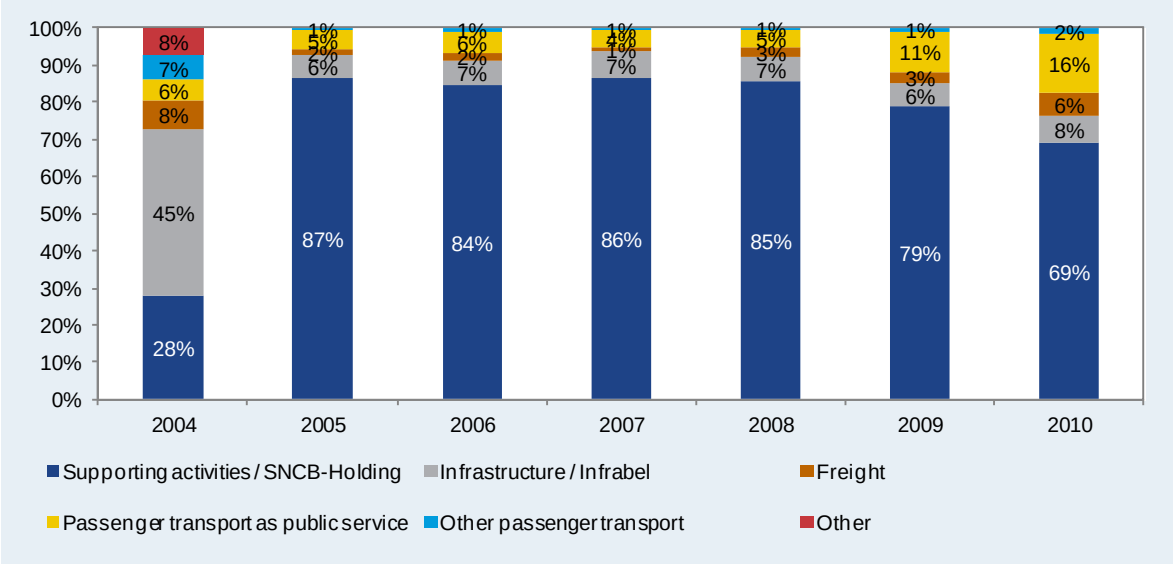
Source: NBB (Central Balance Sheet Office).
* Total debt = balance sheet line 17/49.
Note 1: For 2008, 2009 and 2010, the total balance sheet debt of SNCB listed by business segment do not correspond to the total debt of SNCB's statutory balance sheet.
Note 2: Figures for the individual group companies are added together to produce group figures.

Between 2005 and 2007, the debts of the rail operator's three segments fluctuated within the same proportions (chart 36), which explains the lack of change in the breakdown of debt seen in chart 38. In 2008, debt related to freight transport more than doubled (+148%) to 32% of the operator's debt, close – in relative terms – to its 2004 level of 39%. This trend, which continued in 2009 and 2010,

81 Note that the activities of SNCB-Holding are probably not entirely equivalent to what was called "support activities" under the unified SNCB.

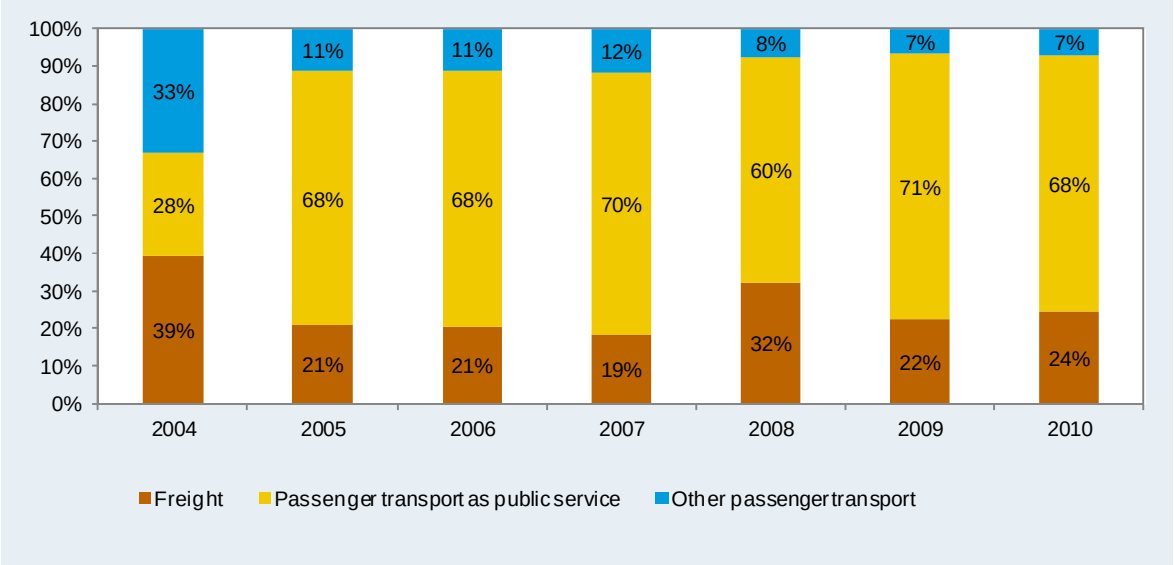
is worrisome for SNCB in a freight market where the operator faces greater competition every year (see above).

Chart 37: Debt* of the SNCB Group by business segment (percentages)



Source: NBB (Central Balance Sheet Office).
* Total debt = balance sheet line 17/49.
Note: Figures for the individual group companies are added together to produce group figures.

Chart 38: Debt* of SNCB the operator by business segment (percentages)



Source: NBB (Central Balance Sheet Office).
* Total debt = balance sheet line 17/49.

As shown in chart 33, the operator's debt increased significantly in 2009 and 2010 in all three business segments (chart 36), such that in relative weight of each segment's debt did not change much. The weight of the public service activity, however, increased marginally to 71% of the operator's total debt in 2009 and 68% in 2010. Of the SNCB operator's three business segments, it is the public service activity that made the biggest contribution to its debt between 2008 and 2010, with an increase of 248% compared with 130% for freight transport and 188% for international passenger transport.

4.2.4. ANALYSIS OF THE RATIOS

Analysis using ratios makes it possible not just to study debt and costs, but to get a fuller picture of SNCB's financial health before and after its reorganisation. We have looked at ratios covering

value added (Table 6), profitability (Table 7), solvency (Table 8) and investments (Table 9). The formulae used to calculate these ratios are provided in Annex 1.

At the overall SNCB Group level, we note few changes in the value added ratios after the restructuring, apart from those related to interest expense. As a reminder, much of the group's debt was transferred to RIF, which explains the sizeable drop in Ratio 3 from 2005. The value added ratios are often unavailable for SNCB the operator because the company's value added is negative every year except 2007, when interest expense as a share of value added was much higher at SNCB than at Infrabel or the Holding company.

Personnel costs as a share of value added (Ratio 1) are fairly high. This ratio actually rose significantly in 2009 at the group level due to a drop in value added whereas personnel costs remained constant.

Table 6 also highlights the high level of depreciation, value impairments and provisions as a share of value added (Ratio 2) at both Infrabel and SNCB. The ratios of over 100% (except in 2005 for Infrabel) mean that net value added[82] is negative for the two companies. Among the few figures available by SNCB business segment, we note that passenger transport as a public service activity had a strongly negative net value added in 2005 and 2006, unlike other passenger transport, where the ratio was under 100%.

Table 6: Value added ratio for SNCB Group companies (percentages)

			2003	2004	2005	2006	2007	2008	2009
1	Share of staff costs in value added	SNCB-Holding			91.8	91.3	89.9	89.9	93.2
		Group	87.2	85.9	91.7	88.8	86.4	90.6	105.4
2	Share of allocations to depreciation, impairments and provisions for contingencies in value added	SNCB-Holding			3.8	2.1	2.7	2.4	8.6
		SNCB					979.6		
		o/w F							
		o/w PSP			*1717.6*	*547.6*			
		o/w OP					*57.8*	*70.9*	
		Infrabel			98.1	133.1	138.1	122.4	533.9
		Group	16.5	14.6	14.7	13.1	11.1	15.1	33.7
3	Level of borrowing costs in relation to value added	SNCB-Holding			5.2	6.7	7.9	8.1	6.1
		SNCB					25.5		
		Infrabel			0.7	1.9	0.7	1.0	2.4
		Group	9.4	12.5	5.3	6.7	7.7	8.3	7.3

Source: NBB (Central Balance Sheet Office).
Note 1: Ratios for the individual group companies are added together to produce group ratios. Before 2005, the group refers to the unified SNCB.
Note 2: Empty cells = figures unavailable.
Note 3: F = freight transport; PSP = public service passenger transport; OP = other passenger transport. Based on annual accounts by business segment.

Table 7 shows that the group's profitability improved after the restructuring, even though with the exception of 2007, net return on equity after tax (Ratio 4) remained negative. This trend in the ratio is chiefly attributable to two factors. On the one hand, financial year losses at the group level were lowered, principally through a substantial increase in the capital subsidies granted by public authorities and recorded in the income statement (line 9125 in the annual accounts); from around €10 million per year before the restructuring, these rose to more than €200 million for the group as a whole between 2005 and 2007, €475 million in 2008 and €2.2 billion in 2009. In addition, the significant increase in share capital (paid-in capital and capital subsidies) following the creation of

82 Net value added is obtained by subtracting depreciation, value impairment and provisions for contingencies and charges from gross value added. Unless otherwise indicated, the term "value added" refers to gross value added.

the new structure made it possible to reduce the size of losses relative to equity capital and thus improve the ratio.

Table 7: Profitability ratios of the SNCB Group companies (percentages)

			2003	2004	2005	2006	2007	2008	2009
4	Net return on equity after tax	SNCB-Holding			-0.7	-3.6	2.4	-3.9	6.9
		SNCB	-1615.1[g]	-709.0[g]	-2.7	-2.2	-0.5	-3.9	-14.8
		o/w F	*-33070.3*	*-16622.0*	*-9.6[e]*	*-9.7[e]*	*-5.4[e]*	*-16.7*	*-40.5*
		o/w PSP	*-581.7*	*-166.0*	*-0.1[e]*	*0.3[e]*	*0.2[e]*	*-2.2*	*-11.8*
		o/w OP	*-3458.6*	*-892.3*	*-7.7[e]*	*-4.9[e]*	*2.4[e]*	*1.7*	*-9.3*
		Infrabel*	44.0	108.3	1.2	0.9	1.2	0.8	0.5
		Group	-8.6	-17.6	-0.5	-0.9	0.9	-0.6	-1.5
5	Net return on total assets before tax and debt charges	SNCB-Holding			1.0	0.8	1.8	0.8	2.1
		SNCB			-2.1	-1.6	-0.4	-3.0	-9.6
		Infrabel			1.1	0.8	1.1	0.8	0.5
		Group	-0.8	-0.5	0.4	0.3	1.2	0.2	-0.5

Source: NBB (Central Balance Sheet Office).
* Before 2005, Infrabel refers to the "Infrastructure" segment of the unified SNCB, based on annual accounts by business segment.
[e] Estimate.
[g] Composite ratio for the F, PSP and OP segments, based on annual accounts by business segment.
Note 1: Ratios for the individual group companies are added together to produce group ratios. Before 2005, the group refers to the unified SNCB.
Note 2: Empty cells = figures unavailable.
Note 3: F = freight transport; PSP = public service passenger transport; OP = other passenger transport. Based on annual accounts by business segment.

Looking at the companies individually, we note that Infrabel is the only group company with a positive net return on equity after tax each year. This performance is due to the subsidies it receives from public authorities and books in its income statement (line 9125 of the annual accounts), which more than offset a perennially negative operating result (line 9901 of the balance sheet). The Infrabel ratios for 2003 and 2004 refer to the infrastructure division of the then-unified SNCB, and are thus taken from SNCB's accounts by business segment, which makes them hard to compare with ratios in subsequent years. The SNCB Infrastructure division had around 30 times less capital than Infrabel but a higher annual result, which changes the ratio's order of magnitude substantially.

For SNCB the operator, the subsidies it receives do not allow it to offset operating losses, except in 2007, when exceptional costs (value impairments to non-current financial assets) nevertheless contributed to a negative annual result. SNCB ratios by business segment show that the only sector in which SNCB faces competition (see below), the freight transport segment, has the weakest profitability and has been a drag on the operator since 2007. This is also the only segment to experience negative profitability each year. Despite the subsidies, the public service passenger transport segment is barely profitable, generating only a weakly positive margin in 2006 and 2007. International passenger transport, which is not subsidised, managed to turn a profit in 2007 and 2008.

The holding company posted an operating profit each year from 2005 to 2008, but the profit was wiped out by financial and exceptional results in 2005, 2006 and 2008, which explains the negative sign for ratio 4 in those years. Paradoxically, the only year in which the holding company earned a negative operating result was the year for which the company has the highest profitability ratio (6.9 in 2009). The operating loss was offset by subsidies from public authorities (line 9125), which increased significantly that year, to €248 million from €55-60 million per year in earlier years.

The same conclusions can be drawn from analysing the net return on total assets before tax and interext expense (Ratio 5). The absence of interest expense in calculating this ratio explains why it is positive where ratio 4 is negative. Note that taxes do not affect the differences between ratios 4 and 5, because SNCB Group companies did not pay any taxes during the period in question.

The group's solvency (Table 8) improved significantly after the railway company's restructuring and has not stopped improving since. As a reminder, part of the group's debt was transferred to a separate fund, then to the State. Furthermore, as mentioned earlier, group equity capital increased substantially following the creation of the new SNCB and Infrabel. These two factors explain the relatively solid solvency of Infrabel and, to a lesser extent, that of SNCB. The holding company's solvency is not as solid because it was the entity that took over most of the debt the group had in 2005, which explains why its solvency deteriorated from that year onward.

At the level of SNCB the operator's business segments, the freight transport division has had the weakest solvency each year, and its solvency deteriorated considerably in 2009. Since 2006, the international passenger transport division has been more solvent than the public service passenger transport activity.

Table 8: SNCB Group companies' solvency ratios (percentages)

			2003	2004	2005	2006	2007	2008	2009
6	Solvency	SNCB-Holding*	43.9	27.2	17.1	16.6	17.3	14.7	16.4
		SNCB	0.8[g]	0.6[g]	77.0	75.0	80.5	78.7	66.2
		o/w F	*0.0*	*0.0*	*73.3*[e]	*72.7*[e]	*80.0*[e]	*61.1*	*47.1*
		o/w PSP	*2.0*	*1.8*	*78.0*[e]	*75.4*[e]	*80.4*[e]	*78.9*	*64.2*
		o/w OP	*0.4*	*0.3*	*77.0*[e]	*76.9*[e]	*81.5*[e]	*81.7*	*71.7*
		Infrabel*	3.0	3.1	87.4	87.0	87.6	93.6	94.6
		Group	24.8	12.3	47.2	48.1	50.3	59.2	59.6

Source: NBB (Central Balance Sheet Office).
* Before 2005, SNCB-Holding and Infrabel refer to the "Support activities" and "Infrastructure" segments of the unified SNCB, based on annual accounts by business segment.
[e] Estimate.
[g] Composite ratio for the F, PSP and OP segments, based on annual accounts by business segment.
Note 1: Ratios for the individual group companies are added together to produce group ratios. Before 2005, the group refers to the unified SNCB.
Note 2: F = freight transport; PSP = public service passenger transport; OP = other passenger transport. Based on annual accounts by business segment.

Infrabel has the highest investment ratios (Table 9). As the infrastructure manager, Infrabel must invest in the infrastructure every year (TGV, RER, capacity maintenance and expansion, etc.). Infrabel's investment ratios were significantly higher in 2005, the year in which some of the former SNCB's property, plant and equipment was transferred to the infrastructure manager, and in 2008, due to the transfer to Infrabel of RIF assets (principally property, plant and equipment) as part of the transfer of RIF debt to the State (see above). As a result of these transactions, the group's investment ratios ballooned in those two years.

Table 9: SNCB Group companies' investment ratios (percentages)

			2003	2004	2005	2006	2007	2008	2009
7	Acquisitions of tangible fixed assets in proportion to value added	SNCB-Holding			7.3	8.8	19.8	20.0	44.3
		SNCB					3362.4		
		Infrabel			3298.6	1412.9	1023.8	7730.0	1990.6
		Group	65.8	67.9	247.8	55.7	67.2	364.7	128.3
8	Acquisitions of tangible fixed assets in proportion to tangible fixed assets at the end of the previous year	SNCB-Holding			1.3	16.6	31.0	30.5	76.7
		SNCB				7.4	10.4	14.4	15.0
		Infrabel				41.8	25.2	194.4	10.8
		Group	14.2	13.7	42.5	21.5	20.6	100.0	17.5

Source: Central Balance Sheet Office.
Note 1: Ratios for the individual group companies are added together to produce group ratios. Before 2005, the group refers to the unified SNCB.
Note 2: Empty cells = figures unavailable.

In conclusion, an analysis of ratios shows that restructuring the railway company has had material consequences in terms of solvency, profitability and investments. Solvency improved and the

weight of interest expense relative to value added decreased following the transfer of a portion of SNCB's historical debt to RIF. The group's profitability improved due chiefly to the increase in subsidies booked in the income statement (line 9125 of the annual accounts). Lastly, investment ratios increased substantially due to the transfer of certain assets (when the subsidiaries were created and RIF was restructured), which inflated the measurement for acquisition of property, plant and equipment. Thus, it appears that the principal changes reflected in these ratios are rather artificial in nature.

Furthermore, the SNCB Group is characterised by relatively good and improving solvency, and high investment ratios, but also by a significant level of personnel costs relative to value added; moreover, at Infrabel and SNCB the operator, net value added is negative.

Analysing the ratios by SNCB business segment confirms the poor financial health of the freight division, which was already apparent from a review of the total debt and operating costs of the rail operator. These results are particularly worrisome for SNCB considering the liberalisation of the freight market, where competition is steadily increasing.

4.3. CONCLUSION

For Belgium, the rail reform initiated by the European Union has resulted in significant changes for the incumbent rail operator, but has not materially altered the Belgian rail transport landscape.

While still owned by the State, in 2005 SNCB changed from a unified structure to a holding company model in which the rail operator – SNCB – and the infrastructure manager – Infrabel – are held by a parent company – SNCB-Holding. This holding company structure can raise questions regarding the companies' independence in crucial areas of infrastructure management vis-à-vis the incumbent operator, especially because only five Member States have opted for such a model. In the case of Belgium, however, European authorities have for now dropped their concerns regarding the model.

Despite the liberalisation of the freight market in 2003, SNCB still had a market share of more than 80% in 2010. That said, its share has been declining steadily since 2006 due to the expansion of its two principal rivals, Crossrail and Captrain (SNCF subsidiary). The precarious position of the SNCB's freight division compared with the operator's other business segments in terms of operating result, solvency and profitability (which is negative every year), and the deterioration of its financial situation in 2008 and 2009 (increase in total debt and operating deficit, decrease in profitability and solvency) are unlikely to strengthen the incumbent operator's position in this market. Moreover, we note that 2009, which was particularly poor in financial terms for SNCB Logistics, was also the year in which the operator saw its biggest decline in market share. However, plans to spin off the SNCB's freight division into a subsidiary and scale back its activities could change the situation.

Considering the number of companies authorised to operate on the Belgian rail network, it is likely that there will be other competitors to enter the freight market, even though certain barriers to entry remain from a practical standpoint. These new players, often subsidiaries of international corporations, raise the question of the impact that competition is having on the consolidation of European railway companies. With respect to passenger transport, the international market for which was liberalised on 1 January 2010, no company has yet emerged to challenge SNCB's monopoly in Belgium. Rail operators appear to prefer cross-border alliances to head-on competition, as witnessed by the agreements between SNCB and its various foreign partners to operate Thalys and Eurostar trains, which are SNCB's principal source of revenues in this market. However, Deutsche Bahn's desire to compete with Eurostar in the Channel Tunnel may at some point challenge this policy of partnerships among European operators.

The reorganisation of rail sector institutions has also led to a substantial increase in the subsidies that it receives. These rose from an average of €1.5 billion over the period 1992-2004 to €3 billion on average in 2005-12 according to management contract estimates. Infrastructure operating subsidies, however, have decreased in order to give Infrabel greater financial autonomy. For the SNCB Group, we note that the lion's share of the €2 billion to €3 billion in subsidies it receives every year (past and forecast) go to SNCB the operator. The operator receives principally operating subsidies, unlike Infrabel and the Holding company, which receive mostly investment subsidies. The operating subsidies received by the rail operator represent around 40% of its revenues, which is a higher ratio than before the restructuring.

A financial analysis of the SNCB Group allowed us to identify several points of concern. The group's total debt has experienced a structural increase over the period under review (2000-2010). When the railway company was restructured, the transfer of a portion of its debt to a separate fund (and then later to the State) did enable the group to substantially lower its debt, but did not reverse the upward trend, such that in 2009, total group debt was again approaching its pre-restructuring level.

The composition of total debt and its breakdown by business segment also changed significantly after the restructuring. In 2004, the unified SNCB's debt was principally financial in nature, whereas from 2005, adjustment accounts – basically comprising the Holding company's alternative financial operations – took up the biggest share. With respect to business segments, there has been a reallocation of debt at two levels. At the group level, first of all, the majority of the debt remaining in SNCB's accounts was taken over by the Holding company at the time of the reorganisation. As a result, the support activities (performed by the Holding company) became responsible for a majority of the debt, even though in 2004 most of the debt was related to infrastructure activities. Furthermore, at the level of SNCB the operator, public service passenger transport activities are now responsible for the majority of the company's debt; prior to the restructuring, the breakdown of debt was relatively balanced among the three business segments (freight transport, public service passenger transport, and other passenger transport).

The restructuring of the incumbent rail operator appears to have gone hand in hand with a significant increase in its revenues and associated costs. However, when internal costs are taken into consideration, based on the annual accounts by business segment, we note that revenues and associated costs remained fairly stable. Trends in the group's operating income and costs were similar, except for SNCB, whose revenues are significantly lower than its costs every year. This operating deficit is principally due to the operator's freight division, which exhibits the biggest operating deficit in relative terms every year (with the exception of 2007).

In addition to examining debt and costs, an analysis of SNCB's annual accounts by using ratios highlights the changes in the company's financial structure before and after its restructuring on the one hand, and developments in subsequent years on the other. The improvements in solvency and profitability that followed the restructuring have been, like the improvement in investment ratios, rather artificial (debt transfers, increased subsidies, intragroup asset sales). However, the group's solvency has continued to improve over the years due to an increase in equity capital and despite rising debt, driven by good solvency at Infrabel and, to a lesser extent, SNCB the operator. The group's profitability has improved but, by contrast, remains either negative or slightly positive, depending on which ratio is used. The group is also characterised by high personnel costs as a share of value added and, for Infrabel and the SNCB rail operator, negative net value added.

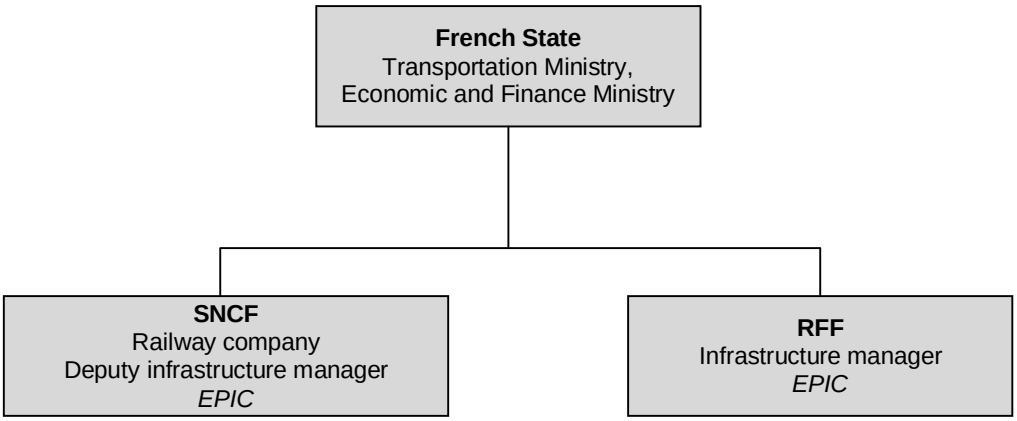
5. THE REFORM OF THE RAILWAYS IN FRANCE

5.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY

5.1.1. BACKGROUND

In France, the incumbent rail operator is Société nationale des chemins de fer français (SNCF). It has had the status of state-owned industrial and commercial enterprise (Etablissement public industriel et commercial, or EPIC) since 1983. Under this legal framework, SNCF is controlled by the French State (Transportation Ministry and Economic and Finance Ministry), with whom it decides upon project specifications and multi-year "planning contracts". The separation between the rail operator and the infrastructure manager required by Directive 91/440 was enacted by Act no. 97-135 of 13 February 1997 "creating the State-owned entity Réseau Ferré de France (RFF) for the purpose of reorganising French rail transport". As its name suggests, the new law gave birth to RFF, the new rail infrastructure manager. This new EPIC was placed under the authority of the same ministries that oversee SNCF (Figure 3). RFF was given ownership of the rail infrastructure, then valued at €22.4 billion, in exchange for assuming a portion (€20.5 billion) of SNCF's debt (Cour des comptes, 2008, p. 111)[83].

Figure 3: Institutional organisation of the rail sector in France



Source: NBB.

This reorganisation was unique in many ways. To begin with, the transfer of rail infrastructure ownership did not go smoothly, giving rise to a lawsuit between SNCB and RFF. For more than a decade, the two companies have been unable to agree on the scope of the asset transfer, which is quite a concern for two companies whose activities are closely linked and must work together on a daily basis.

In addition, the debt taken over by RFF was not recorded in the public debt in the sense of the Maastricht treaty, even though RFF belongs to the State. This accounting distinction was critical, because 1997 was the year in which France had to qualify for euro zone membership. The argument made for excluding RFF's debt from public debt had to do with the company's revenue source. Under French national accounting standards, the royalty payments railway companies make to RFF to use the rail network are considered to be a sale of services. Because the total royalty payments represent more than half of its operating costs, RFF is classified in the national accounts as a commercial enterprise, outside the scope of public administration (Cour des comptes, 2008, p. 3). Here we can see the difference with Belgium, where Eurostat insisted that the SNCB debt assumed by RIF (which does not receive royalties) be classified as public debt under Maastricht (see chapter 4).

83 The option under Directive 91/440 of creating a separate debt amortisation unit in order to clean up the finances of incumbent railway companies had already been exercised in France in 1991 with the creation of the Special Debt Amortisation Service (*Service annexe d'amortissement de la dette*, or SAAD).

But the real uniqueness of the French case is in the breakdown of tasks between RFF and SNCF. The transfer of infrastructure ownership and management to RFF was not accompanied by a transfer of human resources due, according to the Cour des comptes (2008, p. 3), to agreements with unions that have always fought for a unified SNCF. Whereas around 55,000 SNCF employees out of a total of 170,000 were assigned to infrastructure in 2006 (Cour des comptes, 2008, p. 2), RFF has fewer than 800 employees (Table 10). RFF thus outsources much of its duties to SNCF, which is consequently the delegated infrastructure manager. According to the Cour des comptes (2008, p. 2), this situation is "unique in Europe, and perhaps in the world". As a result, there is a legal separation between infrastructure management and network operation, as required by the European Union, but not a de facto one.

Table 10: Number of employees at the SNCF and RFF EPICs (units)

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
SNCF (EPIC)*	180,254	175,328	170,868	168,313	166,140	163,417	161,710	157,832
RFF	521	588	691	761	843	939	1,166	1,299
o/w personnel provided by SNCF	*85*	*88*	*86*	*73*	*73*	*68*	*61*	*62*

Source: RFF annual reports and SNCF Group financial reports.
* Excluding personnel provided to RFF.

RFF is the project manager for network investment projects. In this respect, RFF is responsible for funding, developing and extracting value from the French rail network (railways, telecommunications facilities, buildings used for operations and maintenance), and orders and pays for work done by the general contractor. RFF can perform its duty of project manager directly or delegate it to a representative, usually SNCF.

Furthermore, RFF sets the targets for the following duties, which French law[84] requires it to delegate to SNCF (Cour des comptes, 2008, p. 15):

- technical studies necessary when reviewing train path requests and creating the circulation chart[85];
- operational management of circulation (switching stations) and traffic regulation and safety systems;
- monitoring, maintenance, repairs and other measures necessary to network operation and safety.

The first two duties (circulation chart and circulation management) correspond to "operating" the network, and the third, to network "maintenance". An agreement must specify how these duties are to be defined, executed and compensated. The first duty is critically important in the context of opening the market to competition, because it is a step in the process of allocating train paths, which is RFF's responsibility. Involving the incumbent operator in this task may call into question the neutrality of the procedure for allocating infrastructure capacity among the various operators.

RFF compensates SNCB for network management, whereas SNCF pays RFF royalties (tolls) for infrastructure usage. In 2007, for example, RFF paid €3.8 billion to SNCF, which paid €2.7 billion in tolls to RFF[86]. The function of these royalties is three-fold (Crozet 2010). First of all, they allow a reduction in the subsidies that the State pays to the infrastructure manager. In addition, the tolls are also a signal to users. In high-traffic areas, train paths are a scare resource and access costs are one way to reflect this scarcity and encourage the incumbent operator to boost productivity in order to use the resource efficiently, while also regulating demand and financing a portion of capacity

84 Decree of 5 May 1997 implementing the Act of 13 February 1997.
85 The circulation chart shows all available train paths and their usage throughout the year.
86 http://www.sncf.com/.

investments. But tolls also work to protect the incumbent rail operator (Crozet, 2010; Gómez-Ibáñez and de Rus, 2006). The higher the toll, the less likely competitors are to step forward. As Crozet (2010) explains, there is a trade-off between developing the network and encouraging competition among operators. Encouraging competition lowers costs for users. This means lowering access costs to a level equal to the marginal cost. Because this is a constraint on the public funding activity, it reduces network development. On the other hand, protecting the public funding activity through high tolls encourages more network development, but puts a damper on competition.

In France, the continual rise in tolls since their introduction in 1997 (Table 11) has not encouraged the emergence of new operators, particularly for the high-speed TGV, which is by far the type of train that accounts for the largest share of RFF infrastructure access revenues. Tolls for TGV trains are much higher in France than in neighbouring countries (chart 39), which could mean that France has chosen to promote network development and the State-owned SNCF and RFF companies rather than cultivate competition. The high level of tolls, which for rail operators represent a cost of around 25% to 40% of revenues in the case of TGV trains (Nash 2009, pp. 18-19), also explains why international high-speed rail lines are run in partnership with other railway companies rather than through head-on competition.

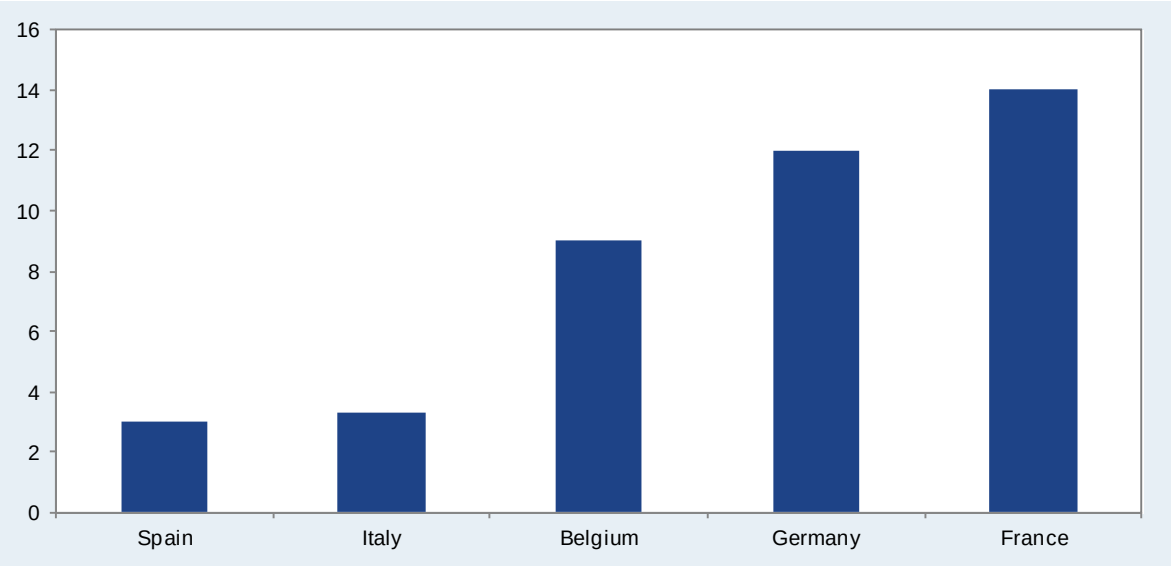
Table 11: Infrastructure access royalty revenues (€ millions)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2008e
TGV		139	616	635	752	897	934	993	944	1245
Long-distance passenger trains	211	126	154	156	154	165	151	198	163	164
Regional express trains	85	94	130	134	143	215	224	459	468	515
Serving greater Paris region	430	462	457	472	481	488	506	545	529	573
Freight	132	150	148	151	155	143	125	225	159	202
Other	34	-	-	-	-	46	38	41	22	31
Total	892	971	1505	1548	1685	1954	1978	2461	2579	2730

Source: Gómez-Ibáñez and de Rus (2006), Cour des comptes (2008).

In addition to the level of royalty amounts, the criteria used to set them may also prove a disadvantage to competing companies. In particular, the Cour des comptes (2004, p. 261; 2008, p. 51) noted that SNCF's "contributive capacity" is taken into account when setting toll amounts. The consideration given to one network user's contributive capacity is not justified by economic theory. Contributive capacity also depends on the user's other costs, those of its potential competitors, and the effectiveness of its commercial strategy. But tolls should reflect infrastructure costs and not the competitiveness of each railway company (Cour des comptes, 2008, p. 53). According to Gómez-Ibáñez and de Rus (2006, pp. 93-94), between 1997 and 2003, the amount of royalties paid was in practice determined after the fact, once SNCF's annual costs were known. This situation changed in 2004, when a system of setting tariffs two years in advance was adopted.

Chart 39: Access costs for a typical inter-city high-speed passenger train (€/train-km)



Source: International Transport Forum (2008).

The institutional reorganisation of the French rail system has been criticized both in France and at the European level. In France, the Cour des comptes (2008) and a report by Senator Haenel (2009) condemned the bilateral monopoly situation into which the law has placed RFF and SNCF. For example, RFF is both the sole supplier of access to the network for SNCF, the rail operator, and the sole client of SNCF's infrastructure division, supplier of infrastructure management services to RFF. This mutual dependence and divergent interests (on compensation owed by RFF to SNCF or liberalisation of the network, for example) is a source of ongoing conflict between the two EPICs which is detrimental to the smooth operation of the rail network. The Cour des comptes (2008) also lamented the unclear division of tasks between SNCF and RFF, which has led to confusion regarding responsibilities and a host of malfunctions with respect to, for example, setting timetables, allocating train paths and scheduling infrastructure work. Gómez-Ibáñez and de Rus (2006), on the other hand, believe that coordination at the operating level between infrastructure operation and management is facilitated by the fact that these tasks are entrusted to a single entity, i.e. SNCF.

The structure of French entities is also a concern for European authorities. As mentioned in Chapter 2, in June 2010 the Commission referred France to the European Court of Justice for inadequate transposition of the first railway package, and notably a lack of independence for the infrastructure manager[87].

5.1.2. DEVELOPMENT ON THE FRENCH RAIL MARKET

France transposed the first railway package Directives with the Decree of 7 March 2003 "regarding use of the national rail network". The rail freight market was then completely liberalised on 31 March 2006, or nine months before the deadline imposed by the second railway package. Opening the market ahead of schedule was the condition imposed by the European Union for authorisation of €800 million in State assistance intended to restructure the freight division of SNCF (Haenel 2009, p. 18).

To operate in the French market, companies must have a licence and a safety certificate before they can request train paths from RFF. Licences are issued by the Transportation Ministry,

87 The referral to the Court of Justice marked the beginning of a legal phase of proceedings for failure to fulfil an obligation initiated by the Commission against the Member State. It follows a pre-litigation phase, also referred to as "infringement proceedings", officially comprised of two stages: the formal notice and the reasoned opinion. Only the pre-litigation phase was launched against Belgium.

whereas safety certificates are issued by the Etablissement public de sécurité ferroviaire (EPSF), the French rail safety authority. This entity is an administrative public authority reporting to the Transportation Ministry[88]. In addition, the Railway Activities Regulatory Authority (ARAF), the national regulator, is in charge of making sure that railway companies' network access is equitable and non-discriminatory. The ARAF can issue rulings, resolve disputes or levy penalties. The authority was created in December 2009 in accordance with Directive 2001/14/EC, but the actual start of its principal duties was postponed by the Law[89] of 1 December 2010, so it did not really begin operating until 2011, according to its website[90].

Table 12: Railway companies operating in France (at 18 July 2011)

Company	Date current safety certificate was issued	Date commercial service launched
B-CARGO (SNCB subsidiary)	5 July 2007	11 December 2006
EURO CARGO RAIL (DB Schenker Rail Group)	30 September 2010	13 May 2006 (under EWSI's certificate)
SNCF	28 June 2007	Prior to delivery of certificate
VFLI (SNCF Participations Group)	3 October 2007	4 October 2007
CFL CARGO (CFL and Arcelor Mittal subsidiary)	13 December 2007	4 February 2008
COLAS RAIL (rail division of the Colas Group)	31 July 2008	8 January 2007 (under SECO RAIL's certificate)
TSO	4 March 2009	29 July 2009
TRENITALIA	31 March 2010	22 February 2011
TRAIN DU PAYS CATHARE ET DU FENOUILLÈDES (TPCF)	19 May 2010	22 July 2010
CFR	21 July 2010	19 November 2010
EUROSTAR INTERNATIONAL LIMITED (SNCF = 55%)	30 August 2010	1 September 2010
EUROPORTE CHANNEL (Eurotunnel Group)	29 October 2010	26 November 2007 (under Europorte 2's certificate)
EUROPORTE FRANCE (Eurotunnel Group)	4 November 2010	13 June 2005 (under CFTA – Cargo's certificate)
ON SITE RAIL FRANCE (SNCB subsidiary)	18 November 2010	18 November 2010
CROSSRAIL BENELUX	25 November 2010	Launch scheduled for 2011
RENFE	27 June 2011	21 December 2010
SNCB LOGISTICS	14 April 2011	14 April 2011
ETF SERVICES	27 June 2011	5 July 2011
COMSA RAIL TRANSPORT	11 July 2011	Launch scheduled for 2011

Source: www.securite-ferroviaire.fr, Commission des comptes des transports de la Nation (2011).

88 http://www.securite-ferroviaire.fr/

89 Article 62 of Act no. 2010-788 of 12 July 2010 "regarding national environmental commitments", known as the "Grenelle II Act".

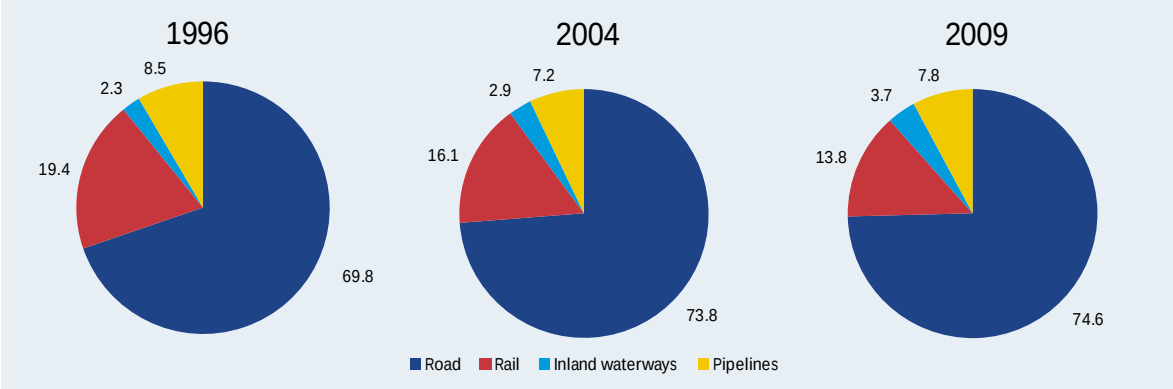
90 http://www.regulation-ferroviaire.fr/

The railway companies active in the French market are listed in Table 12. All of these companies operate in the freight market, with the exception of Eurostar and the incumbent Spanish operator, RENFE. However, these two companies do not really compete with SNCF in passenger transport, because SNCF is a majority shareholder in the former (55%) and partners with the latter on Franco-Spanish links.

5.1.2.1. Freight

In France, rail is the second most commonly used form of transport for freight after roadways (chart 40). The modal share of rail has fallen relative to 1996, but its number two ranking does not appear threatened. In 2009, rail transported 13.8% of the goods passing through France, compared with 74.6% for roads and 7.8% for oil pipelines.

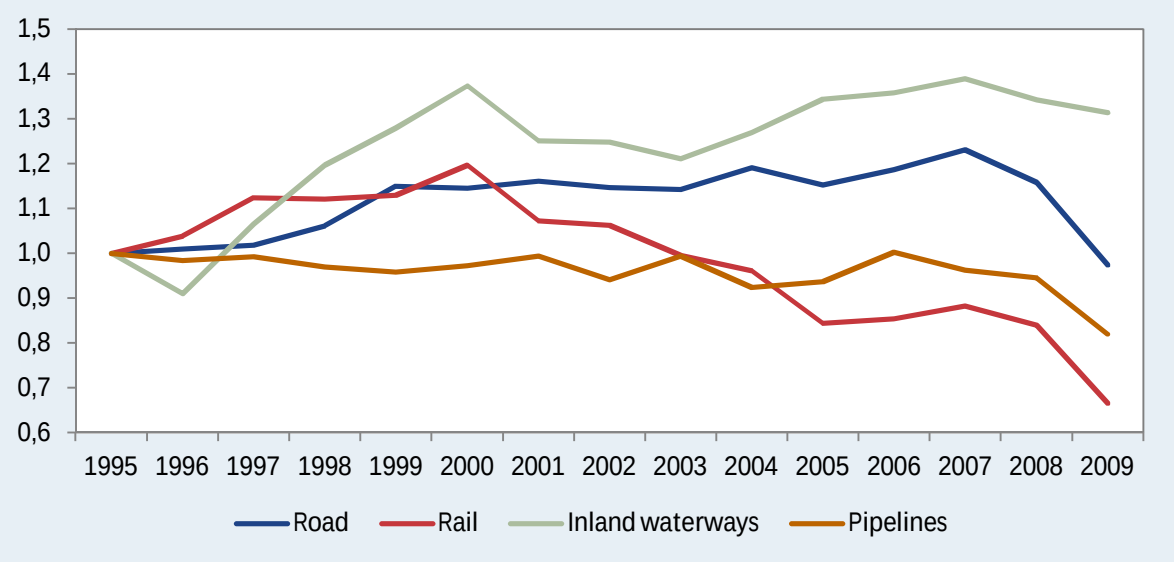
Chart 40: Modal share of freight transport in France (percentages based on tonne-kilometres)



Source: European Commission (2011).

The trend in freight volumes transported by rail (in tonne-kilometres) is worrisome. Since 2000, it has steadily declined, with the exception of an up-tick in 2006 and 2007. With a drop of more than 44% in nine years, it has lost more traffic than any other transport method (chart 41). In 1996, the year before rail reform, 50 billion tkm of goods were transported by rail, compared with 43 billion in 2007 and 32 billion in 2009 under the impact of the economic crisis, i.e. declines of 15% and 36% respectively.

Chart 41: Freight transport trends in France (index based on tkm, 1995 = 100)

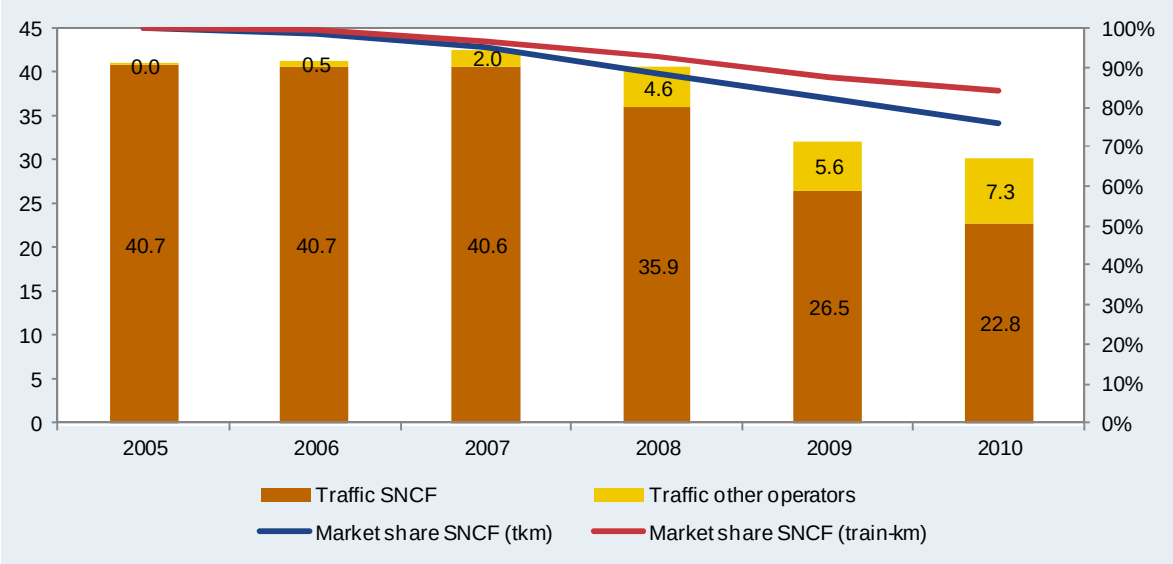


Source: European Commission (2011).

The first competing operator entered the market in 2005, running international traffic between the Meuse region and Germany. The train, operated by CFTA Cargo of the Connex Group (subsequently of Veolia and then Europorte France), was transporting lime. It was stopped for

several hours in France by rail workers from a variety of unions protesting the sector's privatisation (Haenel, 2009, pp. 18-19). The market share of the new entrants developed rapidly from 2007, even though overall traffic fell every year (chart 42). Whereas SNCF traffic fell by 40% between 2007 and 2010, that of its rivals more than tripled over the same period. If this pace were to keep up,[91] the competing operators would pass SNCF in 2012.

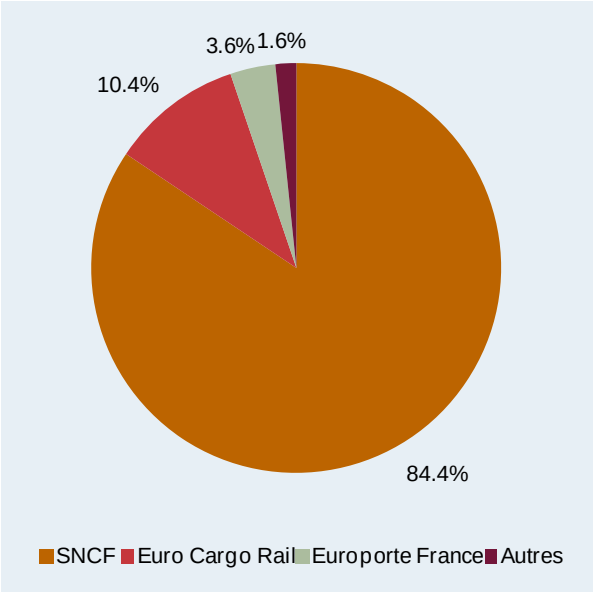
Chart 42: Trend in rail freight traffic in France (tkm) and SNCF market share (percentages)



Source: European Commission (2011), RFF financial reports, UIC and own calculations.

According to Grignon (2010, pp. 18-19), whose observations are based on SNCF figures, six alternative operators shared 16% of the market in 2009 (in train-kilometres). The leader among the new operators is Euro Cargo Rail (Deutsche Bahn subsidiary), with a market share of 10.4%, followed by Europorte France (merger between Europorte 2, Eurotunnel subsidiary, and Veolia Cargo France after the latter was acquired by Eurotunnel in late 2009) with 3.6% (chart 43). The other competing operators (Colas Rail, CFL Cargo and B-Cargo) represent only 1.6% of the market. According to RFF (2010, p. 9; and 2011, p. 9), however, the market share of new railway companies based on train-kilometres amounted to 7% in 2008, 12.5% in 2009 and 16% in 2010. Measured in tonne-kilometres, it was 24% in 2010.

Chart 43: French rail freight market share in 2009 (percentage based on train-kilometres)



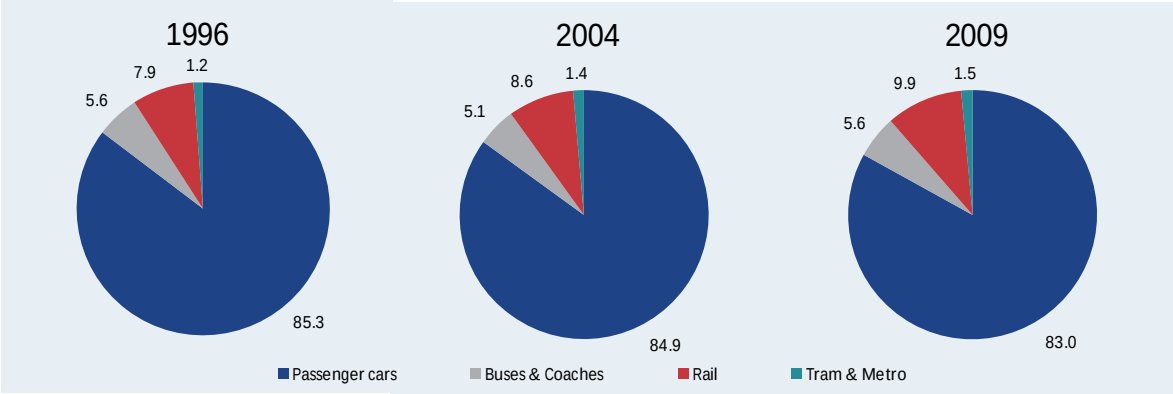
Source: Grignon (2010).

91 Average annual growth rate of -17% for SNCF and 54% for its competitors combined.

5.1.2.2. Passenger transport

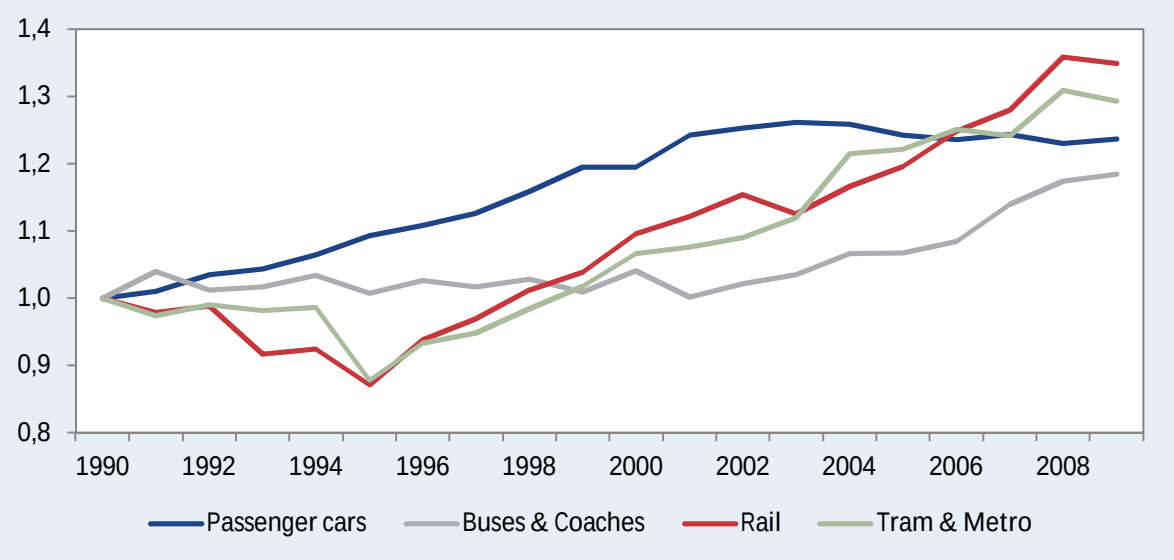
With respect to passengers, trains are the second most commonly used form of transportation after cars (83%) and ahead of buses (5.6%). Unlike freight, the modal share of rail for passenger transport is on the rise. In 2009, it was close to 10%, compared with 8% in 1996 (chart 44). Furthermore, rail is the form of transportation with the strongest growth in passenger-kilometres, at 35% in 1990-2009, compared with 24% growth for cars (chart 45). Rail traffic has more than doubled over the past 30 years.

Chart 44: Modal share of passenger transport in France (percentages based on passenger-kilometres)



Source: European Commission (2011).

Chart 45: Trend in French passenger transport (index based on pkm, 1990 = 100)



Source: European Commission (2011).

Despite this market growth, SNCF still maintains a monopoly. As is the case in Belgium, no alternative operator has yet entered the market, and international connections have so far been operated by partnerships among the incumbent railway companies[92]. That said, several competing operators have shown an interest. In November 2010, Veolia signed an agreement with railway company Trenitalia to create a service between Paris, Lyon and Turin[93]. Service is expected to start in 2012, but will initially use only night trains. Day trains are expected to run in the second phase (using Corail trains), and TGV service is to start in 2014 at the earliest. In December 2011,

92 Note that, as we mentioned in section 4, since 1 September 2010 Eurostar has been a standalone railway company. However, it cannot be considered a real competitor to SNCF because SNCF owns a 55% equity stake in Eurostar.

93 Escande, P. (2010), "Train à petite vitesse pour la concurrence ferroviaire", Les Echos.fr, 18 November.

Trenitalia and Veolia-Transdev (the new name for Veolia Transport since its merger with Transdev in March 2011) are opening a Paris-Venice line using night trains supplied by Thello, a joint subsidiary created specifically for the purpose.

A variety of obstacles may explain why competition has been slow to develop. The practical conditions for accessing the French rail network are unclear, notably the price of the royalties a new entrant would have to pay to RFF and exactly which lines are open to competition. As we mentioned above, the royalties that SNCF pays to RFF for the TGV are relatively high compared with other countries, which may dissuade potential entrants. Furthermore, the procedures for issuing licences, certifying personnel and granting technical approval for equipment (notably TGV high-speed trains) are so many administrative steps that can be difficult for new entrants to navigate. In addition, there is the unique nature of the French rail system, which still leaves substantial power in the hands of SNCF as delegated infrastructure manager, a power it can use to its advantage when it comes to allocating train paths, for example. In this respect, it is important to note the creation on 1 January 2010 of a rail circulation department (DCF) at SNCF. The DCF is in charge of managing traffic and circulation on behalf of RFF and is, according to the French government, independent of SNCF (Grignon 2010, p. 33).

5.2. FINANCIAL ANALYSIS

Following the presentation of the French rail market and the description of the sector's institutional reorganisation, this section examines the financial aspect of the reform. We briefly explain the organisation of the SNCF Group and analyse the trend in its financial results before and after the reform. We also examine the financial impact of French rail system reform in the light of the sector's total debt and the subsidies that it receives.

5.2.1. REVENUES AND SUBSIDIES

5.2.1.1. Revenues and results

Together, the SNCF EPIC and SNCF Participations[94] form the SNCF Group. The SNCF Group is organised into five business lines:

- "SNCF Infra", which manages and operates the rail network;
- "SNCF Proximités", which handles urban, suburban and regional public transport activities;
- "SNCF Voyages" (formerly "Voyageurs France Europe"), which covers transport for long-distance and high-speed rail passengers;
- "SNCF Geodis", which handles freight transport and logistics;
- "Gares et Connexions", which is in charge of train station management and development.[95]

The SNCF Group, via these divisions, is present in 120 countries spread over five continents. In the European market for international passenger transport, the group has developed principally through alliances. For example, in addition to its membership in the Railteam project,[96] the group has created joint ventures with the incumbent operators in neighbouring countries: Thalys and Eurostar (see section 4), Artesia (France-Italy connections in partnership with Trenitalia), Lyria (with CFF, links between Paris and Switzerland), Elipsos (50/50 JV with RENFE for Spain) and Alleo (with Deutsche Bahn, connections with Germany). According to the SNCF website,[97] the operator has a 53% market share of high-speed traffic in Europe and aims to double its revenues in

94 SNCF Participations is a holding company that manages most of the SNCF Group subsidiaries.

95 This new division was not included in the 2009 annual accounts.

96 See section 4.

97 http://www.sncf.com/.

this segment over the next four years through continued partnerships with other European operators.

For freight transport, the other market open to competition, the SNCF Group has made acquisitions in recent years that have made it, according to its 2009 annual report, the second-biggest rail freight transport company in Europe. The group acquired 75% of Import Transport Logistik (ITL) in 2008 and the remainder in 2010. ITL is a private German railway company present in the Netherlands, Germany, Poland and the Czech Republic. In 2009, the group bought the subsidiaries of rail operator Veolia Cargo in the Netherlands, Belgium, Italy and Germany. In Germany, Veolia Cargo is the biggest private freight transport operator via its subsidiary Rail4Chem (SNCF 2010b). Following these acquisitions, the group decided to rename its freight subsidiaries under the Captrain brand. This gave rise to Captrain Benelux, Captrain Deutschland and Captrain Italia. The SNCF Group is also present in the UK via Freight Europe UK, a logistic services company that became a rail operator in 2008[98]. Owned 100% by the SNCF Group, the company was rechristened Captrain UK when the group changed the name of its freight subsidiaries.

The trend in revenues (chart 46, left-hand scale) shows the SNCF Group's growth over the years. Between 1995 and 2009, revenues rose by 74%, from €14.3 billion to €24.8 billion, due notably to numerous acquisitions. For example, in 1995 the group's consolidation scope included 414 companies, compared with 912 in 2009. The biggest subsidiary, without question, is Géodis. This logistics company represented 73% of the consolidated revenues of SNCF Group subsidiaries in 1996 and 76% in 2007. In 2008, it became a fully-owned subsidiary of SNCF, which changed the name of its freight transport and logistics division to "SNCF Géodis" the following year.

The group's net result (chart 46, right-hand scale) has had more ups and downs than its revenues. Whereas the group posted losses of more than €2.5 billion in 1995 and 1996 (notably due to strikes in December 1995 and a deterioration in results linked to infrastructure management), it almost broke even in 1997 (loss of €92 million). This spectacular earnings recovery is chiefly attributable to the reform of the rail system and the creation of RFF. To begin with, the transfer of infrastructure ownership and a large portion of the group's debt to RFF enabled SNCF to reduce its depreciation charges and interest expenses by around €0.8 billion and €1.4 billion respectively in 1997. In addition, the SNCF began receiving two types of compensation annually from RFF starting in 1997: one for its role as delegated infrastructure manager and another for capital improvements made to the rail network on behalf of RFF. In 1997, the former was set at a lump sum of €2.6 billion and the latter, which depended upon project invoicing, amounted to €1.9 billion. Alongside these new revenue sources, it is also necessary to take into account the new SNCF royalty payment to RFF for infrastructure use (€0.9 billion) and the transfer of income associated with the rail network to RFF, which consists primarily of the State's contribution (€1.8 billion in 1997). Even so, the balance of all of these transfers was substantially positive for SNCF, amounting to €4 billion plus a reduction in interest expense from the transfer of an additional portion of SNCF debt to a separate debt amortisation unit (see below), a reduction estimated at €285 million in 1997.

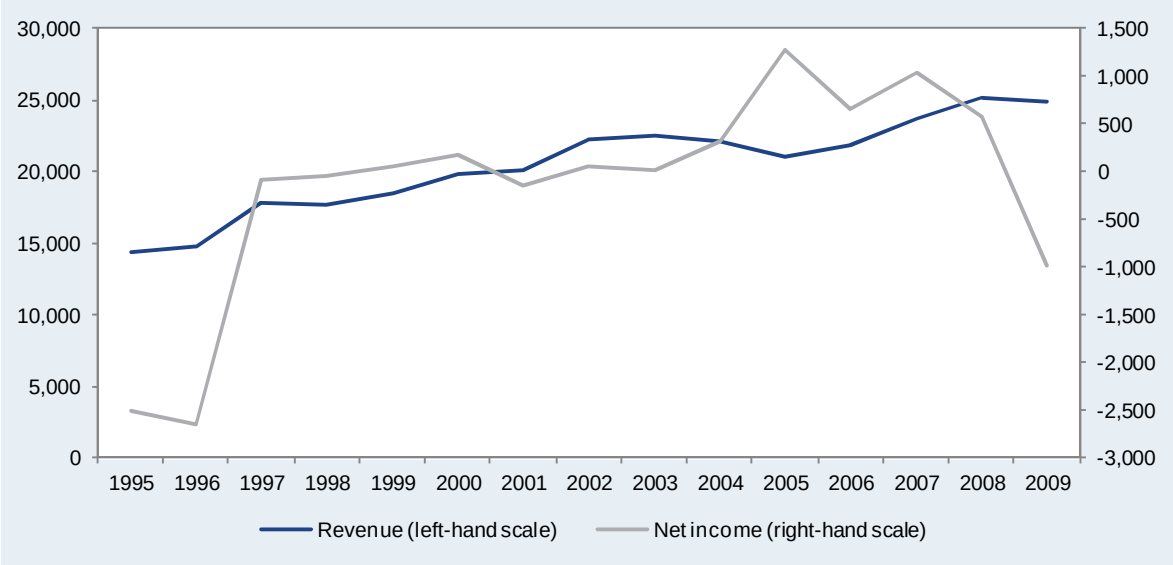
In subsequent years, the SNCF Group barely managed to generate a positive net result until 2005, when it earned a record net profit of €1.3 billion resulting from, among other things, asset sales and increased subsidies (see above), but also from good performances by the Freight division, which significantly reduced its operating loss, and the Passengers France & Europe division, whose operating profit is improving (chart 47). The trend in net results was also marked by a loss of €980 million in 2009 in the midst of the economic crisis.

In general, the Freight division has proven to be the SNCF Group's weakest link. The division has posted an operating loss every year except 2007 (chart 47). By contrast, the Passengers France & Europe division was the only one to earn an operating profit every year between 2003 and 2009,

98 Freight Europe UK (2007), " FE (UK) Ltd becomes Freight Operating Company", press release, 28 December.

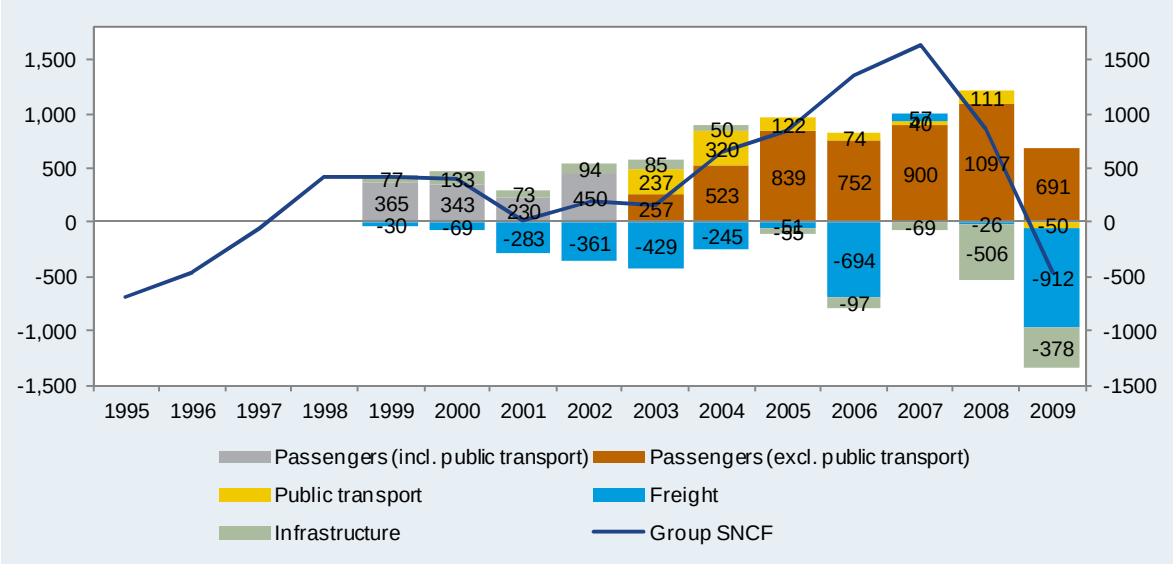
including a €1.1 billion profit in 2008 due notably to improvement in the TGV offering. This division also stands in contrast to the Infrastructure and Public Transport divisions, whose results have declined every year. Whereas the Public Transport division managed to earn an operating profit until 2008, the same cannot be said of Infrastructure, which posted operating losses from 2005. The losses kept growing thereafter, notably in 2008 due to asset write-down's.

Chart 46: SNCF Group revenues and net result (€millions)



Source: SNCF annual accounts.

Chart 47: Operating result by division (€ millions)



Source: SNCF annual accounts.
Note: Results by division are unavailable prior to 1999. From 2003, figures for the Passengers division are broken down into Passengers France & Europe and Public Transport.

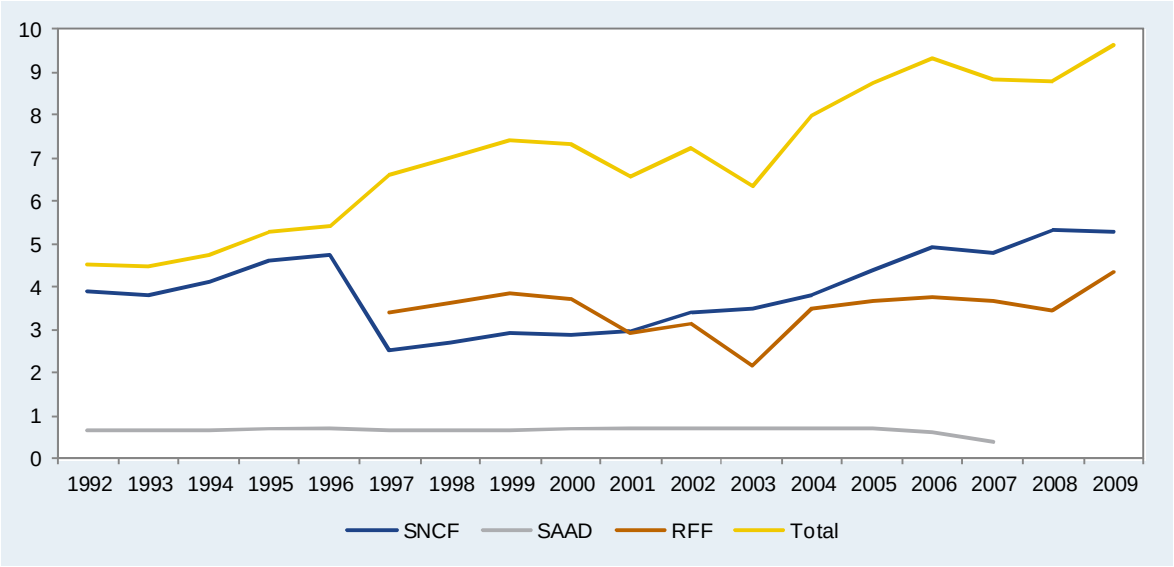
5.2.1.2. Subsidies

French government subsidies to the rail sector (chart 48) more than doubled over 17 years, from €4.5 billion in 1992 to €9.6 billion in 2009,[99] an increase of 113%. These subsidies include those paid since 1991 to the separate debt amortisation unit (SAAD) to help service the debt that was transferred to it (see below). From 1997, the total amount of subsidies paid to the rail sector rose

99 For the sake of consistency with data on Belgian subsidies, the annual share of SNCF pension costs borne by the State is not included in these figures. This portion amounted to €2.1 billion in 1995 and €3.2 billion in 2009.

significantly (+22% vs. 1996) owing to the creation of RFF. The amounts paid to SNCF for infrastructure costs are now paid to RFF, which also enjoys a capital grant and investment subsidies. Some of the subsidies paid to RFF are used to compensate SNCF for the duties it performs on behalf of the infrastructure manager (see above).

Chart 48: Payments by French public authorities to the rail sector (€ billions)



Source: Commission des comptes des transports de la Nation.
Note: Excluding the portion of SNCF pension costs borne by the State.

However, whereas subsidies to SNCF have continued to grow steadily since 1997, the total amount of subsidies paid to RFF began to decline in 2000, despite an increase in investment subsidies. Between 2001 and 2003, the planned RFF capital grant of €1.8 billion was never paid entirely by the State and was not paid at all in 2003 (Commission des comptes des transports de la Nation, 2004, p. 119). From 2004, the capital grant was changed to a budgetary allocation for debt reduction (€800 million in the first year) and a modernisation subsidy (€655 million in the first year). The latter was intended to cover any investments in network modernisation and security that would not generate future income and that, under the previous system, increased the indebtedness of RFF every year (Marini, 2004, p. 15). From 2009, these subsidies gave way to a single operating subsidy (€2.3 billion in 2009) to be shared among the various types of infrastructure for which user royalties do not cover related costs: regional passenger trains, conventional domestic passenger trains and freight trains. The result generated should enable RFF to finance its investments on its own, along with investment subsidies (Commission des comptes des transports de la Nation, 2010, p. 120).

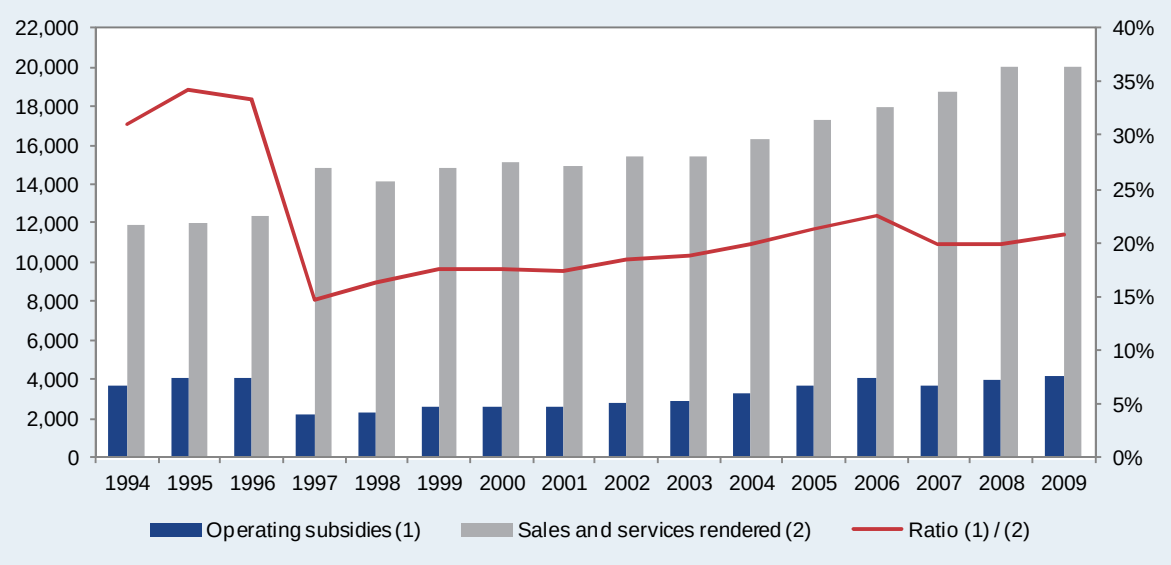
The trend in State payments to the rail sector is also marked by the inclusion of SAAD in the government's accounts, which caused its allocation to disappear from 2008.

The subsidies paid to the SNCF EPIC in 2009 represented 21% of its ordinary operating income (chart 49). This ratio fell sharply following the sector's reform, from 33% in 1996 to 15% the following year. The proportion then increased until 2006, before falling slightly due to an increase in operating income.

The breakdown of public transfers to SNCF and RFF by category (chart 50) shows the preponderant share of operating subsidies excluding infrastructure, and the relative decrease in infrastructure operating subsidies. The latter did increase in 1997 with the creation of RFF (+59% in real terms compared with 1996), but their proportion of overall subsidies has since dropped, reaching 17% in 2008. Like what is happening in Belgium, the State apparently wants to gradually shift infrastructure operating costs from the taxpayer to users. The decrease in subsidies has been accompanied by a steady rise in the infrastructure usage royalties paid to RFF, which have increased by an average of 10% annually since 1997 (Commission des comptes des transports de

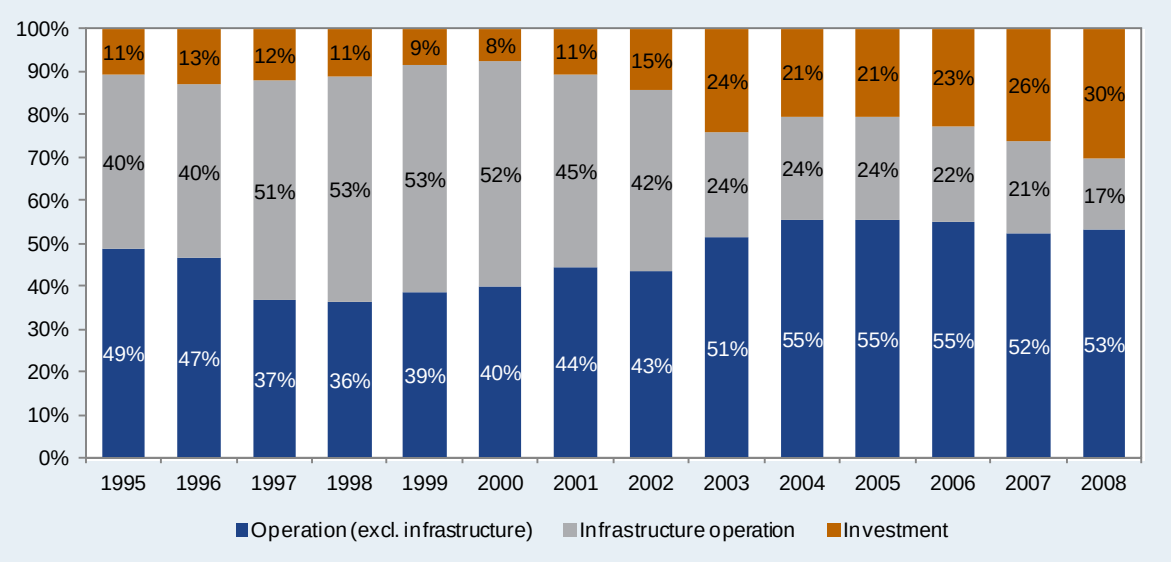
la Nation, 2010, annex I). We also note the relative increase in investment subsidies from 2001 (with the exception of the dip in 2004). In absolute terms, these subsidies rose every year between 2000 and 2008, growing at an average annual rate of 23%.

Chart 49: Subsidies and operating income of the SNCF EPIC (€ millions)



Source: Commission des comptes des transports de la Nation, High Council on Railway Public Service (2001), SNCF financial reports, own calculations.

Chart 50: French State payments to SNCF and RFF by category (percentages)



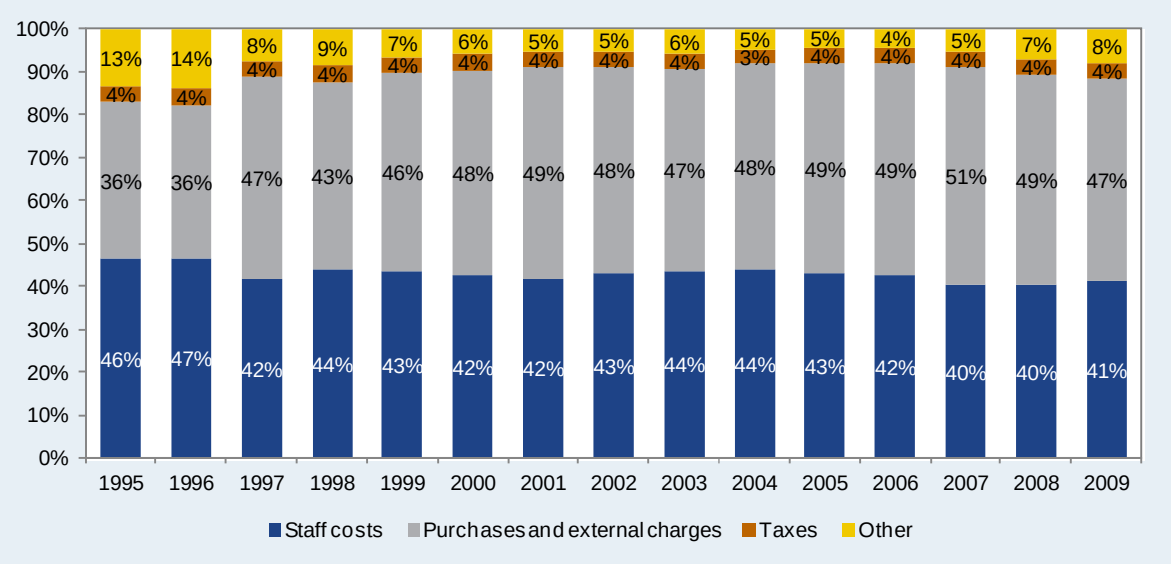
Source: Commission des comptes des transports de la Nation.
Note 1: Excluding the portion of SNCF pension costs borne by the State and allocations to SAAD.
Note 2: Subsidies for modernisation work paid to RFF between 2004 and 2008, in the annual amount of €863 billion, are counted as infrastructure operating subsidies even though a portion of these payments may be used for investment because we lack a detailed breakdown.

5.2.2. OPERATING COSTS

The operating costs of the SNCF Group (chart 51) include chiefly personnel costs and external purchases and charges. Personnel costs as a share of total operating costs fell in 1997 due to the relatively greater increase in external purchases and charges, then remained relatively stable at around 42%.

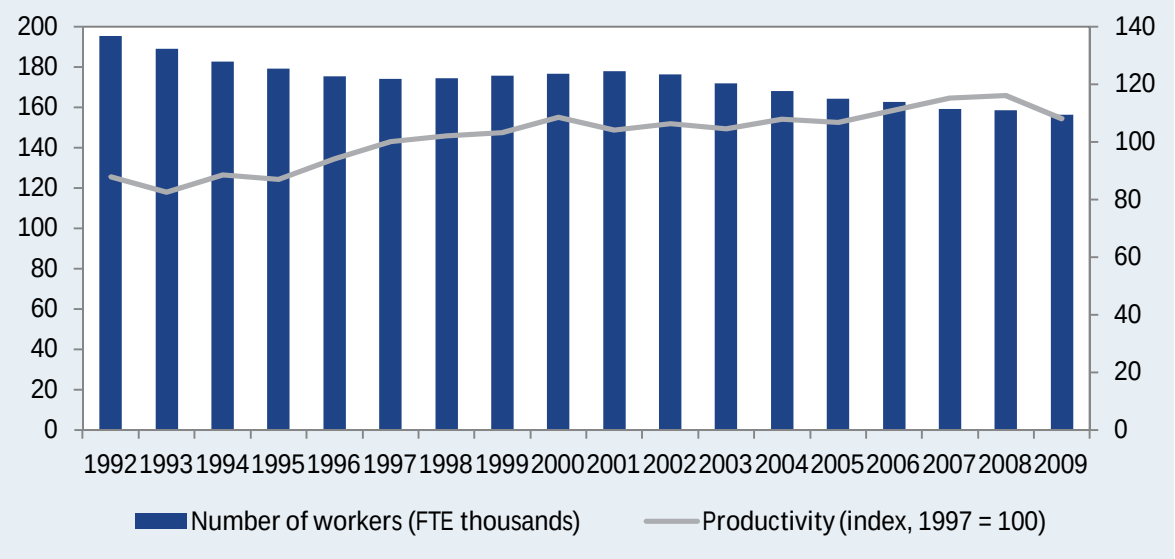
The SNCF EPIC's productivity[100] (traffic relative to the number of workers) has increased by 8% since the 1997 sector reform, principally via a decrease in the number of workers (chart 52).

Chart 51: Operating costs of the SNCF Group by category (percentage of the total)



Source: SNCF annual accounts.

Chart 52: Number of workers (left-hand scale) and productivity of the SNCF EPIC



Source: Commission des comptes des transports de la Nation, Ministry of Ecology, Sustainable Development, Transportation and Housing (2011), UIC and own calculations.

5.2.3. DEBT[101]

As chart 53 shows, the financial debt[102] of SNCF rose strongly until 1996, at an average annual growth rate of 12.4% in 1990-1996, principally due to operating deficits and financing for infrastructure investments (Cour des comptes, 2008, p. 111). In 1996, the year before RFF was created, SNCF debt amounted to €31.7 billion, compared with €17.9 billion in 1990, or a 77%

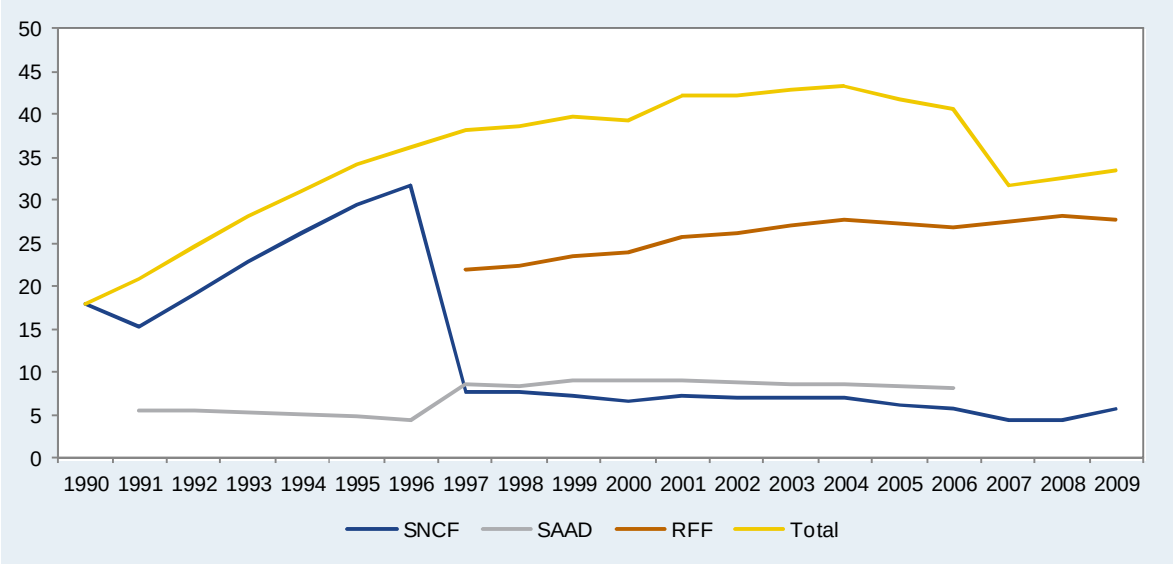
100 Productivity is calculated for the EPIC and not for the SNCF Group because it is measured on the basis of SNCF traffic in France, which is that of the EPIC.

101 The SNCF figures in this section refer to the SNCF EPIC, which operates solely in France, and not to the Group, which is present both in France and abroad.

102 Financial debt net of certain investments and receivables. This is the same concept used in the Cour des comptes' report (2008) and is generally accepted as representative of the French rail system's debt, although figures may vary slightly depending on which sources are used. For a detailed analysis of French rail sector debt, see also Caisse des dépôts et consignations (2004).

increase in six years. From 1991, a portion of the operator's debt, some €5.8 billion, was transferred to a separate debt amortisation unit (SAAD) created specifically for this purpose[103]. As a result, among other things, of State subsidies (see above), this debt was progressively paid down, but the reduction was not enough to diminish the financial debt of the rail sector overall (SNCF and SAAD), which amounted to €36.1 billion in 1996.

Chart 53: Financial debt of the French rail sector (€ billions)



Sources: Joly (2002), Caisse des dépôts et consignations (2004), Marini (2006), RFF, Commission des comptes des transports de la Nation.
Note: For SNCF and RFF, figures refer to financial debt net of certain investments and receivables.

As was the case in Belgium several years later (see section 4), the institutional reorganisation of the rail sector in 1997 enabled the incumbent rail operator to unload much of its financial debt. In France, RFF assumed €20.5 billion of SNCF debt, or 65% of its end-1996 value. Furthermore, in the same year, €4.3 billion of SNCF debt was transferred to SAAD[104]. In 1997, SNCF's debt amounted to €7.6 billion and represented only 20% of rail system debt, compared with 100% in 1990 and 88% in 1996. In 1999, SAAD took over a further €0.6 billion of SNCF debt[105].

The rail system reform thus enabled the operator to drastically reduce its debt, but without reducing the debt of the sector overall. Between 1997 and 2006, this debt rose by a further 7%, from €38.1 billion to €40.6 billion, chiefly due to the increase in RFF's debt on the back of new investments and inadequate State subsidies (Cour des comptes, 2008, p. 111).

In 2007, Eurostat required France to account for SAAD debt as a public debt in the Maastricht sense. Due to the new interpretation, France had to recalculate its deficit and public debt in the Maastricht sense from 1993 onwards.[106] As a result, SAAD was shut down and its debt, which amounted to €8.2 billion at end-2006, was transferred to the State's accounts and no longer booked as rail sector debt. In addition, that same year saw another accounting change that was favourable to SNCF debt. The Caisse de Prévoyance et de Retraite du Personnel (CPRP), used to fund SNCF pensions, became a social security entity separate from SNCF, and its debt was deconsolidated from that of the operator. The rail sector's debt thus declined significantly in 2007 (-22% vs. 2006), but began to climb again the next year due to an increase in SNCF's debt. From 2007 to 2009, rail sector debt rose by an average of 2.6% annually.

[103] SAAD is not legally separate from SNCF, but is an accounting framework used to isolate a portion of the incumbent railway company's debt in accordance with Directive 91/440/EC (see section 2.1). SAAD debt is financed principally through specific contributions by the State.
[104] Berchet (1998).
[105] Caisse des dépôts et consignations (2004, p. 4).
[106] See INSEE (2007).

It thus appears that the French rail sector is having a hard time getting its financial debt under control. The steps that have been taken, have shifted debt to one entity or another without changing the structural trend in the debt, even though since 1997 it has been growing at a slower pace than before.

5.3. CONCLUSION

Rail reform in France has created a unique system of sharing tasks between the newly created infrastructure manager and the incumbent rail operator. The way tasks are shared casts doubt upon whether there is a real separation between the two functions as required by Europe, given that in fact both are largely carried out by SNCF. This may explain why no operator has yet decided to compete with SNCF in the international passenger transport market. With respect to freight, on the other hand, competition has been developing rapidly since 2007, driven by Euro Cargo Rail (Deutsche Bahn subsidiary) and Europorte France (Eurotunnel Group). Despite an overall decrease in traffic, the volume transported by the new entrants is rising every year. In 2010, their market share was between 16% and 24%, depending on which measurement is used.

At the financial level, the reform enabled the incumbent operator to significantly reduce its debt and improve its results. Through a strategy of acquisitions (in the freight market) and partnerships (in the international passenger transport market), the SNCF Group has built a rail operator that is a force to be reckoned with in Europe, even though the Freight division still struggles to earn a profit. For the French rail sector overall, the reorganisation has resulted in higher debt and ever-increasing subsidies.

6. THE REFORM OF THE RAILWAYS IN GERMANY

6.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY

6.1.1. BACKGROUND

The economic development of the West German railways, *Deutsche Bundesbahn* (DB), up to the beginning of the 1990s was the starting point for a thorough reform of the railways (*Bahnstrukturreform*) in 1994. It is here that the German situation differs from the other European countries where the changes in the rail sector were the result of European legislation. From 1960 to 1990, not only did the total size of the network in Germany come down from 36,000 km to 30,000 km, but the market share of passenger transport also fell from 36% to 6.1% and that of freight transport from 37.4% to 20.5% (Seidel, 2002). The financial situation of the railway company got consistently worse as a result of which revenues during the 1970s were no longer even sufficient to cover staff costs (Booz Allen Hamilton, 2006). Through the reunification of East and West Germany, the East German railways *Deutsche Reichsbahn* (DR) was merged with DB as of 1992 and consequently the financial situation became even more precarious. The former East German railway company was deep in debt, possessed an outdated infrastructure and train fleet and, with 203,000 employees, was heavily overstaffed. Despite the annual financial contribution from the German federal government amounting to €7 billion as compensation for the provision of public services and the takeover in 1991 of DB's long-term debt to the tune of €6.44 billion, DB and DR's consolidated losses had risen to €8.13 billion by 1993 (Booz Allen Hamilton, 2006).

In an attempt to reduce DB's debt burden and cut back the federal subsidies for infrastructure, in 1989 the German federal government set up a public rail board, called the *Regierungskomission Bahn* (RegB). With the German reunification, the scope of this board's tasks was radically altered since DR now also had to be taken into consideration in the reform of the German railways. RegB published its findings in 1991 and came to the conclusion that the only possible solution to the problems mentioned above was to open the state monopoly up to the free market economy. To do this, a capital injection by private shareholders was necessary, as was the taking-over of the debt burden by the government, the conversion of the legal status to a public corporation and a clear distinction being made between business activities and politically motivated activities. RegB also proposed to merge DB and DR and turn them into a public limited company with a separate division for passenger transport, freight traffic and the rail infrastructure. Furthermore, a case was made for free access to the railway infrastructure, the abolition of the public service provision and the regionalisation of decision-making powers regarding local transport. Finally, a legal solution would have to be worked out for members of staff whose civil servant status would be converted into private sector employee (Benedikt, 2008).

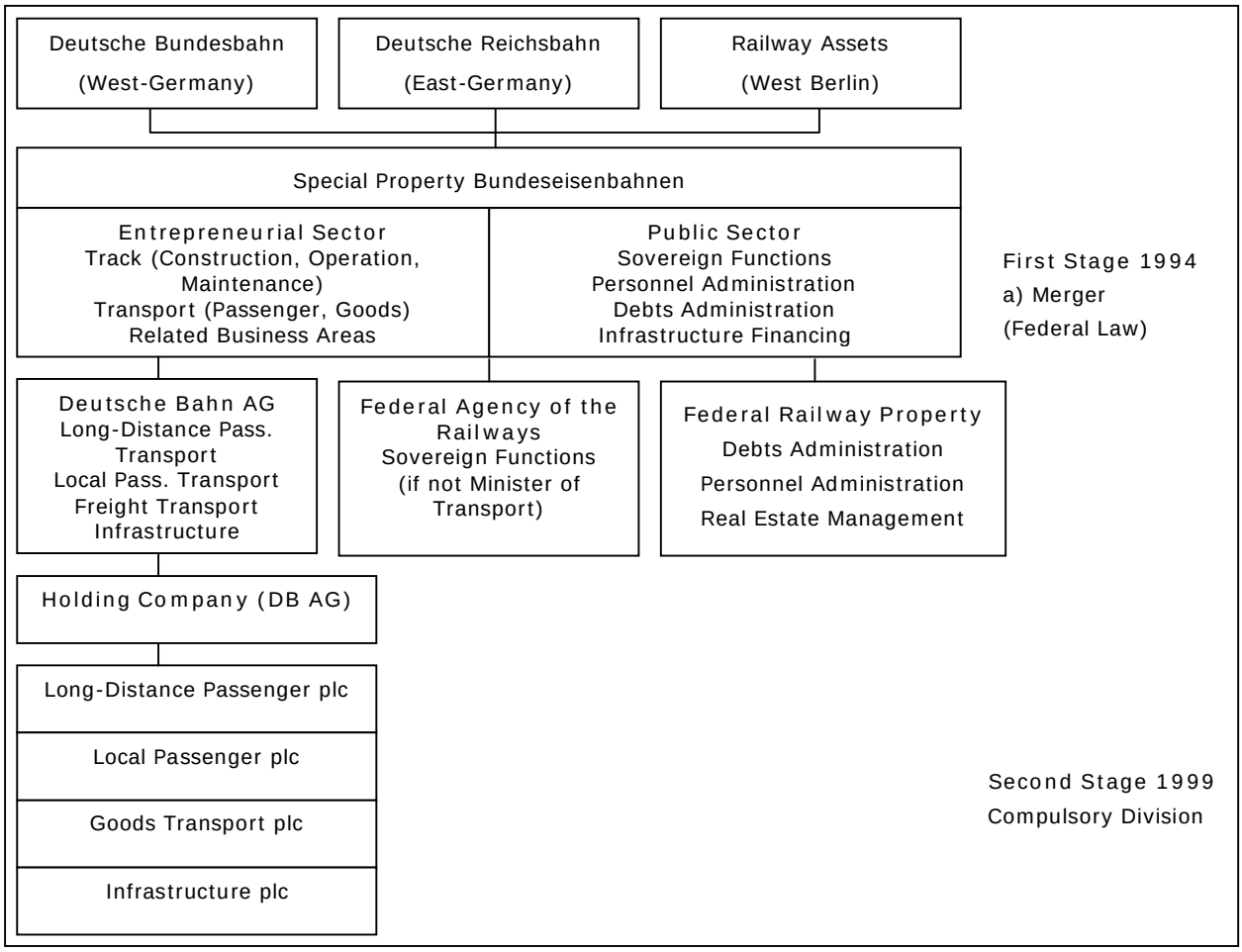
Under pressure from the increasing debt burden of DB and the precarious situation of the German budget owing to the many transfers to the former East German states, the first proposals from the RegB had already been transposed into law by 1992, followed by a thorough reform of the railway system in 1994. In an initial phase, DB and DR were amalgamated and at the same time public and commercial activities split up so the railways could be run without being under the influence of the federal and/or territorial authorities. Moreover, this separation ensured that the railways were relived from non-profit-making obligations (i.e. universal service). Commercial activities were brought under the umbrella of Deutsche Bahn AG (DB AG), a private equity company with the government as sole shareholdder. DB AG had to unbundle organisation and accounting activities into four entities: short-haul passenger transport, long-haul passenger transport, freight traffic and infrastructure (see figure 4). Aspects concerning infrastructure and provision of public services remained under the government's responsibility.

A special institution called the *Bündeseisenbahnvermögen* (BEV) was set up for personnel management and for the former German railway company's debts. The BEV serves as employer of the former staff of the German railways. In exchange for accepting the reform, the rail unions had set a number of strict conditions concerning the status of railway personnel. Each member of staff

could opt to keep his or her status as public official as a result of which they could not be directly employed by DB AG, a company established under private law (Chabalier, 2006). DB AG employs the former public officials under market conditions which in practice means lower pay. The difference is made up and borne entirely by the BEV. This structure was set up as part of the efforts to restore DB AG's balance sheet to health. The difference in staff costs covered by establishing the BEV is estimated at €4.1 billion per year (Benedikt, 2008).

To make it possible to restore DB AG to a sound financial basis, its debts were completely cancelled as part of the radical reform of the railways. After a previous takeover of DB's debts worth €6.44 billion in 1991, another debt transfer to the tune of €34.41 billion followed in 1994 and which was borne entirely by BEV (Booz Allen Hamilton 2006).

Figure 4: First and second phase in the German railway reform



Source: Benedikt P. (2008)

In a second phase in the rail reform in 1999, the above-mentioned entities were converted into five separate companies under DB AG which served as the holding group. The idea was to prevent public resources intended for the infrastructure from being diverted into traffic or regionalisation resources from not only being used for regional passenger transport (Booz Allen Hamilton, 2006). The management holding owns 100% of the shares in the following five subsidiaries (Seidel, 2002):

- **DB Netz AG**, which is responsible for construction and maintenance of the railway infrastructure, inspection and oversight of infrastructure management and the handling of infrastructure capacity. Its revenue comes from access fees and government subsidies for laying new tracks or for measures to improve the existing infrastructure;
- **DB Station und Service AG**, which is responsible for running approximately 6,000 German railway stations for passenger transport. These stations will be modernised and

maintained with the help of revenues derived from fees that are charged to train operators for the use of stations. The costs that are charged depend on the number of stations a given passenger train calls in at;

- **DB Regional AG** which operates in the local, regional and district transport of passengers. In this latter area in particular, DB is trying to gain a foothold by entering into joint ventures with local transporters. The reform of the railways has led to radical changes in the structure of regional passenger transport by bringing the organisation under the wing of the German Länder that receive annual subsidies for that. These federal States have full responsibility for planning, management and acquisition of regional transport and grant service contracts to DB Regional AG or a private rail operator;
- **DB Reise und Touristik AG,** which is responsible for long-haul passenger transport in Germany and for which no public financial support whatsoever is provided. So, DB Reise und Touristik AG also saw itself obliged to cut back considerably on inter-regional services for some time;
- **DB Cargo AG** is responsible for goods transport, but is making a great effort to expand into an international logistics service provider because wagon-load transport (unit or block trains) alone does not appear to be profitable. After a merger with the Dutch freight carrier, NS Cargo, in 2000, its name was changed to Raillon.

In 2008, DB Mobility Logistics AG (DB ML AG) was set up in the context of the planned part-privatisation of the DB group. At the time, the German government had planned a partial flotation of DB on the stock exchange by the end of 2009. DB ML AG had formerly operated under the name of Stinnes AG, a listed company that specialises in the provision of logistic services which was fully incorporated into the DB group in 2003. Both the passenger transport and the logistics section were put into six autonomous corporate divisions under the joint management of DB ML AG, in turn a wholly-owned subsidiary of DB AG (see figure 5):

- **DB Regional AG** provides the regional passenger transport services;
- **DB Long-Distance AG** is responsible for long-haul passenger transport in Germany;
- **DB Schenker Rail AG** is in charge of freight traffic;
- **DB Urban GmbH** is the regional bus service operator;
- **DB Schenker Logistics GmbH** provides logistic services;
- **DB Services** is responsible for real estate (railway station buildings).

Within the DB group, DB AG and DB ML AG both operate as management holding companies that run the group under a vertically integrated structure. Close cooperation between the DB AG and DB ML AG boards is ensured not only by an Integration Committee, but also by the fact that they both have the same CEO and CFO and that this is also the same person as the chairman of the legal, personnel, technical and infrastructure division (Deutsche Bahn Mobility Networks Logistics AG, 2008). DB AG itself regards vertical integration as a key factor in its successful development.

The DB group's infrastructure companies remain under the umbrella of DB AG and therefore are wholly owned by the Federal Republic of Germany:

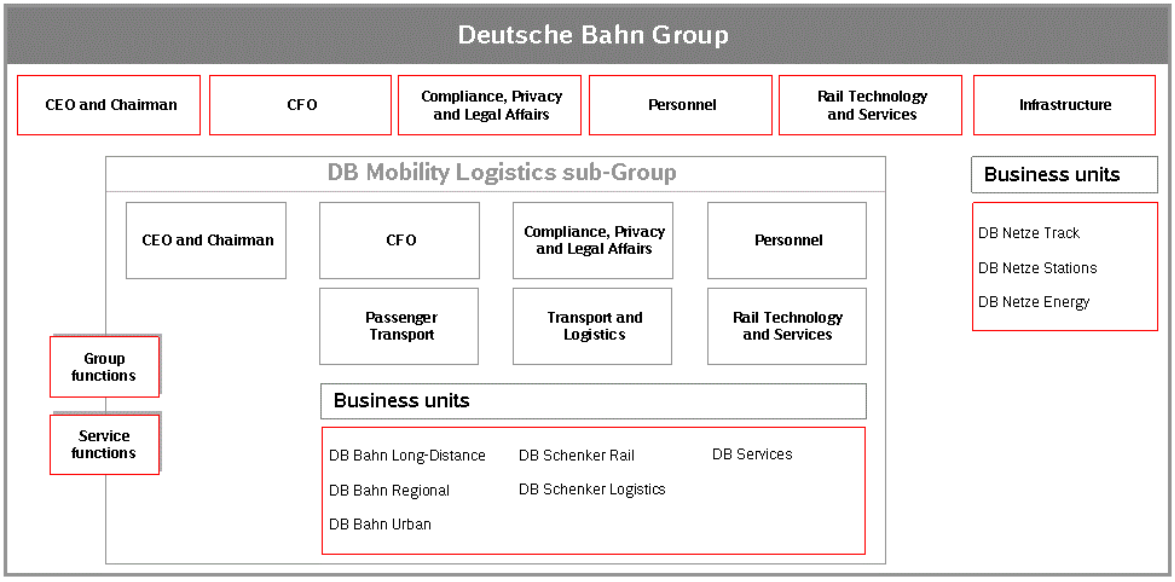
- **DB Netz AG** runs the railway network;
- **DB Station & Service AG** is responsible for the stations;
- **DB Energie GmbH** is energy manager and responsible for locomotive power.

The stock exchange flotation, originally planned in autumn 2008, whereby a maximum of 24.9% of DB ML AG's capital would be sold off to private investors, has been postponed indefinitely owing to the uncertainty on the financial markets (Schreyer *et al*., 2010).

Consequently, the German rail market is characterised by a vertically integrated DB AG which, on the one hand, is a monopolistic owner of the railway infrastructure (upstream activities) and, on the other hand, a dominant rail operator (downstream activities). The vertical integration of the upstream and downstream business activities gives the railway network manager (DB Nezt AG) a

motive to discriminate against the competition that has open access to the railway network in favour of the rail operators which belong to the DB holding company (DB Reise & Touristik AG, DB Regional AG and DB Cargo AG - see 3.1. Freight transport).

Figure 5: Organisation structure of Deutsche Bahn AG and DB Mobility Logistics in 2010



Source: Deutsche Bahn AG, 2009.

Alongside the complete restructuring of the rail company, three other measures turned out to be of importance for the whole rail sector. Firstly, in 1994, a federal railway agency (Eisenbahn-Bundesamt) was set up as regulatory body; secondly, from 1996 onwards, there was a move towards regionalisation under which the German Länder were responsible for local train services; and, thirdly, the entire railway network was opened up to third parties.

6.1.1.1. The regulator

In 1994, the Eisenbahn-Bundesamt (EBA) was set up as regulator responsible for oversight within the rail sector. The EBA is a sub-agency of the Federal Ministry of Transport, Construction and Housing. Its main tasks are granting licences to rail companies, inspecting safety of the technical equipment and planning and financing the infrastructure. Since the federal government is still involved in funding the railway infrastructure, the EBA is responsible for oversight and allocation of government contributions for investment in infrastructure by rail companies that are owned by the Federal Republic of Germany (NEA, OGM et al., 2007). In 2009, an attempt was made to merge the EBA with the BEV but this fell through.

In 2006, the Bundesnetzagentur (BNetzA)[107] was put in charge of regulating access to the rail infrastructure and supervising access fee charging. This decision was preceded by discussions as to whether this task should have been given to the EBA or to two separate agencies. The rail authorities opted for BNetzA because this agency operates independently from the government. Moreover, in this way, all general provisions for regulating a network can be applied in the different

[107] BNetzA is the German regulator for electricity, gas, telecommunications, postal services and the railways. It is an independent federal government body under the supervision of the Federal Ministry for the Economy and Technology. This body was set up as regulator for telecommunications and postal services in 1998 with the title of Regulierungsbehörde für Telekommunikation und Post (RegTP) as a result of liberalisation of this sector. When, in 2006, it was decided to open up the energy and rail sectors to competition, the government took the view that the experience of RegTP as far as free access to network infrastructure is concerned could be usefully applied here and the regulator's name was changed to BNetzA.

sectors in an identical and logical manner. Nevertheless, the BNetzA's work is hampered by the fact that it does not have wide enough powers. The possibilities of requesting information in disputes over access to the infrastructure or the access fees charged are very limited. Moreover, the EBA is responsible for a number of tasks that also have an impact on competition and on the chances for potential competitors to gain access to the market. This leads to a sort of duality and rivalry between the EBA and BNetzA. As a result of this, since 2006, the EBA has been acting more independently than before in a bid to improve its reputation as regulatory agency.

6.1.1.2. Regionalisation

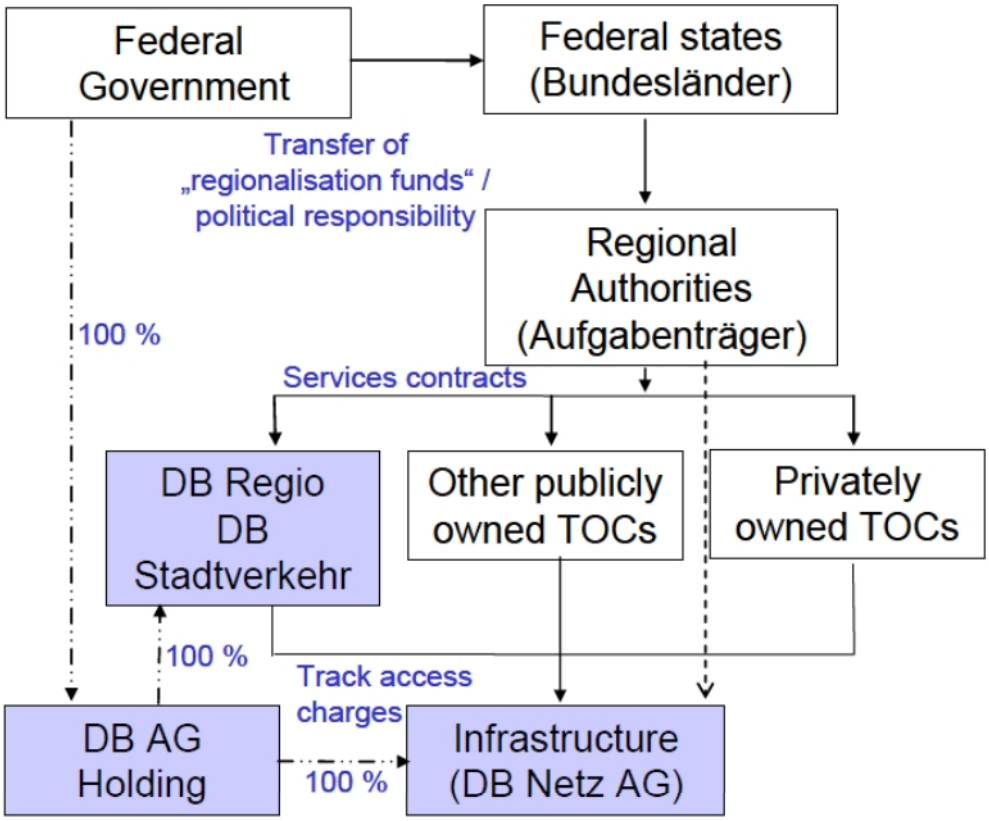
As part of the winding down of universal service provision obligations, in 1996 responsibility for organisation of regional short-haul passenger transport (*Schienengebunden Personen-Nahverkehr* or SPNV) was passed on from the federal government to the different Länder (*Regionalisierung*). Previously, the federal States and local authorities had sole responsibility for public transport by road (bus and tram), while DB was competent for both regional and long-distance transport.

With the adoption of the regionalisation law (*Regionalisierungsgesetz*), the ordering principle (*Bestellerprinzip*) was introduced, which allows the buyer to specify the service level itself, so each federal State fixes the routes and the scope of regional rail transport supply. Regional short-distance passenger transport was only allowed to be offered when ordered and financed by a federal State. The transport contracts that are consequently concluded between a federal State (*Aufgabenträger*) and the operator set the scope of the services to be delivered (number of train-kilometres), the amount due and the quality criteria. The duration of contracts varies between 5 years and a maximum of 15 years. Ticket revenue goes mostly to the operator and thus forms an incentive to raise performance (Seidel, 2002). Roughly 30% of the costs are covered by revenue from ticket sales.

The federal States have set up special bodies for organisation of regional passenger transport (*Aufgabentrager*) which are responsible for the planning, management and acquisition of regional rail transport. The *Aufgabentraeger* award service contracts to DB Regional AG or to other public or private rail operators (see figure 3). In Germany, there are around 33 *Aufgabentraeger* which cause wide diversity as regards the domain for which they are responsible. Some federal States have more *Aufgabentraeger* than others, while Berlin and Brandenburg have established a joint agency (Brenck *et al*., 2007).

The system of regionalisation funds gives the federal States wide freedom of choice as regards contract and service provision which can vary from highly detailed to very general. This makes it possible to organize passenger transport not only for a whole network, but also for one specific route. The federal States are totally free to conclude a contract directly with DB AG or with one of the competitors. The services may also be obtained via public tender.

Figure 6: Regional short-distance passenger transport in Germany



Source: Benedikt P. (2008).

6.1.1.3. Opening up the market to competition

In the framework of the reform of the railways, access to the rail infrastructure was opened up for so-called third-party companies (foreign railway enterprises[108], private rail companies (Nichtbundeseigene Eisenbahn or NE-bahn) and international rail groupings) with the objective of allowing non-discriminatory competition to be introduced in Germany. To make this possible, railway companies must distinguish between the operational part and infrastructure, whether or not within one and the same corporate entity. Furthermore, the rail company must hold a valid licence to be able to supply transport services. A licence is only granted to an applicant that meets specific criteria as regards reliability, financial resources and technical competence.

In 2005, non-discriminatory access to the rail network was laid down by law in a decree concerning the use of the railway infrastructure (*Eisenbahninfrastruktur-Benutzungsverordnung* or EIBV). Besides general trading conditions, this decree also contains qualitative restrictions on access (obligations concerning both trains and staff employed) which comply with the Railway Construction and Operational Regulations (*Eisenbahn- Bau- und Betriebsordnung* or EBO). It was further stipulated that the BNetzA would act as supervisory body alongside the German anti-trust authority (Bundeskartellamt or BKartA) and the European Competition Authority. The law does not foresee any *ex-ante* provisions that must guarantee a non-discriminatory cost price for the use of the rail tracks or the issue of a railway licence. Only trains that run regularly get an unspecified priority in route allocation. Enterprises that are responsible for the infrastructure are obliged to treat all requests from rail operators for the use of a certain route in the same way, to draw up and

108 In accordance with the principle of reciprocity, foreign railway companies only have the right to access the German railway network whenever the network is also accessible for German rail enterprises in the country of origin. In actual fact, under the principle of freedom of establishment within the European Community, every foreign railway company hailing from an EU country has the possibility to move into the German rail market by setting up a rail company in Germany.

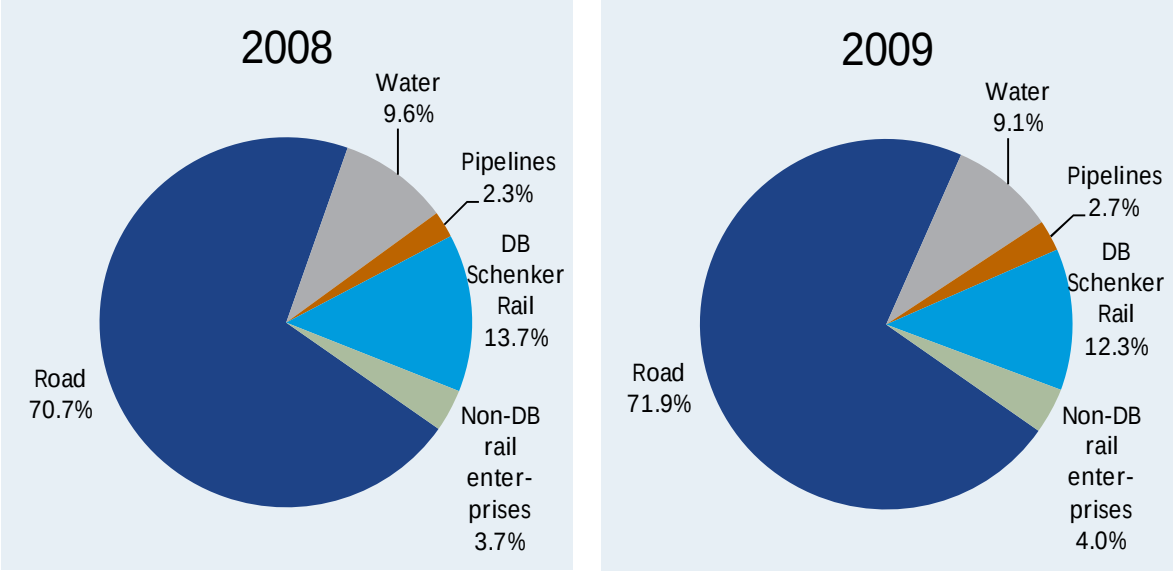
publish transaction conditions including an overview of the cost price for the use of a route or specific facilities, and lastly, to limit the technical and professional obligations for the use of the railway infrastructure to the extent that this enables the rail operators to operate reliably (Booz Allen Hamilton, 2006).

6.1.2. DEVELOPMENTS ON THE GERMAN RAIL MARKET

6.1.2.1. Freight transport

Cargo transport in Germany is still dominated by road haulage (see chart 54). In 2008, only 17.4% of total goods transport carried by rail despite the European Commission's efforts to improve the performance of the railways. In 2009, rail freight transport was hit badly by the global financial and economic crisis. As a result, its market share fell for the first time since 200 to 16.3%. This drastic decline in volumes handled by the rail sector is mainly attributable to a collapse of production in the iron and steel, motor vehicle and chemicals industries. The railways and inland waterways were hit much harder by this loss of production than road haulage, which by pursuing an aggressive pricing policy managed to expand its market share by 1.2 percentage point.

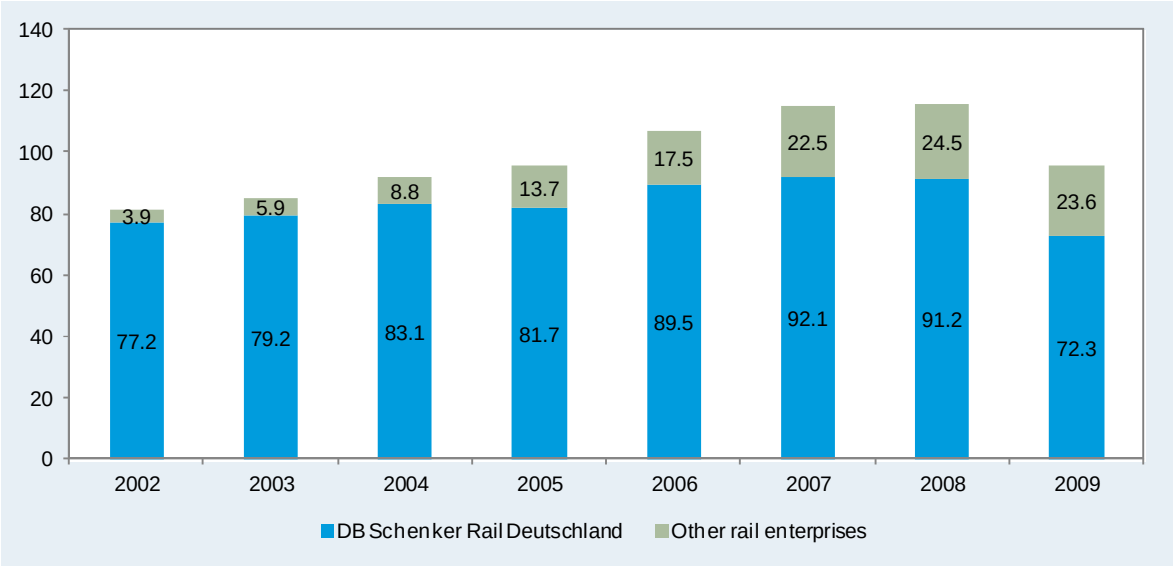
Chart 54: Market share of freight transport by rail in 2008-2009 (based on tkm)



Source: Deutsche Bahn AG, 2009.

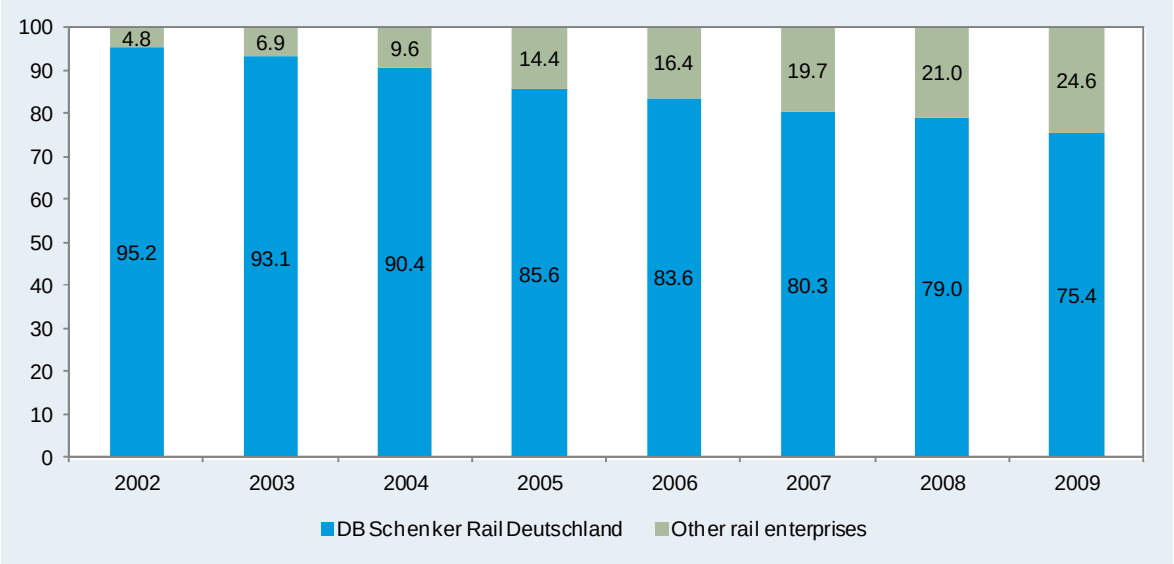
Because Germany was one of the first countries to have opened up access to its railway infrastructure for third-party firms in order to put an end to the virtual monopoly enjoyed by Deutsche Bundesbahn (West Germany) and Deutsche Reichsbahn (East Germany), it now accommodates the largest number of rail companies in Europe. In December 2010, no fewer than 341 different railway companies hold a licence that allows them to operate freight trains on the German railway infrastructure (Federal Railway Office, 2010). Despite the fact that new entrants have been able to offer their services in Germany for a relatively long time now, 75.4% of freight transport is still in the hands of DB Schenker Rail (see chart 56) and the market share of new entrants is growing only slowly. In the period from 2002-2009, it barely managed to expand its market share by 2.8 percentage points a year on average

Chart 55: Rail freight transport performance (in billion tonne-kilometres)



Source: Deutsche Bahn AG, 2006 and 2010.

Chart 56: Market share of DB and other rail enterprises (in %)



Source: Deutsche Bahn AG, 2006 and 2010.

In spite of the high number of licences issued, only 59 rail companies have actually started competing with DB AG (Holzhey et al., 2009). By their sheer number, these operators which are running trains on the German railway infrastructure entirely for their own account give the impression that, as far as freight transport is concerned, intensive competition has been established. Table 13 gives an overview of the number of competing firms in the freight transport field (see annex 3 for a list of abbreviations), broken down by product category. In 11 of the 14 product groups, at least five competing firms are recorded. In four product categories (containers, chemical products, mineral oils and biodiesel, steel and aluminium), there is a choice between more than ten competing rail companies. The number of rail companies operating in a product category is a useful indicator but is no real evidence for a fiercely competitive market. In only four market segments (containers, chemical products, mineral oils and building materials) is there any sign of a completely open market with brisk competition. The main explanation for the openness of this sub-market is the ready availability of rolling stock. Tank wagons and car transporters are in fact always rapidly available but difficulties mainly arise in the other sub-markets as regards wagons for bulk transport which can only be obtained from DB Schenker Rail.

Table 13: Rail companies competing for freight transport, by goods category

Containers	Chemical products	Mineral oils/ Biodiesel	Building materials	Wood/ Cellulose	Waste	Motor vehicles
- BCB (Veolia) - boxXpress - Crossrail - CTL - DE (Veolia) - duisport rail - ERS - EVB - HGK - HSL Logistik - IntEgro - ITL - Kombiverkehr - LOCON - Lokomotion - NRS - OHE - RTB - SBB Cargo - TX Logistik - VPS - WLC - WLE	- BASF - Chemion - duisport rail - HGK - ITL - MKB - MTEG - MWB - rail4chem - TX Logistik - Veolia Cargo	- Bocholter Eisenbahn - CTL - HGK - HSL-Logistik - hvle - Infraleuna - ITL - rail4chem - RBB (Veolia Cargo) - SBB Cargo - Stock	- Ei.L.T. - Eivel - HHPI - hvle - ITL - MWB - OHE - RTB - SBB Cargo	- AL - LOCON - OHE - PRESS - RAN - Rennsteig-bahn - RTB	- AVG - EEB - hvle - OHE - rail4chem - Rennsteig-bahn - TX Logistik - Wincanton Rail	- Crossrail - HGK - ITL - Lokomotion - MTEG - OHE - PCT - SBB Cargo - TX Logistik

Grain	Limestone	Steel/ Aluminium	Cement	Earth	Coal/ Coke	Sand/Sodium
- ITL - MWB - Rail4chem	- BASF - BCB (Veolia Cargo) - hvle - energy rail - LOCON - Neusser Eisenbahn - VPS - WLE	- CFL Cargo - Brohltal-bahn - DE (Veolia Cargo) - EKO Trans - HGK - ITL - Lokomotion - MWB - RTS - SBB Cargo - SWT - TWE (Veolia Cargo) - TX Logistik - VPS	- CFL Cargo - CTL - EGP - LEG - Neusser Eisenbahn - WAB/ energy rail		- EKO Trans - CFL cargo - DE/RBB (Veolia Cargo) - HGK - HHPI - NIAG - TWE (Veolia Cargo) - RTB	- HGK - Neusser Eisenbahn - RBB/BCB (Veolia Cargo)

The other sub-markets cannot yet be considered to be generally open to competition since the third-party entrants are confronted with various problems associated with the dominance of the DB group which gives preferential treatment to firms from its own holding company structure over private train operators. This discriminatory behaviour can be seen in various forms under the following aspects (Zauner, 2004):

- **Infrastructure fees:** the railway network is a necessary facility for private train operators for which there is no alternative. The network must therefore be opened up to competition in exchange for an acceptable fee. Through the vertical integration of the infrastructure and transport within a single holding, DB Netz is in a position to obstruct access by the level and composition of the infrastructure fees it charges. When considering that the costs for the use of the rail network account for 25% of all transport service-related costs, this is an instrument of discrimination that cannot be underestimated. Another thing that goes against DB Netz is the fact that it has failed to set up a pricing system with which it can allocate network capacity in an

economically feasible manner. When its rail network was opened up to competition in 1994, DB Netz had already applied various systems; a two-tier rate that is composed a fixed part and a variable part linked to the number of train-kilometres, elasticity-bound price-setting (Ramsey tarif[109]) and a linear system. Discrimination against the private train operators takes various forms depending on the pricing system applied (Link, 2004). This varies from large reductions granted to DB enterprises because they are the biggest users of rail network to degressive effects associated with the two-part rate which has the same effect. Both BKartA and the EBA have begun various inquiries after complaints were lodged about the two-tier rate. These complaints referred to the disadvantages that competitors are faced with in this pricing system when only small numbers of train-kilometres are purchased.

- **Regional factors:** because infrastructure fees charging is very carefully monitored by the BKartA, DB Netz has limited scope to discriminate against its competitors by means of access pricing. So, the introduction of regional factors (*Regionalfaktoren*) in 2003 can be regarded as the umpteenth instrument for driving up competitors' costs. This price rise, which is a set factor by which the infrastructure fees are multiplied, is only charged on the rail lines intended for regional passenger transport and which have a particularly low cost-to-income ratio. The regional factors relate to 14,000 km (37%) of the total railway network. DB Netz justifies the surcharge on the grounds that the revenue derived from it is used exclusively for maintenance of these railway lines. Given the vertical integration of the DB group, the regional factors can be seen as a means of squeezing out private train operators from certain routes. They can then be run by DB Regional, the regional train operator from the DB holding company. DB Regional can offset any potential increase in its costs as a result of the regional factors from profitable routes. Private train operators mostly tend to offer their services on a particular line and are thus hit much harder by these regional supplements. Moreover, the higher costs for DB Regional are the equivalent of extra revenues for DB Netz and this gives a neutral result on DB Holding's balance sheet.

- **Traction charges:** the transmission system for locomotive power is a necessary facility because some transport services can only be supplied by electric power and no substitute is available. These traction costs can come to as much as 17% of total transport costs (Handelsblatt, 2003). From 2004 onwards, DB Netz Energie has had to open up its electricity grid to other energy producers as a result of which private train operators have the choice of taking their entire electricity requirements from DB Netz Energie or to share out their demand between a private energy producer for feeder power and DB Netz Energie for the electric power transmission. When they opt for a combination of power producers, DB Netz Energie charges electricity grid access costs because the producer's power must be passed on to the buyer. These extra charges considerably restrict the advantage that can be reaped from competition in the power supply market. Generally speaking, private rail companies have discovered that the price DB Netz Energie charges is too high both for power supply and for transmission (Zauner, 2004). DB Netz Energie charges a price that only gives bulk buyers a structural advantage. The reductions are applied upwards of volumes over 500 GWh/year. In practice, it appears that such large quantities are only purchased by rail companies from the DB holding structure.

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109 Where there are high fixed costs (as in the case of a rail company that is also in charge of managing and running the railway infrastructure), a firm with marginal cost pricing cannot finance its activities. The Ramsey-type pricing model advocates that the deficit is financed by a rate higher than marginal costs. The Ramsey rule puts in general that the difference between the price of a product and the marginal costs should be higher as the elasticity of the demand for this product is lower.

- **Slot requesting and allocation[110]:** third-party companies find access to slots awfully difficult (Slack et al., 2007). Scheduled transport services must be booked at least eight months in advance with DB Netz before the first train programmed can actually run. Because some locomotive services are supplied on the basis of spot contracts (e.g. oil transport), private rail companies have a need for a much faster booking system via DB Netz and this seems to be difficult in practice. German law stipulates that the infrastructure operator must answer a request for access to a rail route within one month. In 2007, DB Netz sent out guidelines specifying that every request must be answered within 73 hours. Owing to this change in the administrative procedure, rail companies that want to be granted a slot at short notice (<72 hours) can nevertheless have their access refused by DB Netz. Besides these difficulties with slot allocation, third-party operators are also confronted with various obstacles that can be interpreted to mean that DB Netz is not fully complying with its obligations. These hindrances range from delays (several years) and frequent interruptions in repairs on the railway network to speed limits on certain sections of the network and temporarily cancelled slots. The temporary or geographically limited nature of these obstacles tends to suggest that DB Netz is trying to protect its associated train operators from the chill winds of competition.

- **Siding tracks:** private freight operators also find that access to the sidings is uncertain. Under the pressure of overcapacity, DB AG cut back its network infrastructure by 3,300 km between 1994 and 2006 (BMVBS, 2009). This has led to a drop in the number of tracks and reduced capacity on the national railway infrastructure considerably. After a rail operator has reserved a particular slot, it regularly appears that there is no siding track free or being freed up. With the cut-backs on the network infrastructure, DB Netz mainly seems to take account of the demands of the DB holding company and not so much what small rail operators want (Slack *et al*., 2007).

- **Auxiliary services:** intervention on the part of the infrastructure operator in the event of unexpected incidents is a highly necessary service. It is hard for private rail companies to provide an active and effective replacement for this. Certain third-party companies have actually taken the initiative to set up a private assistance network to counteract the dominant position of DB AG in the event of train disruptions arising (Netzwerk Privatbahnen). However, the majority of private companies are still dependent on DB Netz to repair a breakdown or technical failure. Through its position, DB Netz can resort to discriminatory behaviour towards the competition. There is not normally any delay in providing assistance because a malfunctioning or broken-down train has a major impact on the punctuality of the rest of the rail traffic. DB Netz nevertheless puts the rail operators at a disadvantage by exacting high prices from them for auxiliary services that it supplies. Generally speaking, no *ex ante* contracts are actually concluded between rail operators and the network manager. Rail operators may in fact count on a general right to assistance by virtue of Directive 2001/14/EC. Besides driving up costs, DB Netz treats its competitors unfairly by requiring a broken-down locomotive to be put in a siding until it is collected by the private rail operator. And extra charges have to be paid to DB Netz for this.

The above-mentioned problems facing private freight operators in one of the most liberalised countries as regards rail transport presents a sobering image of the future for freight transport by rail in the European Community. After 15 years of free access to the rail market, new rail operators in Germany find themselves confronted with major obstacles, even just to be able to win a small share of the market. The fundamental inequality within the rail market seems to be fully attributable to the dominant position of the DB Groep and the presence of a railway company and an infrastructure manager within the same holding group. One possible solution would be to set up an infrastructure agency that is owned by the federal government.

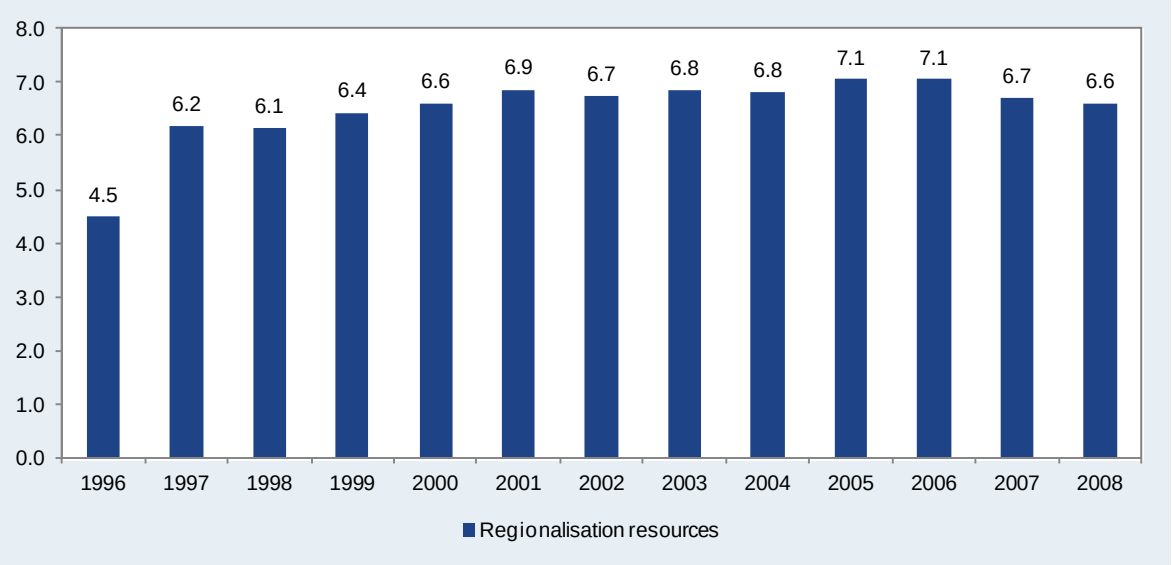
110 The allocation of a slot on the railways is the right to be able to use a particular part of the railway infrastructure within a specific time slot.

6.1.2.2. Passenger transport

6.1.2.2.1. Short-distance passenger transport

The German railway reform (1994) and more specifically the regionalisation law (1996) has led to radical changes in the organisation of regional passenger transport by shifting responsibility for the financing, planning and receiving rail services from the federal level to the level of the German *Länder*. To be able to organise this short-distance passenger transport, the federal States receive annual financial resources (*Regionalisierungsmittel*) that come out of federal tax revenue from mineral oils. The size of the regionalisation funds was estimated on the basis of the average cost per train-km of the SPNV for the year 1993/1994. So, when the regionalisation began in 1996, a sum of € 4.5 billion was transferred by the federal State to the *Länder* (see chart 57). In 1997, the federal subsidies were raised to the tidy sum of € 6.2 billion. In 2002, the legislation governing the granting of regionalisation resources was overhauled and it was decided to apply an annual increase of 1.5% (stimulation of the regionalisation resources). This resulted in an subsidy worth € 6.7 billion in 2002. The German Parliament and the Bundesrat[111] then decided in the spring of 2006 to limit the scope of the regionalisation resources for budgetary reasons. For the three years from 2006 to 2008, the federal States received about €1.4 billion less than had been originally estimated. The end result was that the size of the regionalisation resources from 2007 onwards remained below the 2002 level (Deutsche Bahn AG, 2007). Since 2009, the subsidy has once again risen on an annual basis by 1.5%.

Chart 57: Regionalisation resources 1996 - 2009 (in billion €)

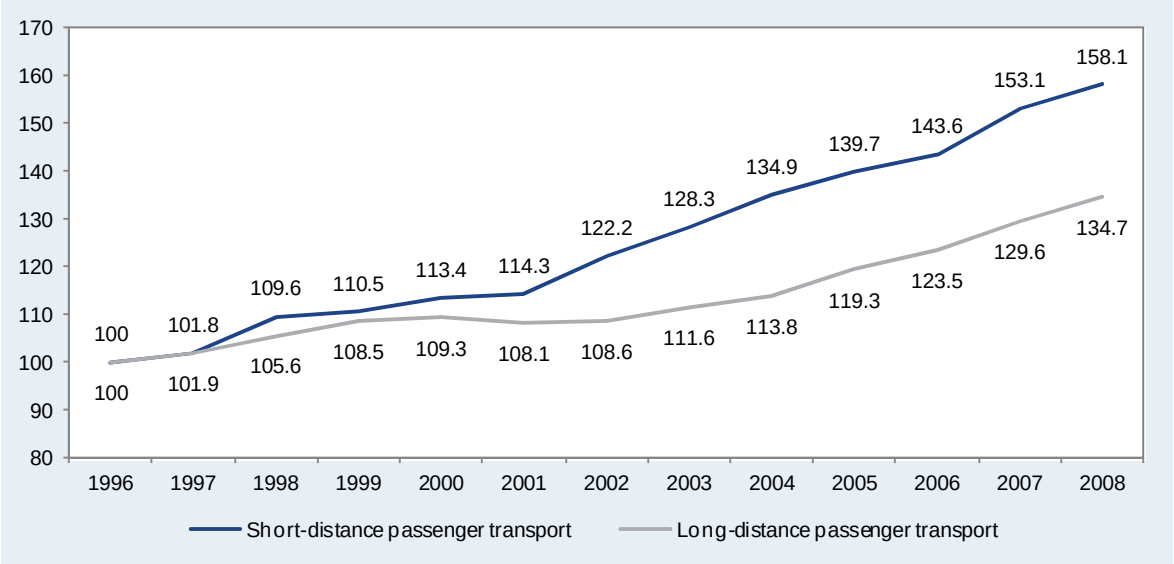


Source: Bundesministerium der Finanzen.

Chart 58 shows trends in prices for short- and long-distance passenger transport from 1996 onwards. What is striking is that although both figures have increased, it is fares for the heavily subsidised short-distance passenger transport that have risen faster (58.1%) than prices for long-distance passenger transport (34.7%).

111 The Bundesrat is the responsibility of the 16 German federal State governments.

Chart 58: Price index for short- and long-distance passenger transport over the period 1996-2008 (price index 1996 = 100)



Source: BMVBS, 2009.

Following the regionalisation of the SPNV, the *Länder* set up authorities (*Aufgabentraeger*) that are responsible for the planning, management and procurement of regional rail transport. In this way, they have considerable freedom of choice as regards both the contract type and the service specifications. An application to provide regional passenger transport can be made for the entire network of a federal state or just for a specific route. The duration of the contract can vary considerably and the desired service provision ranges from very detailed to quite general. The Länder have the choice between various contract-awarding procedures. They can enter into direct negotiations with DB AG or a private rail operator, or request a quote. In addition, they can opt for a public tender in which either all the rail operators can put in bids or just a small number of them who are contacted previously by the federal States.

Through the regionalisation policy and the use of public tenders, there is a lack of any form of standardisation with respect to both contract type and definition of desired service provision for short-distance passenger transport. Seeing that, even within the same federal state, there is often no uniformity at all, this can drive up costs considerably for rail operators that want to put in a bid. Yet there are also several common factors in the contracts. Most of them give rail operators hardly any scope at all for operational decisions (routes, travel time, frequency, first and last service). This may be due to the introduction of synchronised scheduling by some of the German federal states. This coordination of bus networks and intercity rail traffic with short-distance passenger transport limits the possibilities for rail operators to take individual decisions. Moreover, this synchronised timetabling reduces the available capacity as regards infrastructure because it makes it difficult to bring in additional trains. As regards pricing decisions as well, the rail operators have little space to move owing to the use of "one-stop shops" in Germany. Through this system, the public transport user has the possibility to use just one ticket on the different local public transport modes. As a result, rail operators have very few chances to introduce commercially attractive fare systems.

Regional passenger traffic is a market that is entirely dependent on demand from the federal states. Despite the wide freedom of choice and full market opening, a lot of big contracts are awarded directly by the federal states to DB AG (see table 14). Over the period from 2003 to 2005 in particular, the federal states appeared to be genuinely distrustful of any competition. Besides, the contracts that are concluded have a lasting influence on potential competition since the majority of contracts were signed for a period of at least ten years and only very small segments of regional rail services were outsourced to private rail operators. Up until 2007, services covering only 184.7 million train-kilometres out of a total 630 million (29.3%) were granted by means of a public tender (European Commission, 2010). On this point, it should be noted that contracts which have been

given directly to DB AG contain the most extensive parts of the regional rail services to be provided so that the above-mentioned figure tends to overstate the importance of public tenders in Germany. In practice, it turns out that public tenders mostly concern individual routes or smaller networks.

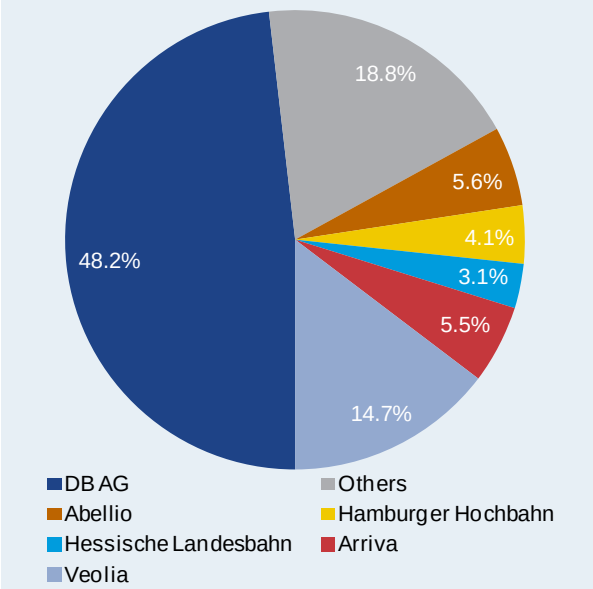
Table 14: Contracts granted directly to DB AG

State	Date of contract	Million train-km	Value (in billion €)	Length of contract
Berlin/Brandenburg	December 2002	35.0	1.9	10 years
Lower-Saxony	January 2003	27.8	2.5	10 years
Saxony-Anhalt	March 2003	16.2	2.5	12 years
Hessen (Rijn-Main-gebied)	April 2003	33.0	4.4	11 years
Baden-Württenberg	July 2003	49.0	4.6	13 yearsr
Hamburg (S-bahn)	July 2003	12.5	0.7	6 years
Rhineland-Palatinate	January 2003	29.5	2.4	11 years
North-Rhine-Westphalia	July 2004	44.0	6.0	15 years
Saarland	July 2004	6.3	0.8	14 years
Berlin (S-bahn)	August 2004	32.4	3.0	15 years
Bavaria	November 2004	98.1	8.0	10 years
Lower-Saxony	January 2005	5.3	-	12 years
Saxony	April 2005	2.6	-	10 years
North-Rhine-Westphalia	June 2005	12.7	1.1	11 years
Bremen	November 2005	2.4	0.02	10 years
Hessen	November 2005	2.4	-	5 years
Bavaria	November 2005	0.5	-	12 years

Source: Brenck *et al.*, 2007.

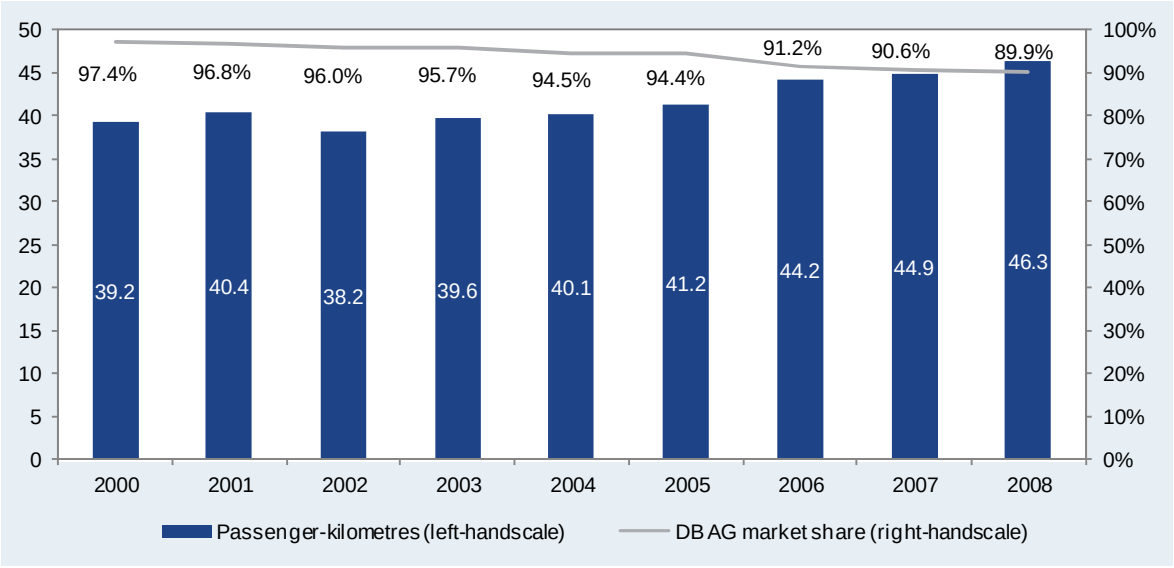
Out of all the contracts that were awarded via public tender, DB AG won around 48.2% up to the year 2007 inclusive (see chart 59). The first international rail operator that gained a foothold in Germany's regional rail market was Veolia Verkehr GmbH. It scooped 14.7% of the rail services put out to tender and consequently is now DB AG's main competitor. Yet, it only controls 2.5% of the total volume of short-distance passenger transport - a very small market share. It can be seen from chart 60 that, in 2008, DB AG's share of the market had reached 89.8% of the total number of passenger kilometres. The limited role of third-party companies can be attributed to both reluctance of the regional authorities to put out contracts to public tender and the rail operators' reticence to go into specific markets or to expand their activities. It is exceptional for an *Aufgabentraeger* to award a contract directly to a private rail operator. Nevertheless, some regional authorities have been found to pursue an underlying strategy in favour of third-party companies so as to ensure that there are more alternatives in the future.

Chart 59: Number of train-kilometres secured by rail operators in public tenders in the period 1995-2007 (in %)



Source: DB AG, 2005 and 2007.

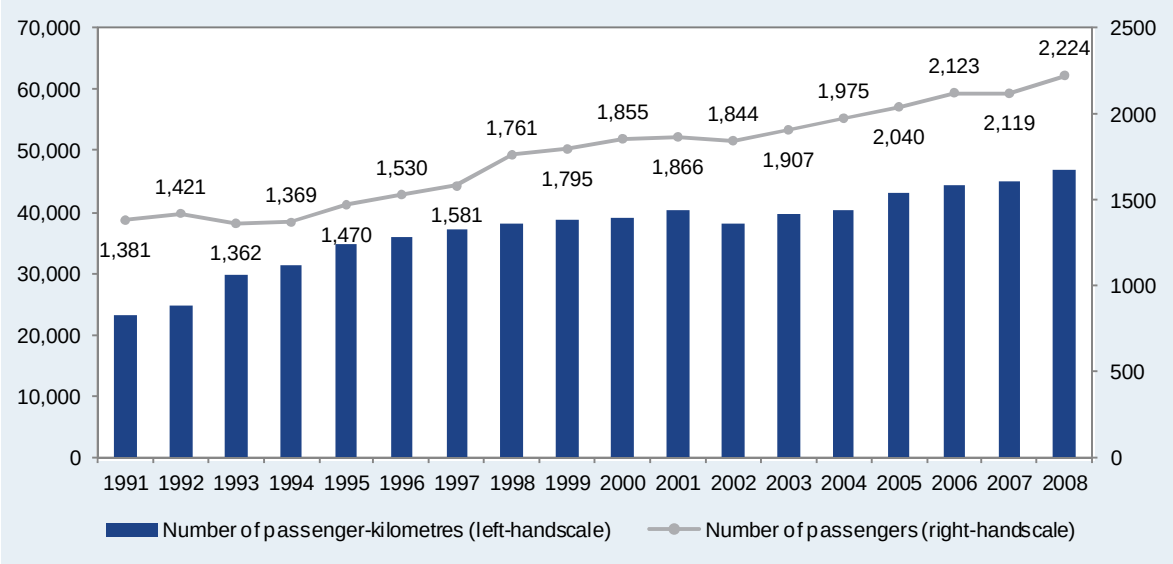
Chart 60 Passenger-kilometres (in billion pkm) and market share of DB AG (in %)



Source: DB AG, 2005 and 2007

Chart 61 reflects the trend in passenger-kilometre numbers and the number of passengers for short-distance travel from 1991 onwards. Since the reform of the railways, the number of travellers on regional rail transport has increased almost every year by 3.4% on average. Transport performance has also risen from 29.9 billion passenger kilometres in 1993 to 47 billion passenger kilometres in 2008. De considerable amounts of subsidies are the main reason behind this positive development. Even DB AG's decision to scrap several long-distance routes has ensured growth of regional transport. Better service and quality levels and the introduction of modern rolling stock have also played a role here. Finally, the introduction of new pricing, ticket and passenger information systems and renovation of railway stations have contributed to this process.

Chart 61: Passenger-kilometres (in million pkm) and number of passengers (in million) in short-distance passenger transport



Source: DIW, 2010.

6.1.2.2.2. Long-distance passenger transport

In comparison to short-distance passenger transport, it had been emphasised in the rail reform that long-distance passenger transport had to function without subsidies. It was assumed that this was feasible from a financial point of view with revenue coming exclusively from fares charged to passengers. It was also assumed that opening up the market to competition would lead to lively competition which in turn would ensure a financially sustainable long-distance rail transport sector without public intervention. In reaction to the opening of the market in 1994, DB AG immediately cut back its long-distance passenger transport services. Despite the negligible competition in this market segment so far, DB AG is still considering scrapping a number of other connections between big German cities.

Long-distance passenger transport within the DB holding is supplied by DB Long-Distanceverkehr AG and comprises two main train categories: the Intercity-Express (ICE) high-speed trains and the Intercity (IC) and Eurocity (EC) trains. The ICE system comprises around 180 stations in Germany and the neighbouring countries and the IC/EC-network links up to even more cities. However, several big cities (with more than 100 000 inhabitants) are not connected by the ICE/IC-network (bv. Leverküsen). Up until the beginning of the 1990s, DB AG had an additional category of trains, such as the Interregiotreinen (IR), that called in at these cities. DB cancelled these connections because they were losing money. On top of that, some federal states decided to replace these former IR services with subsidised short-distance transport. So, the distinction between short-distance and long-distance passenger transport is no longer always quite as clear.

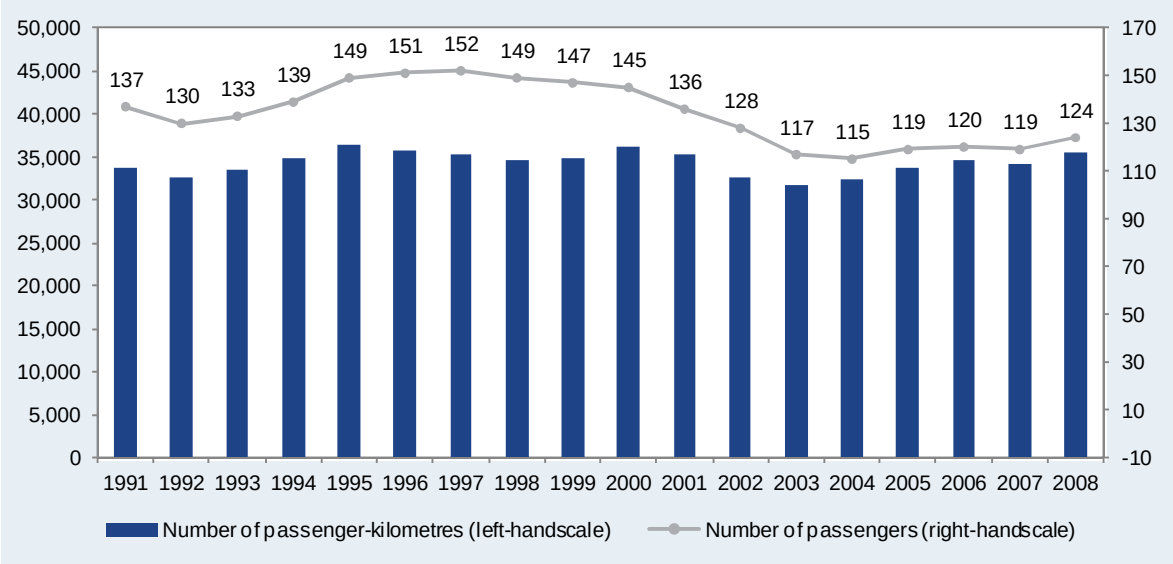
It is not so easy for private rail operators to get a foothold on the market for long-distance transport because, to do so, they have to compete directly with the dominant operator DB AG or run a route on which DB AG offers a weak service. Over the last decade, several third-party firms have entered the market, but there are still very few of them. The biggest private rail operator in long-distance transport is InterConnex, a trade name of Ostseeland Verkehr GmbH which is a subsidiary of Veolia Verkehr. It was under this trademark that, in 2002, the private long-distance train was brought into service in Germany. Interconnex runs a daily service on the Gera-Leipzig-Berlin-Rostock route. The service offered by DB AG on this route does not really appeal to travellers owing to the long journey times and the fact that they have to change trains twice. InterConnex acknowledged the value of this route put itself forward as a price-conscious alternative to DB AG. Consequently, none of DB AG's tickets or rail passes can be used on InterConnex. At the end of 2002, the connection between Dresden and Stralsund was also brought into service, followed in

mid-2003 by the InterConnex Cologne-Rostock connection. Another private rail operator that is active in the long-distance rail transport sector is a joint venture between the Swedish national rail company SJ (Statens Järnväger) and the German GVG GmbH (Georg Verkehrsorganisation). Since September 2000, they have been running the Berlin Night Express; a night train link between Berlin and Malmö. And lastly, there is the Vogtland-Express which has been providing a connection between Plauen and Berlin since June 2005. This route is served by a private rail company called Vogtlandbahn GmbH which is a wholly-owned subsidiary of the Arriva group. Up until 2001, the route had been part of DB AG's service. But, now, the big advantage of the Vogtland-Express is that it is a direct connection so travellers do not have to change trains.

Despite the opening up of this section of the rail market, DB AG is still the most dominant firm and in practice a monopolist. In this segment, too, new entrants are confronted with a whole host of problems linked to the dominance of the DB group. In 2002, InterConnex applied for a temporary injunction against DB AG because it had not announced the long-distance connection between Stralsund and Zwickau in its travel information given out to the public. After several lawsuits, the court ordered DB AG to include the necessary information about long-distance routes served by private rail operators in all its data carriers (timetables, advertising boards, Internet, telephone).

A look at the number of passenger-kilometres (see chart 62) shows that they are stagnating and, in 2008, were 2% lower than when the railways were reformed in 1994. The slump in 2002 and 2003 was caused by the introduction of a new fare pricing system that was not accepted by the general public and subsequently withdrawn. Passenger volumes rose by 10.8% in the period from 1994 to 2008, an increase that can be explained by DB AG's scrapping of the InterRegio connections (long-distance transport) which were replaced by short-distance passenger transport links.

Chart 62: Passenger-kilometres (in million pkm) and passenger numbers (in million) in long-distance passenger transport



Source: DIW, 2010.

Opening up the market for long-distance passenger transport has not led to any growth in this segment and no competition has developed as it has in the other segments (freight and short-distance transport) where a market share of 10 to 20% has been reached. This can be explained by a number of different reasons (European Commission, 2010):

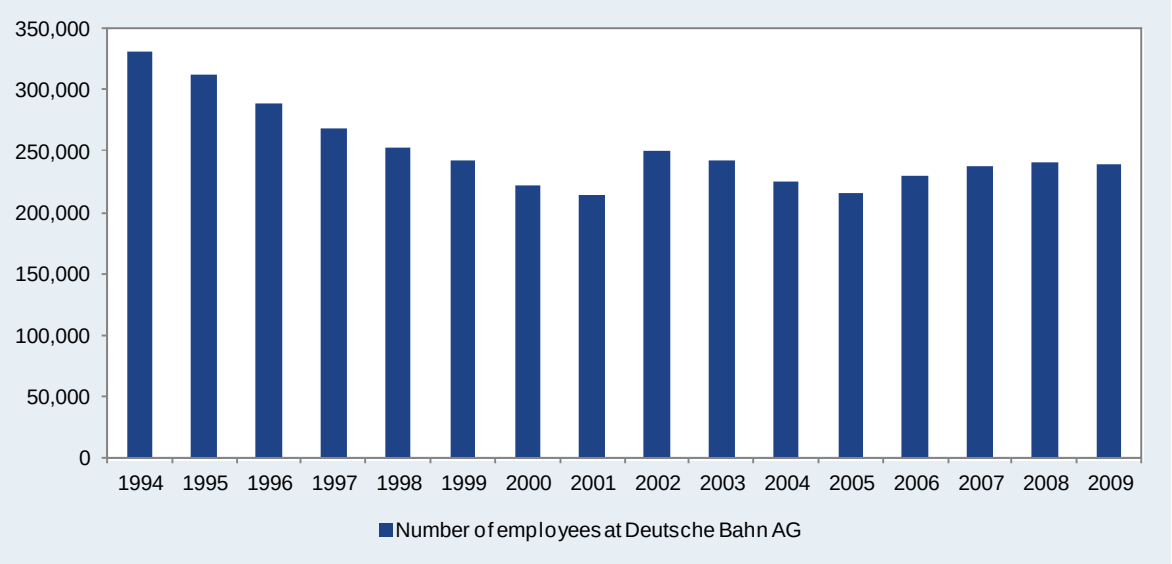
- in the early years after the railway reform, new entrant third-party firms were confronted with several problems: availability of slots, the way they were treated by the stations and availability of rolling stock were all unsatisfactory. As a pioneer and subject to the necessary legal interventions, InterConnex has since brought about an improvement in all these areas;

- the difficulty of obtaining rolling stock: at the start of the railway reform, DB AG refused to sell its surplus passenger carriages and international leasing companies had no experience on the German market;
- from the outset, the remaining rail market segments (freight and regional) were more attractive than the market for long-distance transport: as a result of regionalisation, there is no shortage of budgets available for short-distance transport and access to the market for freight transport is much easier owing to the use of block trains (a goods train that is put into service specifically for one particular client). Furthermore, freight transport enjoyed unprecedented growth on account of the trend towards globalisation which brought a sharp increase in freight traffic from the North Sea ports.

6.1.3. EMPLOYMENT TRENDS IN THE GERMAN RAILWAYS

The trend in employment at DB AG has clearly been influenced by the railway reform and, more specifically, by the need to scale down staff numbers after amalgamation with the East-German rail company. As can be seen from chart 63, over the period 1994-2001, the number of employees at DB AG shrank by an average of 6% a year. From the year 2002, this trend was reversed and staff numbers started rising again (+16.9%) as a result of the takeover of the rail telematics division of Arcor AG and the logistics service provider Stinnes AG[112]. In the following years, further efforts were made to cut back the number of employees. But from 2006, this no longer appeared to be possible because of DB AG's active takeover policy as it endeavoured to become Europe's biggest railway enterprise. Through the acquisition in 2006 of the Hangartner Group, a Swiss forwarding company and logistics supplier, staff numbers went up by 5.9%. Employee numbers expanded again in 2007, this time by 7.9%, as a result of the takeover of the biggest British rail freight company (English Welsh & Scottish Railway Holdings Limited or EWS). In 2008 as well, staff numbers increased by 3.2% through the acquisition of an internationally active logistics service provider from Spain (Transportes Ferroviarios Especiales SA (Transfesa)).

Chart 63: Number of employees at Deutsche Bahn AG since the rail reform



Source: Deutsche Bahn AG, 2010 and 2004

112 By taking over the rail telematics division of Arcor AG, DB AG wanted to reassert itself as market leader in telematics so as to improve the interoperability between the European railway network telecommunications systems (i.e. through the introduction of "GSM-R", a standardised platform for mobile rail telecommunications). So, the takeover of the logistics service provider Stinnes AG once again fits in with the trend towards offering a broader transport concept. The rail freight forwarder is not limited to just locomotives but also presents itself as a provider of logistics services that also takes care of carriage services before and after shipping.

Since the reform of the railways, the sector has shown remarkable growth in productivity. This is illustrated in chart 64 by changes in the ratio of passengers and tonne-kilometres[113] to employees for the period from 1994 to 2009. Between 1994 and 2001, this indicator rose by 82% on the back of growth in passenger transport and freight and as a result of cut-backs in staff numbers. In 2002, productivity fell (-18%) for the first time owing to a combination of an increase the workforce following the acquisition of Arcor AG and Stinnes AG and the economic recession which had a significant impact on the development of both passenger and freight transport. The second major drop in productivity (-10.8%) which occurred in 2009 was fully attributable to the collapse of the freight transport market as a result of the severe economic and financial crisis. The initial decline in German goods transport had already been gaining momentum over the last few months of 2008 but picked up pace in 2009, which led to an unprecedented collapse in sales volumes in the case of all possible modes of transport. Weak foreign trade meant that international goods transport was hit particularly hard. Cargo transport by rail suffered the biggest loss of market share, down by 17.3% (DB Group: 20.8% and non-DB rail companies: 4.4%), compared to 10.2% for freight haulage by road and 16.2% for the waterways (Deutsche Bahn AG, 2010).

Chart 64: Productivity developments (ptkm per employee)

Source: Deutsche Bahn AG, 2010 and 2004.

A study by Friebel, Ivaldi and Vibes takes an in-depth look at the influence of rail reform in the different European countries on the productivity of national passenger transport by means of a model based on the production probability curve[114]. It shows that, in spite of a different degree of deregulation in each country, all reforms have exerted a positive influence on productivity of passenger transport. It can be seen from the model that Germany was even more productive than the other countries in 1999. Relative productivity enjoyed a period of growth between 1993 and 1999, only to fall back afterwards in 2000. This does not mean that Germany has become less productive but simply that other countries are seeing productivity growth rates that are stronger than Germany's.

113 In goods transport, a tonne-kilometre is used as a uniform unit of measurement for the volume of goods shipped and is the equivalent of shipping a tonne load weight over a distance of one kilometre.

114 When two items can be produced using a given production technology two, the production possibility frontier gives the maximum quantity of one item that can be produced when a given quantity of the other is a produced. Moreover, all possibilities within the curve are inefficient. The convex side of the production probability curve shows the increasing alternative costs of expanding production of a good. Economic growth results in a shift outside the curve.

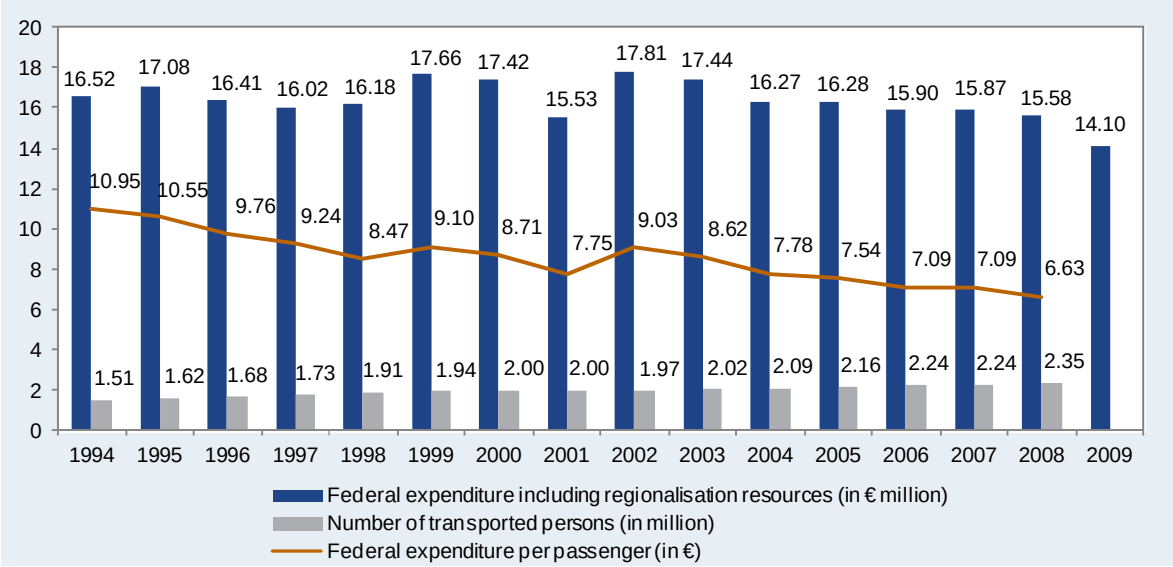
6.2. FINANCIAL ANALYSIS

6.2.1. REVENUES AND SUBSIDIES

The rail reform's main objective was to lighten the financial burden on the German budget by bringing down expenditure flowing to railway traffic. As mentioned above, in the early 1990s, both railway companies were in a precarious economic situation. According to certain models calculated by the Regierungskommission Bundesbahn (RKB), without any reform, the federal government's demand for financial resources for the railways would amount to € 32.5 billion on an annual basis by the year 2000. However, the reform measures would ensure that the Federal Republic of Germany would by 2000 manage with a budgeted amount of €12 billion on an annual basis.

Looking at Germany's actual joint expenditure development (including regionalisation resources) for the railways in chart 65, these amounts average out at €16.8 billion per year or 40 % more than originally budgeted. The total joint expenditure for the railways amounts to €262.1 billion for the period 1994 up to and including 2009. However, in this case it is an upper limit, as the federated entities are not accountable to the federal government about the use of the regionalisation resources; in reality, the latter are not always used exclusively for the railways but also for other expenditure related to public passenger transport.

Chart 65: Federal expenditure on the German railways, including regionalisation resources (in € billion)



Source: Bundesministerium der Finanzen.

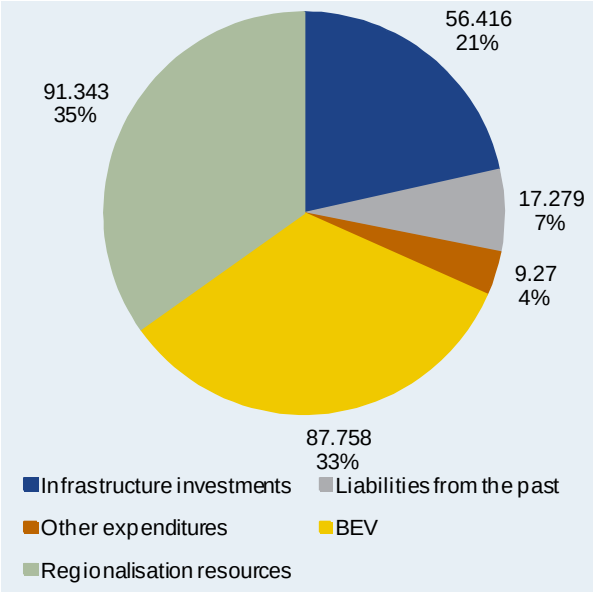
But for a number of years, joint expenditure shows a rather static development during the period 1994-2005. A first expenditure dip occurred in 1997 and 1998 and can be attributed completely to infrastructure investment being reduced by about a quarter in relation to 1996, as a result of which these amounted to € 2.92 billion in 1997 and to € 2,83 billion in 1998 (see annex 2). A second dip can be noted in 2001 as a result of a 40 % cut in the contribution to the BEV (*Bundeseisenbahnvermögen*) to € 3.46 billion. Only from 2006 onwards does joint expenditure clearly start its downward trend. Up until 2008, this trend can be explained by the German parliament's decision to limit the extent of the regionalisation resources (see. 6.3.2.1. Short-distance passenger transport). As of 2009, regionalisation resources are again index-linked (annual increase of 1.5 %) and the drop in expenditure is to be attributed completely to an almost 60 % drop in infrastructure investment to € 1.44 billion. This is the lowest amount ever invested in German railway infrastructure since the beginning of the rail reform.

A comparison of total federal expenditure for the German railways with the number of passengers per year in short-distance and long-distance passenger transport shows that this ratio declined by

39.5 % from 1994 to 2008. At the start of the rail reform in 1994 the subsidy cost per passenger amounted to € 10.95 per passenger and to € 6.63 per passenger in 2008.

Maintaining a high-performing railway system in Germany requires considerable expenditure from the federal government. Over the past decade, joint expenditure including regionalisation resources amounted to some 8 % of the German Federal Republic's total budget. Chart 66 shows that 40 % of railway expenditure serves to meet past obligations (€ 87.76 billion for the BEV and € 17.28 billion charges from the past). Only 21 % of all means spent in the last 16 years are intended for rail infrastructure investment, whereas 35 % goes to the federal States for organising the regional short-distance passenger transport (Booz Allen Hamilton, 2006).

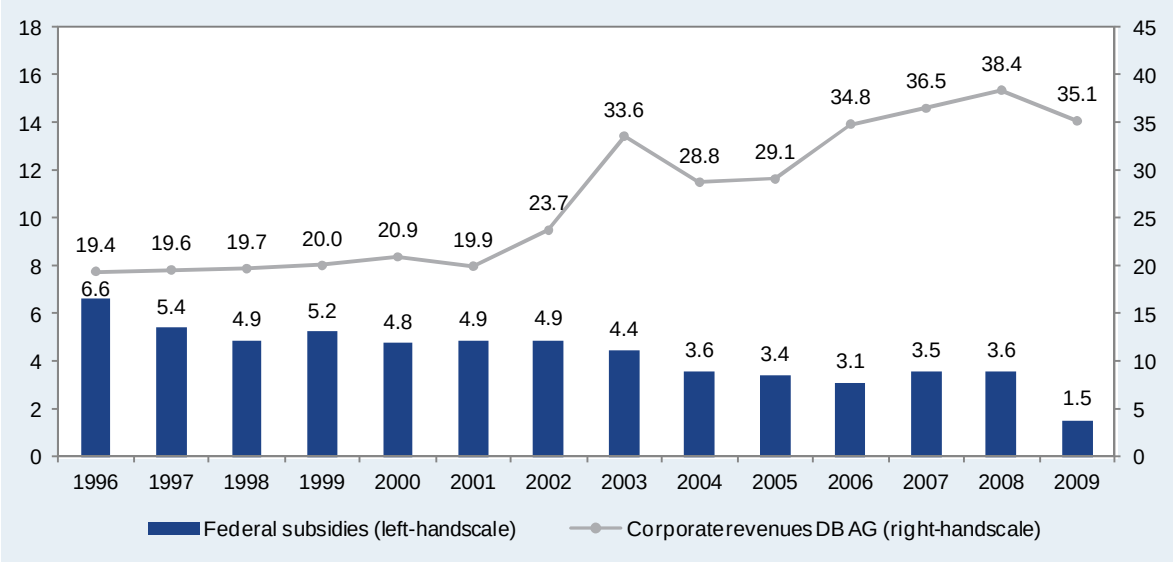
Chart 66: Accumulated German federal railway expenditure including regionalisation resources during the period 1994-2009 according to scope (in € billion)



Source: Bundesministerium der Finanzen.

Since the rail reform, DB AG has depended on both indirect subsidies (regionalisation resources and BEV) and direct subsidies. From 1996 until 2009, each year an average of € 4.3 billion of federal resources flowed directly to the railway company (€59.7 billion in total). These resources are destined both for investment measures (new constructions, replacement and maintenance) and for meeting liabilities inherited from East Germany in the past concerning staff and material expenditure. Chart 67 shows a declining trend in direct federal subsidies to DB AG (an average annual change of -9 %) and a strong dependence of these subsidies of the overall budgetary situation in Germany. A comparison with the corporate revenues of DB AG shows that not only the nominal value, but also the proportion of the federal subsidies is declining annually.

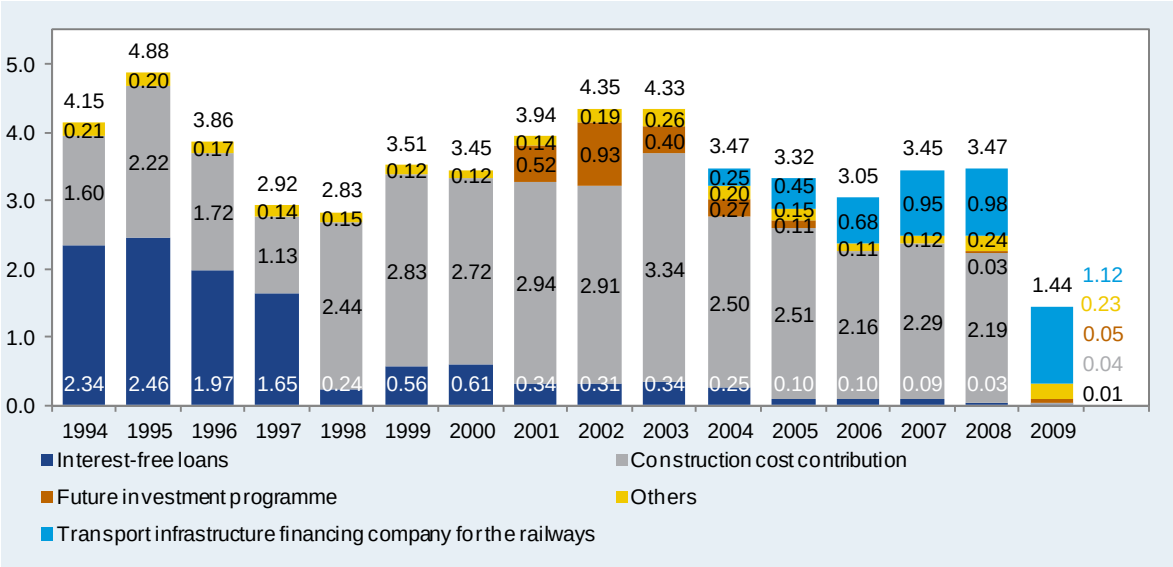
Chart 67: Corporate revenues of and federal subsidies to DB AG for the period 1996-2009 (in € billion)



Source: Bundesministerium der Finanzen.

The investment resources DB AG is entitled to show a fluctuating development (see chart 68). Since the rail reform, on average € 3.53 billion of public resources are made available for rail infrastructure investment. After a low in 1997 and 1998 the average revenues increased consistently until 2004. From 2001 onwards, investment resources increased because of the so-called future investment programme, as a result of which a maximum value of € 4.35 billion was reached in 2002. The following years, federal expenditure for rail infrastructure investment again show a downward trend, hitting an absolute low in 2009 with an investment budget limited to € 1.44 billion.

Chart 68: Federal investment resources for DB AG for the period 1994-2009 (in € billion)



Source: Bundesministerium der Finanzen.

Over the years, the form of the investment financing structure changed repeatedly. Originally, mainly interest-free loans were granted for improvements, new constructions and infrastructure replacements for which DB AG itself was requesting party. They were then refunded according to the rhythm of the annual write-downs. Another form of subsidy was the construction cost contribution without refunding obligation, which was only applied for investment measures for which DB AG itself showed no interest, but for which the decision had been taken within the federal transport policy. In 1998, the federal government and the rail companies reached an agreement to

convert these aforementioned financing forms. The construction cost contribution became the standard rule for investment in infrastructure improvements and new constructions. This meant a considerable relief for DB AG because there was no refunding obligation attached to this. Interest-free loans could only be used for replacement measures. The next investment financing modification occurred in 2001, when the federal government created a number of additional financing instruments (for instance, the future investment programme and partnership for traffic infrastructure financing of the railways) (Benedikt, 2008).

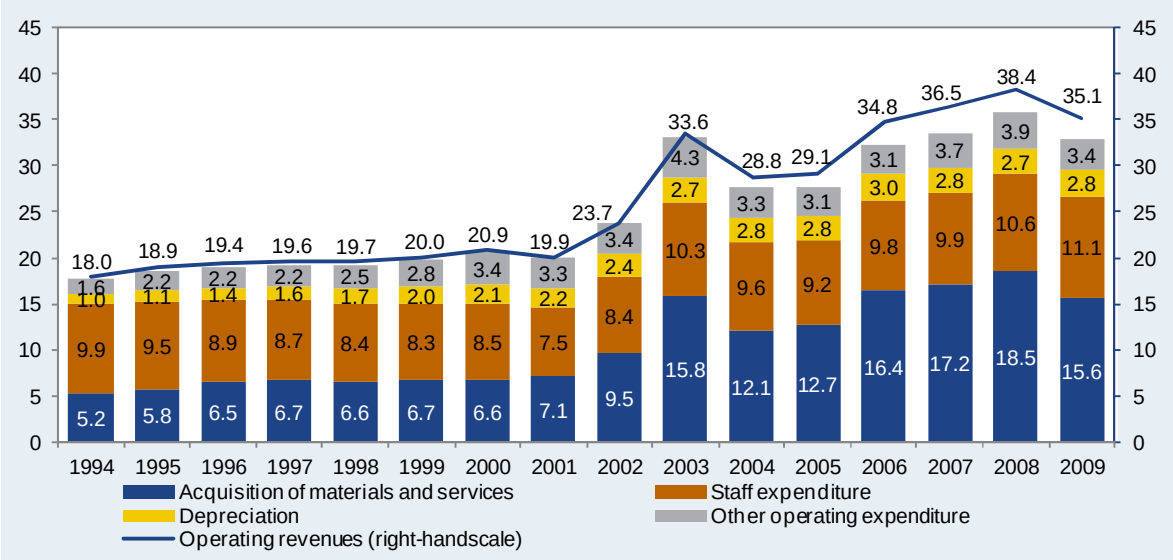
The actual size of DG AG's contribution to investment in new constructions and infrastructure improvements is debatable. The federal Audit Office (Bundesrechnungshof or BRH) talks of 2 % and DB AG claims it is 10 %. On the other hand, the Federal Ministry of Transport, Building and Public Housing argues that it does not have sufficient reliable statistics at its disposal concerning DB AG's contribution to railway investment (Böttger, 2004).

The high amount of public resources received annually by DB AG can not be found in the annual accounts. The company does not enter investments financed by subsidies as assets. This makes it difficult to trace the amount of subsidies flowing to railway infrastructure and the use that is made of them. Furthermore, the amount of DB Netz AG 's write-down costs is considerably lower compared with other enterprises that invest heavily in tangible fixed assets. From the start of the rail reform until 2007 and despite the artificially low write-downs, DB Netz AG closed each financial year with a loss (Benedikt, 2008).

6.2.2. OPERATING COSTS

Chart 69 shows movements in the consolidated corporate costs[115] of all independent corporate sub-divisions within the management holding company DB AG. In order to put these business costs into perspective, the associated corporate revenue is also reflected.

Chart 69: Corporate revenue and costs of the Deutsche Bahn Group (in billion €)



Source: Deutsche Bahn AG, 1994 to 2009 inclusive.

The railway reform set as a target two basic objectives that had to be achieved within a 10-year time span, namely an improvement in DB AG's transport performance and a reduction of government expenditure on the railways. Because of these targets, from the start of liberalisation in 1994, DB AG had to invest heavily each year in modernising and improving the performance of the railway system. On top of that, it also had to set off the technical and organisational deficits of the

[115] In the annual report from Deutsche Bahn AG and DB Mobility Logistics AG, no information is given about individual business costs of each independent corporate sub-division within the management holding company.

former DR. For this purpose, DB AG received annual state aid under the terms of a federal law of 23 December 1994. These subsidies were run down according to a fixed schedule and phased out completely in 2002. This federal government support had to be matched by annual productivity growth achieved by DB AG. From chart 68, it appears that the rail company did not manage to do that up until the year 2000. Both corporate revenue and costs remained roughly at the same level over the period 1994-2000.

By the end of 1999, implementation of the reform process was half way through and it was decided to appint a new chairman of the board (Hartmut Mehdorn) who was given the task of preparing the DB group for a stock market flotation by the end of the originally foreseen reform period. In order to attain this objective, a "value management"[116] concept was implemented to enable the DB group's corporate performance to be measured. A target figure for the Return on Capital Employed (ROCE) of at least 10% by the year 2005 was assumed.

A new restructuring programme ("Fokus") was then introduced with the aim of further increasing efficiency. This programme had to deliver visible improvements in performance for both passenger and goods transport. One of the most important measures was the planned cooperation with Stinnes AG from 2001 onwards. Alongside that, considerable cost savings also had to be made in both operational and administrative functions. The programme also included approval of an intensive investment programme that sought to speed up modernisation of the infrastructure and rolling stock by 2005 for a hefty sum of €40 billion.

In 2001, an operational loss (EBIT117) of €98 million was recorded as a consequence of this modernisation process and the associated intensive capital investments. In both 2002 and 2003, an operating profit was booked to start with but, after deduction of the financial results, this eventually turned into a pre-tax loss (2002: - €438 million and 2003: - €133 million). It was not until 2004 onwards that the tough Fokus restructuring programme bore fruit and once again a positive pre-tax result was posted.

The year 2003 brought a remarkable 41.5% increase in corporate revenue. This was the first full accounting year in which the Stinnes group results were consolidated with those of the DB group. Since DB AG held almost all the share capital of Stinnes AG by October 2002, the results were consolidated on a *pro rata temporaris* basis in the 2002 accounting year, which produced a 19% rise in corporate revenues. Total operating expenditure increased by 39.6% in 2003 to €33.1 billion. Purchases of equipment and services in particular saw huge growth of 65.3% (€15.8 billion in total) entirely attributable to the consolidation with Stinnes AG. Its portfolio includes various subsidiaries that have much more to do with purchases of goods and services than the conventional railway business.

Once the merger was fully rounded off, DB AG decided to sell off two non-transport-related companies in the Stinnes AG portfolio. The first was Brenner AG, a firm that is active in the trade and distribution of chemical products, and the second a company specialised in steel products and raw materials, Interferer AG. Owing to this change in the scope of the merger, corporate revenue fell in 2004 by 14.4% to €28.8 billion. When this figure is adjusted to take account of the hive-off of Brenner/Interferer, corporate revenue of all the other entities within DB AG is seen to rise by 4.1%.

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116 Value management is a project management technique that should enable the progress with a project to be measured as objectively as possible. It involves control over (timely) application of methods and techniques that are used during the project development phase so as to follow the efficiency of the development process and to lead to the best possible outcome.

117 EBIT, which stands for Earnings Before Interest and Taxes, is the equivalent to so-called operational profits or losses. This is a measure of performance that takes no account of the effects of the capital structure of the enterprise, nor of the various aspects of the corporate tax system where were included in the profit-and-loss account.

This appeared to be growth which was to continue into the following years and 2006 was thus the most successful financial year to date in the history of Deutsche Bahn. Favourable trends in performance in rail transport and logistics together with a number of mergers led to a massive 19.6% rise in corporate revenue to €34.8 billion. The most important transaction that was behind this increase was the 100% takeover in November 2005 of BAX Global Inc., an American listed company that supplies worldwide air, sea freight and transport services out of the United States. For DB AG, this was not only a big step forward in its endeavours to further expand logistics activities, but also fell within its long-term strategy to become market leader in this sector in combination with a strong, global position in all growth regions. If corporate revenue per region is examined, a major shift appears through the takeover of BAX Global Inc. The income generated in Germany in 2006 still only came to 66% of the total revenue compared with 74% in 2005. The rest of Europe remained roughly unchanged with 20%. By contrast, North America accounted for 7% of corporate revenue in 2006 compared with 3% in 2005 and the Asia-Pacific region represented the same amount.

The 4.8% growth of corporate income in 2007 was not due to the takeovers but mainly to the continuing positive performance by rail transport, global freight transport and logistics services. All the independent entities within DB AG without exception were on an upward curve and contributed to the increase in revenue. The biggest increases were recorded by Energy (+25.4%) and Track Infrastructure (+12.6%). It is worth noting that this is mainly thanks to higher demand for train paths and traction by rail companies that do not belong to the DB group.

The positive trend of the previous year also continued in 2008 with a 5.2% increase in corporate income. This can be explained, on the one hand, by the continued favourable developments on the rail market and, on the other, by several new corporate takeovers by DB AG. The most important acquisitions were DB Schenker Rail UK, DB Regional UK, Spain-Tir and Transfesa. DB Schenker UK was formerly known as English, Welsh and Scottish Railways Ltd and is the biggest British rail freight transport company. DB Regional UK sprang out of the takeover of British operator Laing Rail. Through this, DB Regional is now owner of Chiltern Railways (a British private train operator that runs the Chiltern Main Line commuter trains between London and Birmingham) and joint operator of London Overground (private commuter transport in London) and Wrexham & Shropshire (a private rail operator that provides a direct connection between London and Shropshire). With the takeover of Spanish freight forwarders and logistics service providers Spain-Tir and Transfesa, DB Schenker gained an important foothold in Spain and Portugal and further consolidated its leading position in the European market for overland transport.

In 2009, there was a marked drop (-8.4%) in corporate revenue compared to the previous year that can mainly be attributed to greatly reduced freight carriage volumes and the logistics market caused by the global economic crisis. In addition, income from long-distance passenger transport was also reduced by the limited availability of ICE high-speed trains. Following a number of incidents, metal fatigue was detected in these trains. Technical inspections therefore had to be stepped up and, consequently, the number of operational trains available was sharply reduced especially during the winter months. Expenditure was down by the same amount (8%). There was a particularly sharp drop in purchases of equipment on account of a scaling-back of corporate activities at DB Schenker Logistics. Then again, this was partly offset by the increase in staff costs resulting from negotiated pay rises and restructuring costs.

6.2.3. DEBT

Despite the active acquisitions policy and the global economic crisis, DB AG managed to run down its financial debts considerably over the period 2004-2009[118] (-18.6%). The financial debt refers to

[118] Statistical data for DB AG's financial debt up to 2004 have been compiled in accordance with the German GAAP standards. After that, the group switched over to International Financial Reporting Standards for drawing up its consolidated annual accounts.

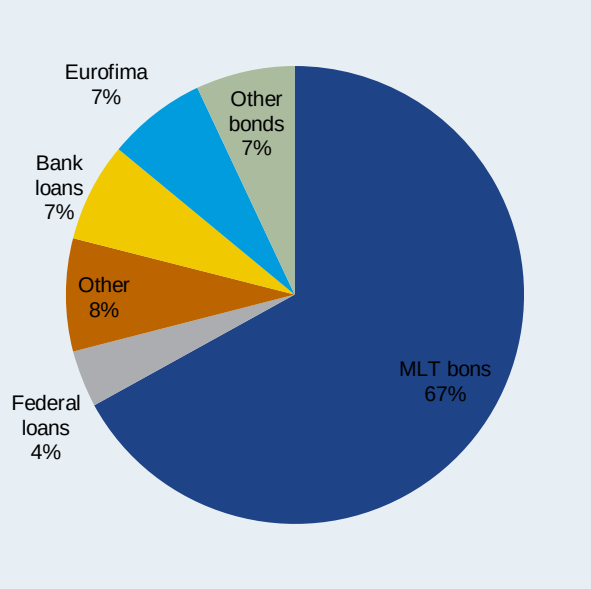
all interest-bearing debts, including the federal loans used for funding infrastructure projects. The net financial debt is calculated on the basis of the gross financial liabilities exclusive of liquid assets and financial claims. Chart 70 shows the various components (with the exception of interest-free loans worth a total of € 3 276 million) that make up DB AG's financial debt position.

Table 15: Financial debt of Deutsche Bahn Group (in € million)

	2004	2005	2006	2007	2008	2009
Financial debt	20,276	19,974	19,881	18,062	16,853	16,510
- Outstanding claims	- 765	- 305	- 295	- 1.549	- 910	- 1.499
Net financial debt	19,511	19,669	19,586	16,513	15,943	15,011

Source: Deutsche Bahn AG, 2010.

Chart 70: Structure of the financial debts (as at 31 December 2009)



Source: Deutsche Bahn AG, 2010.

6.2.4. ANALYSIS OF THE RATIOS

The Return on Capital Employed (ROCE) (see table 16) is the ratio of Earnings before Interest and Tax (EBIT) to the difference between total assets and short-term debts. It is a gauge of efficiency and profitability of the investment made by DB AG over the period 2004-2009. Up to 2008, the ROCE was on an upward path, a trend attributed to the rising corporate profits, only to fall back again to 5.9% in 2009 under the impact of the global economic crisis. This is considerably lower than the yield of 10% that DB AG itself had assumed it would reach.

The cover ratio is the relationship between the operational cash flow and the net financial debt and indicates the likelihood of a firm to meet its fixed debt commitments. DB AG is aiming for a ratio of 30%. In 2008, the highest cover ratio was recorded (22.5%) but this was below the target figure. Nevertheless, the cover ratio is on a positive trend and DB AG is clearly in a position to pay off its debts contracted under the intensive investment programme.

Table 16: Financial ratios of the Deutsche Bahn Group (in percentages)

	2004	2005	2006	2007	2008	2009
ROCE	3.8%	5.0%	7.5%	8.7%	8.9%	5.9%
Cover ratio	12.7%	14.7%	18.6%	21.1%	22.5%	19.4%

Source: Deutsche Bahn AG, 2009.

6.3. CONCLUSION

The German situation differs from the other European countries, where the changes within the railway sector sprang out of Directive 91/440/EEC. The basic principle of the German rail reforms was a combination of unfavourable economic developments on the one hand and the German reunification on the other, as a result of which the East German railways were joined up with the DB. In 1989, a public railway committee was established whose proposals led to a thorough reform of the railway system in 1994. This committee concluded that the problems from the past could only be solved by subjecting the State monopoly to the free market economy and by allowing free access to the railway infrastructure.

Both railway companies were merged and transformed into a public limited company with separate departments for passenger transport, freight transport and railway infrastructure. In an ulterior phase, these entities were transformed into separate partnerships under DB AG that acted as a holding company. This was meant to prevent public resources intended for the infrastructure from being used for transport. The German railway company operates as a vertically integrated group structure which the company itself indicates as the most important factor of its successful development.

In 1996, when the universal service obligation was removed, responsibility for the organisation of short-distance passenger transport was passed on to the different federal States. This regionalisation allows for more freedom concerning contracts and services. In order to enable the *Länder* to organise the short-distance passenger transport, they receive on an annual basis financial resources coming from the federal State's tax proceeds. However, the lack of standardisation, both concerning the form of the contract and the definition of the requested services, leads to substantially higher costs for rail operators that are willing to make a bid. Moreover, despite the broad freedom of choice for the federal States and the full market liberalisation, a large number of big contracts still seem to be attributed directly to DB AG. Its biggest competitor is Veolia Verkehr GmbH which has secured 14.7 % of the railway services on offer, but only 2.5 % of the total short-distance passenger transport volume. DB AG clearly holds the biggest contracts and as the majority of them have been concluded for at least a ten-year period, this has a long-term impact on the functioning of competition.

Because Germany was one of the first countries to liberalise access to the railway infrastructure for third-party companies, it has the largest number of freight rail companies within Europe. Nevertheless, DB Schenker Rail still holds 75.4 % of freight transport and the market share of newcomers is only growing slowly. Moreover, new third-party entrants experience various problems linked with the DB Group's dominance. Owing to the vertical integration of infrastructure and transport within DB, DB Netz hinders rail network access by the extent and composition of the infrastructure user charges it imposes. These problems faced by private freight operators in one of the most liberalised countries with regard to rail transport offer an eye-opening picture. After 15 years of free access to the rail market, rail operators are still faced with big impediments caused by the DB Group's dominance in order to be able to acquire only a limited market share. Furthermore, the complex and varying approach of the liberalisation process in Europe allows for historic players from big countries (like DB) to actively take over. This raises the question whether ultimately, this concentration phenomenon is not to the consumer's disadvantage.

The rail reform's main objective was to limit the financial burden on the German budget. Without a reform, the federal government's demand for financial means for the railways would amount to € 32.5 billion on an annual basis by the year 2000. However, the reform measures would ensure that by 2000 a budgeted amount of € 12 billion would be sufficient. In reality, joint expenditure averages € 16.8 billion per year or 40 % more than originally budgeted. Because of this, federal expenditure including regionalisation resources amount to about 8 % of the Federal Republic's total budget.

The financial analysis of DB AG shows that, in the period 1994-2000, the railway company failed to realise an annual production growth that must compensate for the cut-back in government support. In 2000, a new management board chairman was appointed with the task of preparing the DG group for a stock market flotation by the end of the original reform period. A restructuring programme was introduced that, besides an intensive investment programme, also foresees considerable cost-cutting. As from 2004, this programme clearly appeared to be paying off and it turned out to be the start of continuing growth over the following years. DB AG also conducts an active takeover policy in its aim to become Europe's biggest railway company. Corporate revenue grows annually owing to a combination of takeovers and continuing favourable performances delivered by rail transport, overall freight transport and logistic services. Due to the many takeovers, staff costs also rise, but always at a slower rate than the revenues, so each year a positive result is recorded. In 2009, corporate revenue declined remarkably, although this was largely attributed to the worldwide economic crisis. Expenditure fell proportionally, so that in this year, too, a positive result was recorded. Despite the active takeover policy and the worldwide economic crisis, DB AG has managed to cut back its financial debt substantially.

Along with a productivity increase owing to the implementation of an intensive restructuring plan, the rail reforms in Germany turned DB AG in 2010 into the European market leader for freight transport by rail. The German company intends to dethrone the SNCF and to become the European market leader for passenger transport, too. DB has a bigger domestic market and better balance sheet figures, making its position more suitable for foreign acquisitions and further expansion.

7. THE REFORM OF THE RAILWAYS IN THE NETHERLANDS

7.1. REORGANISATION AND DEVELOPMENT OF THE INCUMBENT RAILWAY COMPANY

7.1.1. BACKGROUND

De Nederlandse Spoorwegen (NS) [Dutch Railways] was established in 1938 as a private legal entity (NV) with the Dutch State as the sole shareholder. NS was licensed by the government to manage the rail infrastructure, the rolling stock, the staff and the transport process. Until 1970, NS was largely independent, both financially and in regard to day-to-day operations. Only the installation of new infrastructure was funded entirely by the Ministry of Transport and Water Management, after which NS acquired ownership and had full responsibility for the management and maintenance costs.

By around 1970, NS was facing serious financial problems as a result of the expansion of road transport and the loss of the profitable work of transporting coal from South Limburg. The Dutch government provided support measures as payment for certain services associated with the term "public service". Under Regulation 1191/69 EEC, compensation for the provision of such public services is exempt from the obligation concerning prior notification to the Commission. However, this meant that NS lost much of its independence, because its deficits were from then on adjusted by the Ministry of Transport and Water Management. From 1987 onwards, the government's role in regard to NS policy was greater still because the Minister had power to draw up the budget, amend tariffs and adjust the schedules.

In the early 1990s, there was increasing dissatisfaction about the annual financial support in the form of subsidies because of the resulting heavy burden on the budget, and people had the impression that NS did not always use the money efficiently. This gave rise to a number of significant public transport reforms. The government wanted to expand the available services, increase efficiency and cut the public contributions. The formal reason for the structural changes at NS was Directive 91/440/EEC which stipulated that the infrastructure must be separated from the operations. For the purpose of implementing this European Directive in national law and establishing the future administrative and financial relationship between the government and NS, the Minister of Transport and Water Management set up the independent Wijffels Commission.

In 1992, this Commission issued its recommendation in the form of a report entitled "*Sporen voor straks*" [Travelling by train in the future] (Wijffels *et al.* 1992). The recommendation focused mainly on breaking the link between the government and NS by vertical separation between the installation and maintenance of the infrastructure and the operation of the transport services. Another recommendation was that there should be horizontal separation in order to end the complex interconnections between the operating activities of NS. The Wijffels Commission identified four core functions of NS which could be transferred to separate business units: the operation of passenger transport, the operation of freight transport, management of the infrastructure and capacity management[119]. In future, only the infrastructure would be funded by the government (Infrastructure Fund) in exchange for the phasing out of the operating subsidies to NS. This privatisation[120] would mean that the railway company would again be able to decide its own tariffs, schedules and investment policy. According to the Commission, a key condition was the termination of the traditionally major influence of the Ministry of Transport and Water Management on the business aspects of railway operation.

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119 This is the allocation of railway capacity according to objective rules between users (passengers, freight, infrastructure management, potential third parties) in regard to both planning (scheduling) and execution (traffic control).

120 In strict legal terms, privatisation was not possible because NS had already been a private organisation since 1938. Privatisation primarily refers to the limitation of government involvement in the management of the business, and the phasing out of public funding.

In 1995, an agreement under private law known as "*Over de wissel tussen markt en overheid*" [on cooperation between the market and the government], was drawn up between the government and NS on the reorganisation of responsibilities. The government remained responsible for the policy relating to the infrastructure and the quantity, planning, costs and charges for the use of the railway infrastructure. The operation of rail transport services had to take place on a commercial basis and the NS subsidies would be phased out completely by the year 2000. For routes where certain transport services were not viable, but were desirable for social reasons, the government could conclude specific contracts with a transport operator. In 1994, the McKinsey consultancy conducted a survey on behalf of the government and NS into the losses per line (train series) and per route (routes). This survey identified 30 lines as unprofitable, laying the basis for the separation of the Dutch railway network into a main rail network (see figure 7) and other lines which could be outsourced in the short or long term (contract sector train services or decentralised train services).

Figure 7: The main rail network

Source: Main Rail Network Decree, 20 December 2004.

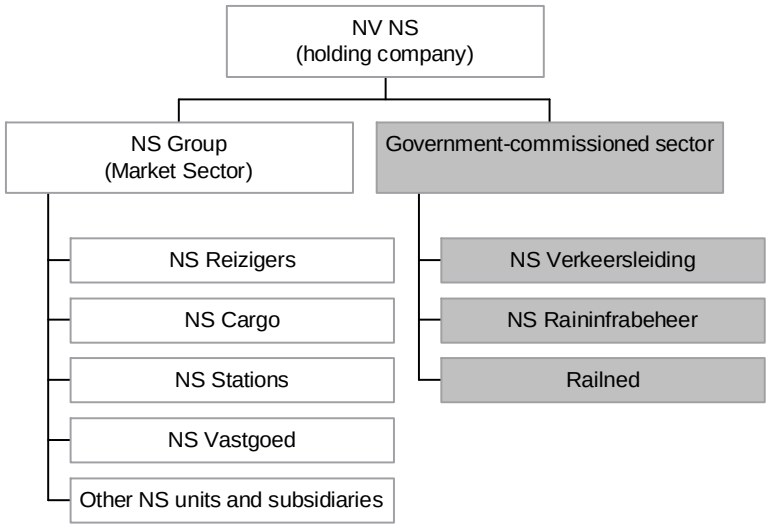
Following privatisation of NS, creating a public limited company without government subsidies, NS focused more on passenger transport because rail freight in the Netherlands was not sufficiently profitable. Rail freight was hived off since the market share was considered too small to become a sound, independent NS division. In 2000, NS Cargo was sold to Raillon. The holding company, Raillon GmbH, is a subsidiary of DB Logistics and was set up following this merger of the freight

divisions of the Dutch (NS cargo) and German railways (DB Cargo). In 2009, the name was changed to DB Schenker Rail.

Though the general subsidies for passenger transport ended, NS had greater freedom in regard to tariffs and schedules. As a result, the company tapped new markets and encouraged off-peak travel by its fare structure. Since peak traffic is not so lucrative as off-peak traffic, peak-time fares were raised. This led to social protest and political debate.

NS was divided into a market sector and a government-commissioned sector (see figure 8). The market sector comprised the elements which had to operate on a commercial basis: NS Vastgoed (site development and running of buildings, shops and sites in and around stations), NS Stations (station operating), NS Cargo (freight transport) and NS Reizigers (passenger transport). These business units were to remain with NS. The government-commissioned sector comprised the units regarded as the government's responsibility: Railinfrabeheer (installation and maintenance), Railned (capacity planning, allocation and safety) and Verkeersleiding (traffic control, signalling and technical adjustments). These 'task organisations' (executive agencies) remain part of the NS group and were fully funded by the Ministry of Transport and Water Management. Any surplus or deficit remained in the agencies so that there could be no financial connections with the market units. The task of the NS holding company was confined to running the executive agencies. The reason for this was that staff were against leaving NS. A transitional period was agreed for the implementation of the arrangements under "*Over de wissel tussen markt en overheid*"; that period was to run until 31 December 1999.

Figure 8: Organisation chart for Dutch Railways (NS) from 1995



Source: Lower House of the States General, 1998-1999.

After 1995, a complicated situation arose in practice because of the loss of the coordination mechanism between NS transport and the infrastructure. The executive agencies have to apply to the Ministry of Transport and Water Management and adopt a more formal attitude towards NS, while the latter remains a shareholder and as such is involved in the accountability process of the executive agencies. In the first few years after 1995, the new organisations were rearranged and the executive agencies were separated from the NS group. NS concentrated on privatisation and the new commercial opportunities. The cost structure also underwent close scrutiny because the business operated on the assumption that it would ultimately be floated on the stock market. The costs of the executive agencies, in particular, were subject to strict limits. In those years, the relationship between Railinfrabeheer and the Ministry of Transport and Water Management was also very bad, with constant conflicts. Since the Ministry of Transport and Water Management had previously only been concerned with the finance and administration of NS, there was a major lack of expertise with regard to the specialist executive agencies.

In the period 1997-2000, there was much government debate about the desired market system, and the most varied models were considered. This process crippled the rail sector because it implied great uncertainty over a long period. In addition, there were some instances where the future was anticipated, such as the licensing of Lovers Rail. This was the first private rail operator for passenger transport in the Netherlands, and was part of Compagnie Générale d'Entreprise Automobiles[121]. In 1997, the government granted the company a concession for the Amsterdam-Haarlem, Leiden-The Hague and Utrecht-Hilversum routes, so that – for the first time – NS had a direct competitor "on" the track[122]. On the first route, a train concept called "Optio" was introduced. This was a luxury train with extra services and a lower ticket price which sought to tempt passengers away from NS. In September 1999, all Lover Rail train services were abruptly terminated. The reason given was that the lines were not a commercial success because NS had systematically refused to cooperate, among other things in setting up an integrated fare and ticket system.

In 1999, the report "*De derde eeuw spoor*" [The third railway age] finally presented a model for the future of the rail sector. In view of the experience with Lovers Rail, it was decided to permit competition "for" the track. In the case of the main rail network, it was decided to grant NS a concession by private contract up to 2015. In the case of freight, competition "on" the track was permitted in accordance with Directive 91/440/EEC. The report also proposed that the three executive agencies together with Railinfratrust (legal owner of the railway infrastructure) should be removed from NS by 1 January 2000 and placed with Verkeersleiding and Railned in a single independent public authority[123] (ZBO or Zelfstandig Bestuursorgaan). The report contained no proposals on the legal form of Railinfrabeheer. Nevertheless, the executive agencies eventually remained part of the NS holding company until 1 July 2002.

The report also drew attention to the fact that the goal of creating competition between different rail operators does not chime well with a government which is the sole shareholder of NS. For that reason, it was said that the ultimate plan was to dispose of the shares via sale or flotation. In the Netherlands, privatisation by floating NS on the stock market was seen as the logical conclusion to privatisation and the introduction of market forces.

In the spring of 2001, the railways encountered serious operating problems. There were several instances of major disruption due to defects in the infrastructure and strikes[124] which affected the entire rail network. There was a noticeable deterioration in the performance of NS, so that people realised that the proposed aims for the railways were too ambitious. The Minister of Transport and Water Management responded by submitting a review document to the Parliament, setting out the basis for the ultimate design of the relationships within the railway sector. The changes announced in the review document were implemented by the *Spoorwegwet* (Railway Act) and the *Concessiewet* (Concession Act). The starting point was a recovery plan intended to restore the rail

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121 Compagnie Générale d'Entreprise Automobiles is a French transport firm which operated under that name until 2000 and was then renamed Connex, and from 2006 Veolia Transport.

122 There are two ways of allowing competition on the railways: competition "on" the track, in which multiple train operators use the same routes so that passengers can choose the cheapest option, and competition "for" the track in which the government arranges a public tender for all or part of the rail network and the chosen operator acquires exclusive rights for a specified period.

123 An independent authority is an entity which provides a public service and therefore comes under the government, but is not subordinate to a Minister in the hierarchy. The competent minister is therefore not responsible for the authority's decisions but does have a limited range of powers (e.g. appointing members of the executive board or approving the budget).

124 NS wanted to introduce a new production model to boost efficiency and make the trains more reliable. Train drivers and ticket collectors went on strike because they would not agree to work on fixed routes because this would make their job too monotonous ("*Rondje om de kerk*").

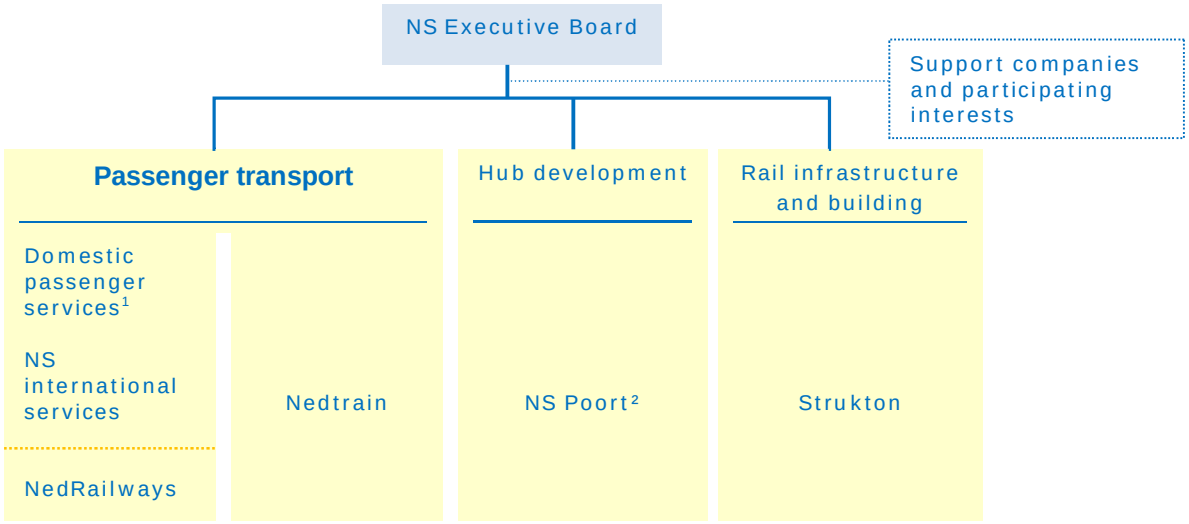
sector's performance within five years without the need for irreversible, radical changes to the structure.

It was decided to drop the proposal put forward in the report "*De derde eeuw spoor*" whereby the three executive agencies Railned, Railinfrabeheer and Verkeersleiding would be set up as independent authorities. Instead it was decided to go for a single private organisation responsible for operating the railway infrastructure (ProRail). Officially, ProRail is a subsidiary of Railinfratrust. The subsidiary is the beneficial owner. In July 2002 the executive agencies were split from the NS holding company, and the government became the sole shareholder of Railinfratrust. From January 2003, the three executive agencies operated unofficially under the joint name ProRail. On 1 January 2005, they were legally merged to form ProRail BV, and the Railway Act and the Concession Act concerning rail passenger transport entered into force, together with the underlying legislation.

The removal of the executive agencies changed the NS organisation chart (see figure 9). The NS group is run by the NS executive board, and the supervisory board exercises supervision. NS NV comprises four segments consisting of one or more business units, each headed by a management team. The segments are:

- Passenger transport: covers all transport activities comprising Reizigersvervoer binnenland (holder of the concession for the operation of the main rail network and the regional tenders won by NS), NS Internationaal (in 2006 this became NS HiSpeed) and NedRailways (in 2010 changed to Abellio, responsible for the operation of the British, German and Czech concessions of NS).
- Hub development: NS Poort is an amalgamation of NS Stations and NS Vastgoed. NS Stations is responsible for the commercial operation of stations, including via the subsidiary Servex. NS Vastgoed develops building projects in and around stations and manages the land surrounding the railway network.
- Rail infrastructure & building: Strukton is an NS subsidiary which carries out maintenance and building work in the sphere of civil engineering throughout Europe, specialising in railways and tramways.
- Support companies and participating interests: this covers NS Projectconsult (consultancy which was sold in 2009 to DHV Group), NS Opleidingen (vocational training in the rail sector, absorbed by the new NS Academy in 2010), NS Insurance (insurance), NS Financial Services (leasing of equipment to NS Reizigers and other operators) and RegioLinq (NS alliance with bus operator Haagse Tramweg Maatschappij).

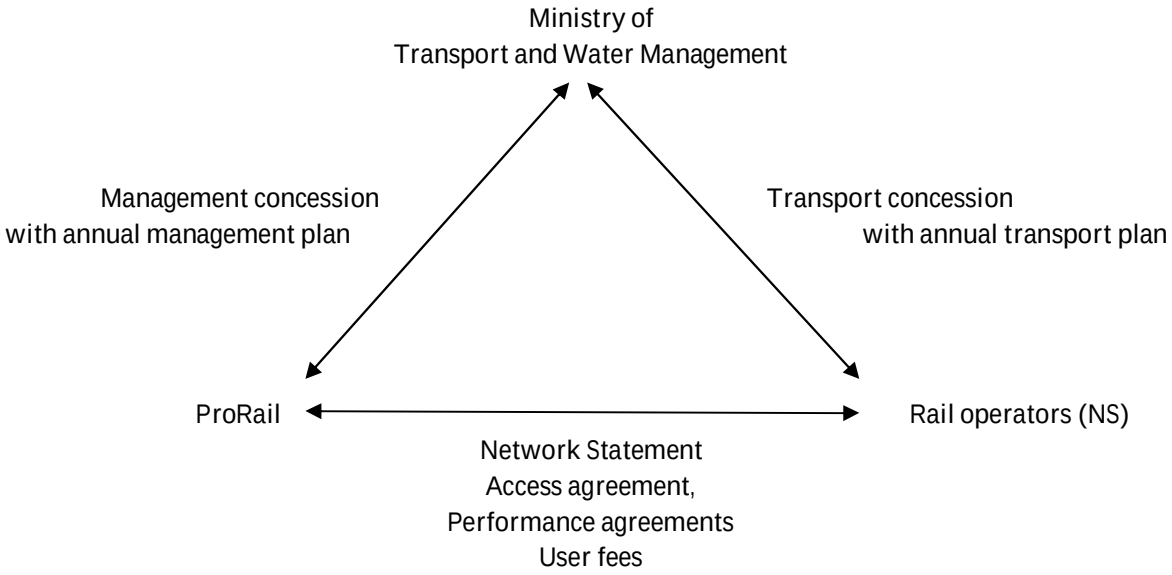
Figure 9: Organisation chart for Dutch Railways



[1] Comprising NS Reizigers and NS Commercie
[2] Comprising NS Stations, NS Vastgoed and NS Commercie Stationsontwikkeling

The management and maintenance of the railway infrastructure was specified in the Main Rail Infrastructure Management Concession which, together with the Main Rail Network Transport Concession, forms part of the Railway Act. Within the railway sector, there are now various players (ProRail, government and rail operators) who have to work closely together. That cooperation is known as the "institutional triangle" (see figure 10). The Ministry of Transport and Water Management grants the operating and transport concessions to ProRail and NS respectively. Both parties draw up a management and transport plan each year which has to be approved by the Ministry. ProRail and NS agree arrangements between themselves which are spelt out in the Network Statement (e.g. the allocation of the infrastructure capacity and the expected quality). Independent supervision of the relationship between the infrastructure manager and the rail operators is assigned to the Netherlands Competition Authority (NMa) while the Transport and Water Management Inspectorate (IVW) supervises rail safety.

Figure 10: Institutional triangle in the railway sector



Source: Lower House of the States General 2005-2006.

As a result of the entry into force of the Passenger Transport Concession Act (*Concessiewet personenvervoer*), which supplements the Passenger Transport Act 2000 (*Wet personenvervoer 2000*][125]), the concession system[126] has also applied to rail passenger transport since 1 January 2005. The provinces are formally authorised to grant, modify or withdraw concessions for the regional train services, so that there is competition on the railways; this does not include the ownership and management of the railway infrastructure concerned, which remains the responsibility of ProRail. The powers concerning the operation of regional train services are less extensive than in the case of urban and district transport. Changes to the schedules such as increases in frequency have to be submitted for approval to ProRail, which checks them against the available capacity and the impact on rail safety.

125 In 1998, the management of Dutch urban and district transport was devolved from the government to the provinces. When the Passenger Transport Act 2000 was passed, market forces were introduced. Since then, public transport in the Netherlands has been subject to public tenders per region or per service for a specified period. The transport company that wins the contract gains the exclusive but temporary right to operate public transport services in a particular region.

126 A railway concession is a package of routes which a 'public transport' authority (in reality, it is usually a province) grants exclusively to a transport operator subject to certain conditions.

The train services which were decentralised were all routes which NS had indicated as unprofitable in 1996 (see figure 11). In principle, these contract sector routes do not have close links with the main rail network. Nevertheless, they were selected primarily on financial grounds, with transport service criteria playing a much smaller role. Up to 2005, the Ministry of Transport and Water Management concluded a temporary contract with NS each year for the use of the main rail network. As a result of the Concession Act, NS and ProRail together won a ten-year concession giving them exclusive rights to operate passenger trains on the main rail network up to 2015. The regional concessions were awarded to NS, Arriva, Syntus, Connexxion and Veolia.

Figure 11: Summary of decentralised railway lines

Source: Kennisinstituut voor Mobiliteitsbeheer (Mobility management research institution), 2008.

The concession for the main rail network comprises a number of performance standards which both NS and ProRail must meet. Both must be able to achieve improved figures for these standards. To that end, they have to draw up an annual transport and infrastructure plan capable of allowing speedy adjustments if circumstances change. If certain standards cannot be met, NS and ProRail must explain the reasons. During a transitional period up to 2007, both undertakings were able to learn how to work with this new system. Since 2008, fines have been imposed if either of them fails to achieve the set standards.

The new railway legislation which came into force on 1 January 2005 stipulated that the Minister of Transport and Water Management would report to the States General in 2006 on the effectiveness and practical impact of the law. At the request of the Lower House, this evaluation was postponed until 2008. The end conclusions of the Final Report on the Evaluation of the Railway Legislation (Ministry of Transport and Water Management, 2008) were as follows:

- The responsibilities and obligations of the government, manager, transport operators and other parties involved in rail transport were clearly laid down in the railway legislation. The European legislation was correctly implemented in national law. The public interest in the management of the railway infrastructure is broadly safeguarded, and access to the public rail transport market was arranged by the introduction of a concession system.

- People are making more use of the railways. The quality of passenger and freight transport and the quality of the infrastructure both improved during the 2005-2007 period.
- Power over the day-to-day operations rests entirely with the transport operators and the manager (self-direction). The government establishes the legal framework but does not always succeed in distancing itself from the concession holders, and sometimes becomes involved in the operational details. In addition, the Ministry of Transport and Water Management and ProRail differ in their understanding of one another's tasks and roles.
- Not all the instruments provided for by the law are applied. The legislative system could operate better. This is due partly to a lack of clarity in the law but also to the transitional process in which the various parties involved have to get used to their new role and responsibilities.

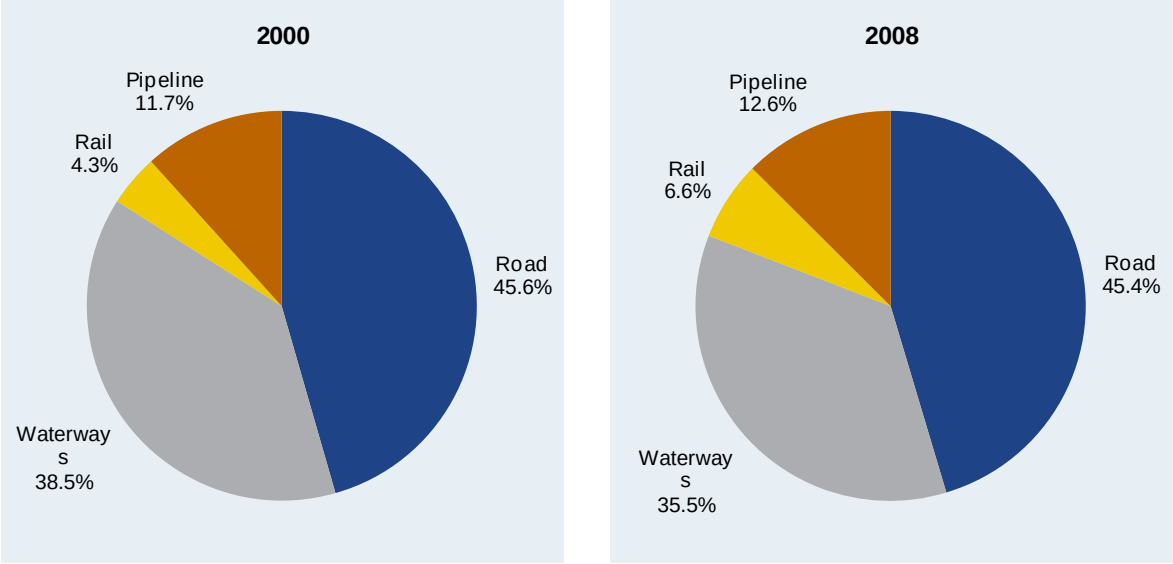
The government decided that the railways no longer required radical restructuring, but that they could be better organised. The framework for user charges and the allocation of capacity had to be tightened up, improved and rendered more transparent. In addition, the position of the regional authorities in the management of the stations needed to be improved, and the position and role of the management of both ProRail and NS must become much more transparent.

7.1.2. DEVELOPMENTS ON THE DUTCH RAIL MARKET

7.1.2.1. Freight

During the period from 2000 to 2008, there was little change in the share of total freight transported by road, rail, inland waterways and pipeline in the Netherlands (see chart 71). The share of rail freight increased from 4.3% in 2000 to 6.6% in 2008. Despite the European Commission's efforts to improve the performance of the railways, the share of rail freight is very small in the Netherlands. The main reason for this modest role of the railways in total freight transport is due to the topography of the Netherlands. Owing to the high start-up costs, rail is [only] attractive for carrying freight over long distances. Since the Dutch territory is relatively small, there is considerable cross-border rail traffic. In addition, the Netherlands has a good alternative for carrying heavy bulk goods, namely inland waterways, an option to which other countries have more limited access (Ramaekers *et al*., 2009).

Chart 71: Market share of rail freight in 2000 and 2008 (based on tkm)



Source: Rail Cargo, 2009.

The rather limited growth of rail freight is attributable mainly to international transport. Between 1995 and 2006, this increased by 18.3 million tonnes per annum (see table 17). Domestic transport grew by 2.6 million tonnes over the same period. A key reason for this development is economic

growth in general and the globalisation of both the production and the consumption of goods. However, the expansion of international transport is not evenly distributed. While transport across the Dutch-German border more than tripled between 1995 and 2006, transport across the Dutch-Belgian border declined by 0.7% over the same period. One very specific development which explains this is the closure of the German coal mines. This led to an increase in German imports of coal from abroad. Finally, there has been transit traffic (between Germany and Belgium via the Netherlands) for a number of years, and that flow is estimated at 1 million tonnes in 2006. A key reason for this transit flow is the high user charge on the German network compared to the charge imposed in the Netherlands (Project Group on the Evaluation of Railway Legislation, 2008).

Table 17: Rail freight in the period 1995-2006 (in million tonnes)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Domestic	4.3	4.7	5	4.6	4.6	5.2	4.4	5.7	5.7	6	6.5	6.9
Germany	8.2	8.3	9	10.7	11.8	14.9	14.9	16.6	18.8	22.5	25	27.2
Belgium	7.2	8	9	9.9	8.9	8.2	7.1	6	5.2	5.7	6	6.5
Transit										0.5	1	1
Total	19.7	21	23	25.2	25.3	28.3	26.4	28.3	29.7	34.7	38.5	41.6

Source: Kennisinstituut voor Mobiliteitsbeleid, 2007.

Apart from the economic reasons for the expansion, ProRail also mentions the opening up of the market as a significant factor (ProRail, 2004). Since 1998, when competition was permitted on the Dutch railways, the number of market players has risen strongly. In freight transport, the number of foreign firms has increased particularly in the last few years. The reason is that they focus very strongly on transport to and from the port of Rotterdam. As a result, there are only two active freight transport operators which are entirely Dutch (ACTS Nederland BV and Rotterdam Rail Feeding BV) (see table 18). The internationalisation of the rail freight sector has resulted in the (virtual) disappearance of Dutch rail freight operators, although many firms do have a branch in the Netherlands (except for Häfen- und Güterverkehr Köln AG and Dillen & Lejeune Cargo NV).

In order to become a rail freight transport operator, a rail operator needs to obtain an operating licence from the IVW. All foreign firms holding a European licence can operate in the Netherlands provided they have an appropriate safety certificate. This certificate is also issued by the IVW following a thorough inspection. In addition, rail operators have to conclude an access agreement with ProRail and/or Keyrail which entitles the transport operator to a basic access package.

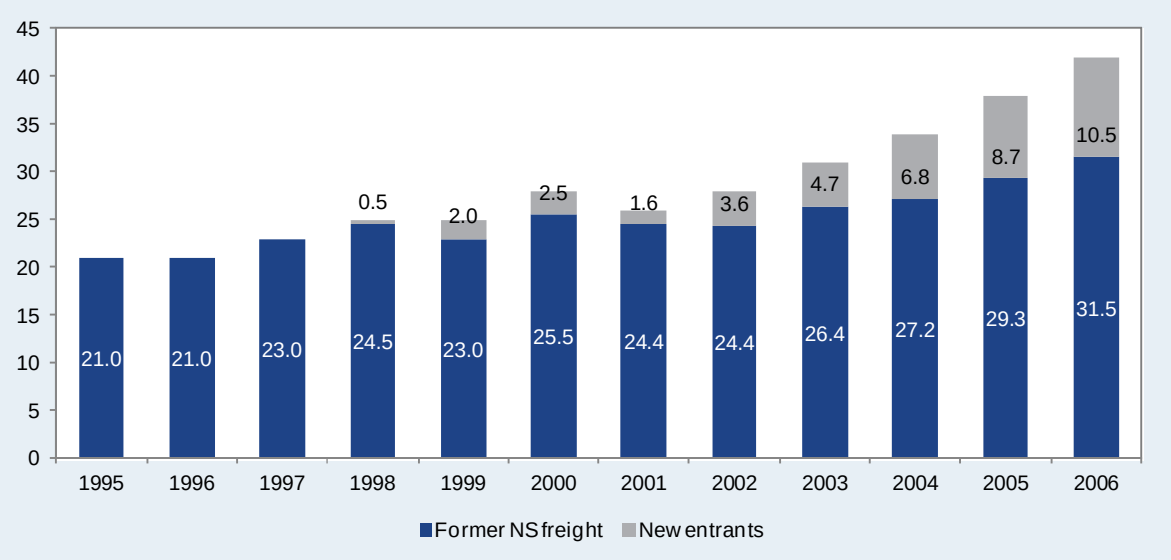
DB Schenker Nederland accounts for most of the rail freight traffic (see chart 72). In 2006, the new entrants had a market share of 25% between them (see chart 73). This puts the Netherlands in the leading group of European Union countries in terms of market forces. Germany is home to the largest number of railway firms in Europe, but in 2006 their market share was only 16%.

Table 18: Freight transport operators in the Netherlands

Transport operator	Licensed	Shareholder	Markets
DB Schenker Nederland NV	1938	DB Logistics (100%)	all freight
Bentheimer Eisenbahn AG	1990	Landkreis Grafschaft Bentheim (93.99%), Stadt Nordhorn (6%), Stadt Neuenhaus (0.01%)	combined transport from/to Coevorden
ACTS Nederland BV	1998	HUSA Capital BV	everything, initially mainly domestic but now also international
Shortlines (stopped in 2004)	1998		
ERS Railways BV	2002	European Rail Shuttle BV (100% Maersk)	containers mainly international
Dillen & Lejeune Cargo NV	2003	Jeroen lejeune, Ronny Dillen, Hupac (40%)	block trains, mainly international
Rail4Chem Benelux BV	2003	BASF, Hoyer, Bertschi, VTG Lehnkering (25% each)	mainly international
Häfen- und Güterverkehr Köln AG	2004	Stadtwerke Köln GmbH (54.4%), Kreis Köln (39.2%), Kreis Erft (6.3%)	only international
Rotterdam Rail Feeding BV	2005		started in the Rotterdam port area but steadily moving further inland
Veolia Cargo Nederland BV	2006	Veolia Transport (100%)	coal, steel, oil, gas, containers/intermodal
B-Cargo	2007	NMBS, Belgian State	
SNCF-fret	2007	SNCF, French State	
Ruhrtalbahn GmbH	2007	Kreis Düren (25.1%), R.A.T.H. GmbH	
ITL Benelux	2007	ITL Dresden	Germany, Czech Republic, Poland

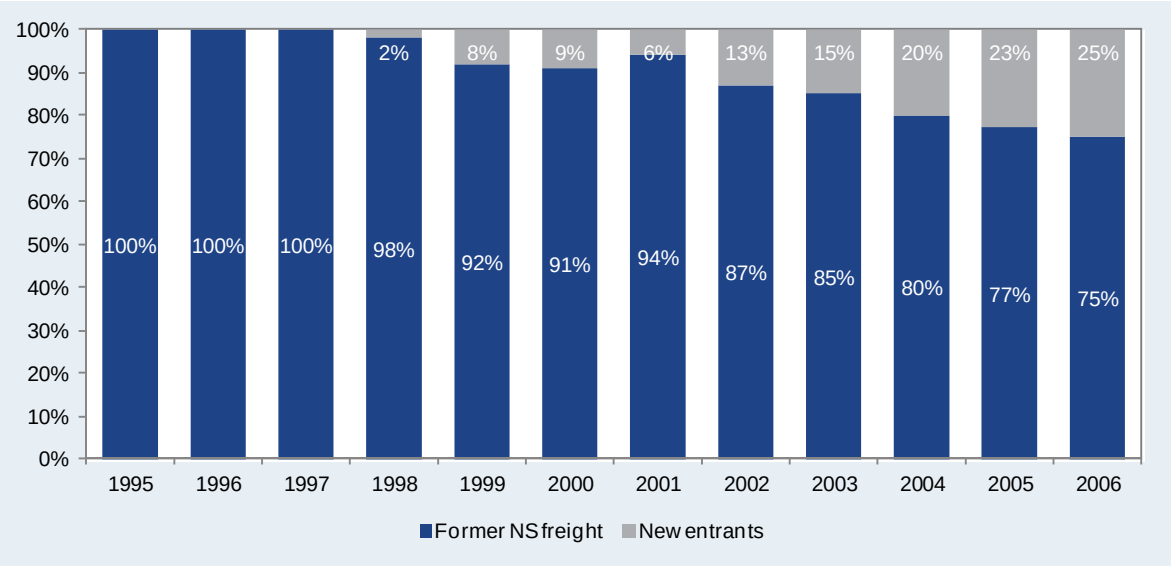
Source: Kennisinstituut voor Mobiliteitsbeleid, 2007.

Chart 72: Transport performance, rail freight (in million tkm)



Source: Rail Cargo, 2009.

Chart 73: Market share of former NS freight and new entrants (in %)



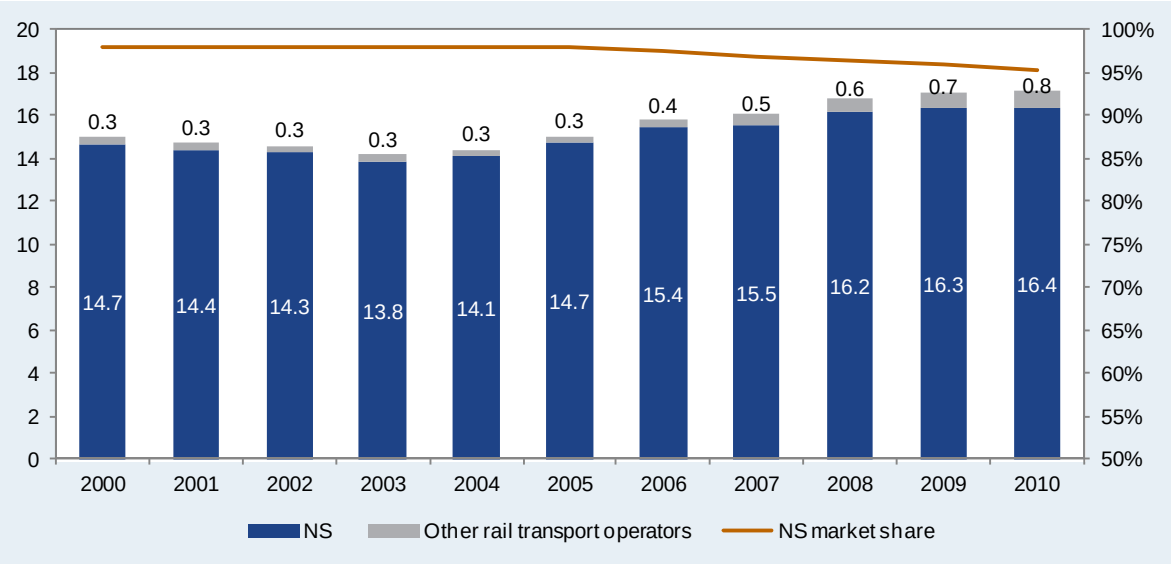
Source: Rail Cargo, 2009.

7.1.2.2. Passenger transport

7.1.2.2.1. Regional passenger transport

Between 2000 and 2010, there was an 11.5% rise in train use on NS routes from 14.7 to 16.4 billion passenger-kilometres (see chart 74). During this period, responsibility for tenders for a number of regional routes was gradually decentralised to provinces and municipalities. Nonetheless, NS remained the biggest rail transport operator with a 95% market share in 2010. In the majority of cases, there are now rail companies other than NS operating on these routes. During the same period, the volume of traffic carried by those other operators more than doubled to 0.8 billion passenger-kilometres in 2010, causing total train use to increase from 15 to 17.2 billion passenger-kilometres, representing 14.7% growth over the period as a whole.

Chart 74: Rail passenger traffic in the period 2000-2010 (in billions of passenger-kilometres)



Source: Kennisinstituut voor Mobiliteitsbeheer, 2010.

This growth was uneven. Between 2000 and 2003, rail use declined by 9% as a result of the weak economic growth in those years, deteriorating punctuality and fare increases. The years 2004-2007 were a boom period so that the performance of the railways improved again. This led to an 11.5% rise in rail use. That growth was attributable not only to an improvement in the economic climate

but also to an increase in the number of student travel cards[127] and rising fuel prices. In addition, businesses were increasingly turning to NS for train journeys, cards and/or season tickets. Turnover in this segment grew by 9% in 2006 and 10% in 2007. In 2008, despite the financial crisis, passenger traffic increased for the fifth year running, with growth of 4.6%. According to NS, extra trains and the new schedules and refurbished stations promoted the rise in passenger numbers (NS, 2008). In 2009, as a result of the economic recession, the growth of passenger traffic was weaker than in previous years. though the impact was slight, so that the number of passenger-kilometres still increased by 1.4%. In 2010 the growth virtually came to a halt (+0.8%). According to NS, part of this slowdown was due to the severe weather at the beginning of 2010. The wintry conditions revealed the vulnerability of the crowded rail infrastructure in the Netherlands and caused equipment breakdowns leading to many delays.

Table 19: Regional rail service transport concessions in 2010

Contracting authority	Concession area	Transport operator	Start date	End date
Groningen	Groningen-Delfzijl	Arriva	11/12/2005	10/12/2020
Groningen	Groningen-Nieuweschans-Leer	Arriva	11/12/2005	10/12/2020
Groningen	Groningen-Roodeschool	Arriva	11/12/2005	10/12/2020
Groningen/Friesland	Groningen-Leeuwarden	Arriva	11/12/2005	10/12/2020
Friesland	Leeuwarden-Harlingen	Arriva	11/12/2005	10/12/2020
Overijssel	Zwolle-Kampen	NS	10/12/2006	08/12/2012
Overijssel/Flevoland Lelystad	Zwolle-Lelystad	NS	12/12/2012	08/12/2018
Overijssel/Drenthe	Zwolle-Emmen	NS	10/12/2007	09/12/2012
Regio Twente	Almelo-Mariënberg	Connexxion	01/06/2007	10/12/2013
Overijse/Drenthe/ Regio Twente	Vechtdallijnen (Zwolle-Emmen; Almelo-Mariënberg)	Arriva	09/12/2012	31/12/2027
Gelderland	Doetinchem-Winterswijk	Syntus	12/12/2009	11/12/2010
		Arriva	12/12/2010	11/12/2020
Gelderland	Zutphen-Winterswijk	Syntus	12/12/2009	11/12/2010
		Arriva	12/12/2010	11/12/2020
Gelderland	Zutphen-Apeldoorn	NS	13/12/2009	11/12/2010
		Arriva	12/12/2010	11/12/2020
Gelderland	Arnhem-Tiel	Syntus	01/04/2005	11/12/2010
		Arriva	12/12/2010	11/12/2020
Gelderland/Regio Twente	Zutphen-Hengelo-Oldenzaal	Syntus	14/12/2003	13/12/2013
Gelderland/South Holland	Geldermalsen-Dordrecht	Arriva	10/12/2006	09/12/2018
Gelderland/Utrecht	Eed/Wageningen-Amersfoort	Connexxion	10/12/2006	09/12/2021
South Holland	Gouda-Alphen a/d Rijn-Leiden	NS	10/12/2006	14/12/2018
Limburg/Stadsregio Arnhem Nijmegen	Roermond-Nijmegen	Veolia	10/12/2006	09/12/2016
Limburg	Maastricht-Kerkrade	Veolia	10/12/2006	09/12/2016
Stadsregio Rotterdam	Rotterdam-Maassluis-Hoek van Holland	NS	10/12/2007	09/12/2012

Source: Koninklijk Nederlands Vervoer, 2010.

Since the introduction of the Passenger Transport Act 2000, concession areas have been introduced for regional passenger traffic. In the process, responsibility for regional, unprofitable train services was transferred to the provinces and municipalities which now have the task of granting licences for these routes to transport operators (see table 19). Meanwhile, these decentralised routes have not only become synonymous with unprofitable routes, but their function has also changed. The primary function of the unprofitable routes was to open up rural areas and

127 Students can obtain not only a grant but also a student travel pass entitling them to free travel on public transport.

provide transport facilities for them. A number of the decentralised routes now also have the function of linking regional economic centres or sub-centres and maintaining their accessibility (Kennisinstituut voor Mobiliteitsbeleid, 2008).

Decentralisation, tendering and the grant of concessions for regional rail transport were intended to achieve various goals. The aim was to increase the number of passengers and improve the integration of public transport. The regional and local authorities were encouraged to take account of economic and social criteria in deciding whether trains or buses should be used on certain services, permitting more rational use of resources. In addition, the extra revenue from the rail traffic could be used to improve the regional traffic and transport policy.

As a result of decentralisation, the new rail operators and regional and local authorities took certain measures which would never have been taken in the past: increase in the number of early and late trains and weekend trains, integration with bus services, elimination of duplicate bus services, increase in frequency both at peak times and in off-peak periods, renovation of the equipment and improvements to station environments and stations. This led to an increase in the number of passengers on most of the routes awarded by tender. According to the KiM (Kennisinstituut voor Mobiliteitsbeleid), the effect of decentralisation can be estimated at a 20% increase in passengers. A quarter of these came from buses that formerly duplicated the service, and the rest were new regional rail service users (Kennisinstituut voor Mobiliteitsbeleid, 2008). Another significant effect of the decentralisation is that existing train services were maintained. In addition, the provinces have become more involved in the provision of regional rail transport, permitting a speedy and appropriate response to local requirements and problems. Yet in practice, it seems that the regional and local authorities are unable to achieve substantial reductions in operating costs, and the administrative costs have increased. There is a strong temptation for regional and local authorities to turn to the government to fund certain requirements because the provinces can only generate modest resources of their own. However, there is little chance of success because the government rejects most of the applications.

In reality, it seems that – after all – the conditions for successful decentralisation and market forces have not been entirely fulfilled. This is partly because of NS, which has a strong position on the national rail transport market and can assert its power in the regions on that basis. For instance, there have been problems with the coordination of service schedules and with keeping sales outlets open. In addition, the external companies feel obliged to follow the NS strategy on fares. Funding of the sector has also proved to be cause for concern. This is due to the "WROOV" method[128] used in the Netherlands to allocate the public transport revenues among all the transport operators. As a result, additional revenues earned by attracting more passengers or changing the services available do not automatically accrue to the operator concerned. This prompted a number of rail operators to introduce their own types of ticket because the revenues from them were not distributed according to the "WROOV" method. The nationwide introduction of the public transport smart card[129] could solve this problem.

Another sticking point is the availability of the necessary rolling stock for which there is no second-hand market. This means that NS is in fact the only supplier of used rolling stock that meets the Dutch licensing requirements. In addition, external companies are dependent on NS not only for

[128] In Dutch, WROOV stands for the Working Group on Passenger Numbers and the Volume of Sales (Werkgroep Reizigers Omvang en Omvang Verkopen). The "WROOV" system is used to allocate the revenues from national tickets. The actual use in a particular period is ascertained by various methods and that forms the basis for determining the formula for allocating the revenues per ticket group for a given year. The formulas for year n+1 are decided in November of year n.

[129] The public transport smart card is an electronic travel card which can store a credit balance for public transport in the Netherlands. The card was phased in from 2005. The system permits a combination of card integration (the same card can be used with different transport operators) and fare differentiation (the fare depends not only on the distance but also on the transport operator and possibly also the time of day).

the availability of used rolling stock but also for its maintenance. NS Nedtrain has a monopoly on the maintenance market. Finally, the obligation to take over staff limits the room for manoeuvre available to train operators when tendering. In practice, problems arise mainly in connection with taking over ticket collectors. Transport operators running regional train services often choose not to have a conductor on the train as standard practice. This means that the conductors who have to be taken on need to be given a different job in the new company.

7.1.2.2.2. International passenger transport

In the Netherlands, two concessions have been granted for international passenger transport. One is the 10-year concession granted to NS in 2005 for the operation of the main rail network. This was supplemented by a second concession for trains running on the high-speed link HSL-South between Amsterdam, Schiphol Airport, The Hague, Rotterdam and Brussels. This concession was granted via a public tender to High Speed Alliance (HSA) for a period of 15 years. HSA is a consortium of NS (90%) and Air France-KLM (10%).

NS Internationaal is the NS unit that operates international trains and concentrates mainly on the major international traffic flows to major cities in neighbouring countries. At the beginning of 2000, NS Internationaal was accumulating losses year after year. Turnover growth was only modest, averaging 3% per annum. It was decided to take a number of steps to improve the operating results in the short term. Operation of the Ardennen Expres, AutoSlaapExpres, AlpenExpres and the night trains to Germany, Austria and Switzerland was terminated. It was also decided to develop a new system jointly with SNCB/NMBS whereby tickets were sold on-line or through travel agencies. Despite this move, the cost of selling international train tickets was still too high, so it was decided to close 17 of the 27 sales outlets over a 3-year period.

Despite these economy measures, the turnover generated by NS Internationaal in 2003 and 2004 was disappointing. After years of growth, there was a sharp decline in sales accompanied by a substantial loss. The main reasons were the increased competition from cheap flights and the economic downturn. To deal with the poor operating result and the competition, it was decided to launch a "Business Process Redesign[130]" to ensure sound future prospects for NS Internationaal.

Passenger numbers have risen since 2005, giving NS Internationaal more commercial clout. International travel revenues have risen again after years of decline, with 4% growth due to the success of a number of advertising campaigns and on-line sales. In 2006, this growth was reinforced with a 6% increase in passengers and a 12% rise in the volume of traffic. To ensure that the future prospects remain sound, it was decided that the costs must be reduced by efficient, streamlined organisation. In the same year, NS Internationaal and HSA therefore merged to form a single company operating under the name of NS Hispeed; its principal task was to prepare for the operation of HSL-South.

In 2007 and 2008, there was a further increase in NS Hispeed's commercial strength, with passenger numbers up by 2.3% and 10.3% respectively. This was combined with a fall in the sales costs per passenger, attributable entirely to the rising sales of tickets on the internet or at ticket machines. Owing to difficulties in the construction of the complex Europe-wide safety system ERTMS (European Railway Traffic Management System), it was not possible for the HSL (High-Speed Line) to be brought into service in 2008 as originally planned. It was September 2009 before passengers could use the Fyra, the high-speed train service running on HSL-South. In 2010, the introduction of the high-speed train led to a 14% increase in the number of passengers using international services, compared to 2009.

Nevertheless, that growth fell short of expectations and sales were significantly lower than estimated, primarily because of the low number of passengers. This caused serious financial

130 Business Process Redesign (BPR) is the fundamental rethinking and redesign of business processes in order to achieve improvements in critical performance criteria such as costs, quality, service and speed.

problems for HSA, and heavy losses were incurred on the operation of the HSL-South concession (€ 105 million in 2009 and € 123 million in 2010). NS Hispeed decided on a temporary cut in Fyra fares from February 2011. The results were very promising, namely a quadrupling of the monthly season ticket sales. In addition, there were talks with the government on reducing the price of the concession in order to safeguard the continuity of HSA (NS Annual Report, 2001-2010).

7.1.2.2.3. Foreign passenger transport

At the beginning of 2000, NS tried to acquire one or two concessions in other countries to gain experience in international competition with modest investment and effort. NS focused on countries which appeared to offer the best opportunities at that time: Britain, Germany and Poland. In 2003, the NS subsidiary NedRailways and the British service company Serco Group PLC together won the Merseyrail concession for rail transport in the Liverpool area for a period of 25 years. he next year, the same joint venture won the Northern concession in Britain for $6^{3/4}$ years with the option of a 2-year extension. Northern Rail serves the whole of Northern England, operating municipal transport in major cities (Manchester, Leeds, Sheffield, Newcastle) and regional services. In 2005, the joint venture Serco-NedRailways was the seventh biggest player on the liberalised British railway market. Both concessions are profitable and their operational and financial performance has exceeded expectations. By the end of 2005, Northern Rail had seen a 12.5% rise in passenger numbers compared to the start of the concession. The number of Merseyrail passengers was up by 6% in 2005.

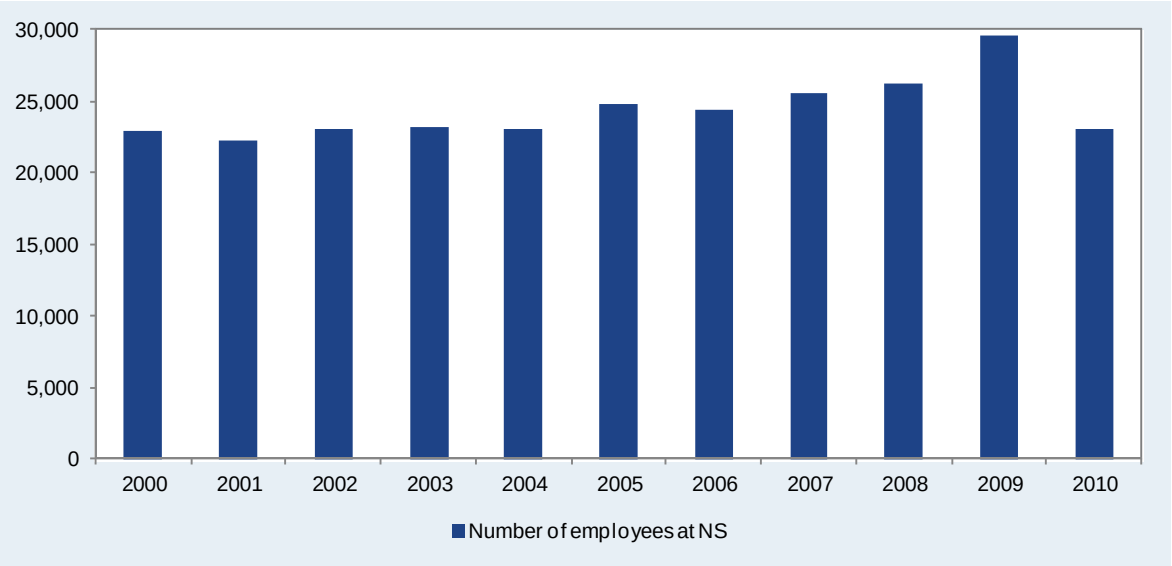
NedRailways put bids in for new tenders in Britain (for the North London Railways concession in 2006 and jointly with Serco for the West Midlands concession in 2007) but did not succeed in winning any new concessions. In 2008 they took over the Czech bus company Probo Trans Beroun which operates bus services west of Prague, and the German passenger transport operator Abellio with bus and train services in Hessen, North Rhine Westphalia and Saxony. In June 2009, NedRailways acquired a stake in the London bus market by taking over Travel London. This company operates bus services in Central and South London. From 2010, these expanding activities led to the adoption of the name Abellio for all the activities of NedRailways.

In the future, Abellio aims to strengthen its position in the countries where it is already active, both by tendering and by targeted acquisitions. It also wants to enter new markets, particularly in Scandinavia. Sweden and Denmark are the most attractive markets because bus transport is almost totally liberalised. In addition, Swedish regional train services are all put out to tender, as is the subsidised long-distance transport (NS Annual Report, 2001-2010).

7.1.3. EMPLOYMENT TRENDS IN THE DUTCH RAILWAYS

The number of NS employees fluctuated little up to the year 2004 (see chart 75). In 2005, the average number of staff increased over the year as a whole by 1 628 full-time equivalents (FTEs) from 23 084 in 2004 to 24 712 FTE in 2005. This was due to the takeover of Northern Rail (see 3.2.3.) which increased the average number of FTEs by 2 110. This means that the average number of staff employed on other activities declined by 482 FTEs. In the ensuing year, the average number of staff contracted over the year as a whole by 378 FTEs to 24 334 FTEs. One reason is the large number of employees who retired at the end of 2005, plus the sale of NedTrain Consulting to Lloyd's Register Group. Since the NS subsidiary NedTrain aims to concentrate on its two core activities, maintenance and repair of passenger trains and locomotives, it was decided to sell the technical consultancy division so that it could reinforce its position on the European rail market.

Chart 75: Number of employees at NS in the period 2000-2010 (in FTEs)



Source: NS, 2001 to 2010.

In both 2007 and 2008, the number of employees increased again owing to the recruitment of service trainees and maintenance fitters combined with acquisitions by Strukton. The subsidiary, Strukton, specialises in installing and maintaining railway infrastructure and aims to become one of the market leaders in the European railway construction market. The takeover of Georg Reisse GmbH & Co KG was Strukton's first venture in the German railway market. By acquiring Betonmast Bane AS and increasing its stake in Jernbaneservice AS, Strukton aims to further expand its position in the northern European market (Norway, Sweden). In 2009, the acquisition of Travel London by NedRailways and the award of the bus concessions at QBuzz increased the number of staff by 3 235 FTEs. At NS Reizigers, NedTrain and NS Poort, the average number of employees declined by 424 FTEs in that year.

In 2010 the average number of employees was down by 6 526 FTEs, restoring it to the 2002 level. The bulk of this striking decline (6 059 FTEs) is attributable to the sale of Strukton plus a fall in the average number of employees at NS Reizigers, NedTrain and NS Poort. In regard to Strukton, it was decided that this was no longer one of the NS group's core activities. Consequently, on 29 October 2010 NS sold the Strukton Group and with it the entire rail infrastructure & construction segment to Oranjewoud NV.

7.2. FINANCIAL ANALYSIS

7.2.1. REVENUES AND SUBSIDIES

It is not a simple matter to state the financial flows received by the railways in the Netherlands. In 2010 the Dutch Audit Office tried to draw up a statement of the cash flows in the rail sector from source to target (see Annex 4). This shows that rail expenditure is highly fragmented, and there is a lack of transparency regarding the available rail budgets. The cash flows indicated comprise a minimum of € 3 374 million in total for 2011. The Audit Office was unable to trace all the cash flows exactly. One reason was that it does not always have the power of inspection. Another reason is that it is not clear for all the cash flows which element is directed towards the rail sector. This applies, for instance, to the amounts originating from the targeted State subsidy[131] (BDU).

[131] The BDU is a financial contribution which the provinces and municipalities receive each year from the Ministry of Transport and Water Management for implementing the traffic and transport policy at local and regional level.

The principal sources of funding for railway expenditure are: the government (contributions from the budget of the Ministry of Transport and Water Management (VenW)), the Infrastructure Fund, the Municipal Fund, the Economic Structure Reinforcement Fund[132] (FES), the Ministry of Housing Spatial Planning and the Environment (VROM)), NS One-Off Contribution Fund[133] (FENS), the private sector (fees from rail operators) and the lower tiers of government. In 2011, of the various sources of funding, a minimum subsidy of € 2 392 million came from the central government. The money is channelled from the funding source to the various operating entities: Infraspeed, Keyrail, NS, ProRail and the regional authorities/transport operators. The size of the rail subsidies per operating entity is discussed below.

7.2.1.1. Infraspeed

Infraspeed is the rail infrastructure manager for the HSL-South section of the Schiphol-Antwerp high-speed line in the Netherlands (there is also the HSL 4 section in Belgium). In 2001 the Dutch government concluded the biggest ever Public Private Partnership contract with this company. Infraspeed is responsible for installing the HSL-South superstructure (2001-2006) and, following delivery, will manage and maintain the line for 25 years for the railway manager ProRail (2006-2031). Since 2006 the Dutch State has paid Infraspeed an annual amount of roughly € 105 million for making the HSL-South infrastructure available. That figure is included in the Infrastructure Fund budget under "Integrated forms of contract/PPP" (see chart 2). Infraspeed is to use this to cover its costs and recoup its investments. However, this payment depends on availability, which must be at least 99 %. If that is not achieved, the payment is reduced.

7.2.1.2. NS

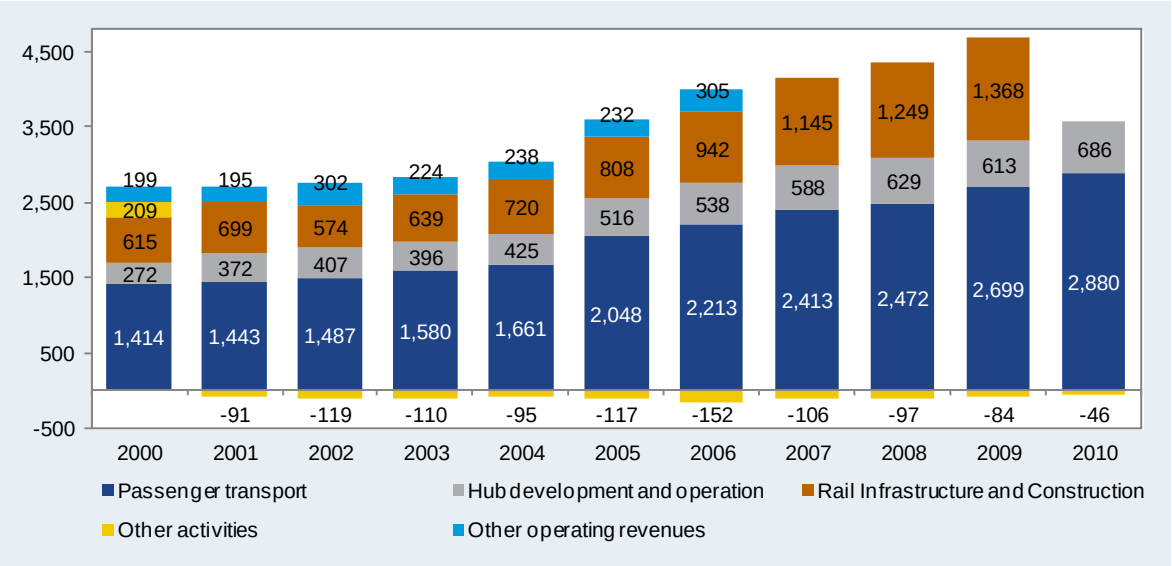
Chart 76 summarises the operating revenues of NS from the year 2000. In 2001 income declined by 3.4% owing to major operating problems concerning the rail infrastructure and shortages of staff and equipment (see 1.1). Nevertheless, there was a 2.1% rise in turnover in the passenger transport segment, due entirely to fare increases, as the total number of passenger kilometres dropped by 2% from 14.7 billion in 2000 to 14.4 billion in 2001. Turnover in the "Hub development and operation" segment (comprising NS Stations and NS Vastgoed) also increased (36.8%) as a result of reorganisation within the group, in which a number of activities were transferred from NS Reizigers to NS Stations. However, in the "Other activities" segment there was a decline of 69.7%. Apart from the group management, this segment also comprises support units. Elimination of intra-group transactions between the various segments led to a negative balance.

In the ensuing years, operating income followed an upward trend averaging 7.4% per annum. The biggest increase (18.2%) occurred in 2005 because this was the first time that the revenues from the share acquired by NedRailways in Northern Rail were included for a full year (see 7.1.2.2.3). In addition, within the "Rail Infrastructure & Construction" segment there was a strong rise in revenues in 2006 and 2007 (2006: 16.6% and 2007: 21.6%), attributable entirely to acquisitions with which Strukton aims to become a full service provider by offering comprehensive solutions in the infrastructure and accommodation sphere.

[132] The FES is a fund financed out of part of the proceeds from the sale of natural gas from the Slochteren gas field. The fund is intended to strengthen the Dutch economic structures. A large part of the money spent by the FES comprises contributions to the budget via the Ministry of Transport and Water Management, used for infrastructure projects (Betuwe line and High-Speed Line).

[133] At the end of 2000, the Ministry of Transport and Water Management and the Lower House decided that € 1.3 billion of the € 1.9 billion from the sale of the telecom company Telfort should be placed in a fund for improving the railways. This NS One-Off Contribution Fund made available € 340 million for infrastructure projects.

Chart 76 Operating revenues at NS during the period 2000-2010 (in € million)



Source: NS, 2001 to 2010.

In 2010, operating revenues were down by 23.4% owing to the loss of the income from the Rail Infrastructure & Construction segment. NS decided that Strukton was no longer part of the NS Group's core activities, and sold the entire Rail Infrastructure & Construction segment to Oranjewoud NV for € 168 million. The proceeds from that sale were paid out to the government in the form of an extra dividend. If the sale of Strukton Groep NV is taken into account, the revenues in 2010 were 7.6% higher than in the previous year (2009: € 3 271 million in 2010: € 3 520 million).

At the time of the 1995 privatisation, it was decided that the general financial contribution from the government to NS for operating the public rail transport services would be phased out by the year 2000. Since then, NS has not received any subsidies and is profitable purely on the basis of the revenues from selling tickets to passengers.

However, it should be noted that the charge for use of the infrastructure in the Netherlands is relatively low in comparison with other European countries. The amount is not in line with Directive 2001/14/EC. This permits differential pricing in order to achieve an efficiency-driven demand for capacity. Until the year 2000, there was no charge for use of the track in the Netherlands. After that, the Ministry of Transport and Water Management set a tariff each year on the basis of the number of train-kilometres and stops combined with the level of the marginal costs of the infrastructure manager for the use of the existing infrastructure network. Until 2005, that was subject to a transitional arrangement[134] with an additional discount for freight transport operators, so that the usage fee was well below the European level. In 2005, 20% of the expenditure on the infrastructure (including loans and guarantees) was covered by the user fees and the remainder was paid for by the government (ECMT, 2005). From 2006, the user fee was gradually increased so that the infrastructure levy now covers the whole of the infrastructure maintenance costs and the traffic management costs.

In addition, NS did not have to pay anything for the transport concession for the main rail network until 2008. Financial forecasts revealed that the likely results were not sufficient to justify a concession price. Moreover, only a small tariff increase would be acceptable and a further improvement in transport performance was necessary. The main purpose of the concession price

134 From 2000 to 2004, only a certain percentage of the budgeted costs (per train kilometre and per station) was taken into account: 15% in the year 2000 (85% discount for the transport operator), 30% in 2001 (70% discount for the transport operator), 45% 2002 (55% discount for the transport operator), 60% in 2003 (40% discount for the transport operator) and 80% in 2004 (20% discount for the transport operator).

would be to give NS an additional incentive to remain steadfast in the pursuit of more efficient operation. An assessment of the concession indicated that a concession price could be set from 2009 onwards. NS could pay a concession price for the exclusive right because the results were better than originally expected. In practice, this meant that NS owed the Ministry of Transport and Water Management the following amounts: € 10 million in 2009, € 10 million in 2010, € 20 million in 2011, € 20 million in 2012, € 30 million in 2013 and € 30 million in 2014. The current transport concession expires in 2015.

With regard to the former contract sector routes which were added to the main rail network, it was agreed in 2005 that, during the subsequent years, NS would receive a subsidy declining to zero for these unprofitable routes.

7.2.1.3. ProRail

According to the Railway Act, the Minister of Transport and Water Management is responsible for the installation, management and maintenance of the railway infrastructure. Via a management concession, the Minister chose to transfer responsibility for the performance of these tasks to ProRail. The financial resources made available to the rail sector via the budget of the Ministry of Transport and Water Management are provided on the basis of the Infrastructure Fund Decree which only grants one-year subsidies for the maintenance and repair of the infrastructure. ProRail draws up a management plan each year containing proposals regarding the performance targets. Those proposals are decided in consultation with the rail operators and local authorities.

The performance that ProRail can achieve depends on the financial resources made available to ProRail via the Infrastructure Fund contribution from the Ministry of Transport and Water Management, amortisation of the amounts invested[135], user fees, NS framework agreement contributions[136] and any other income sources[137]. When the State contribution is determined, income from the user charges is taken into account. The user fee payable to ProRail is deducted from the expenditure to be subsidised by the government.

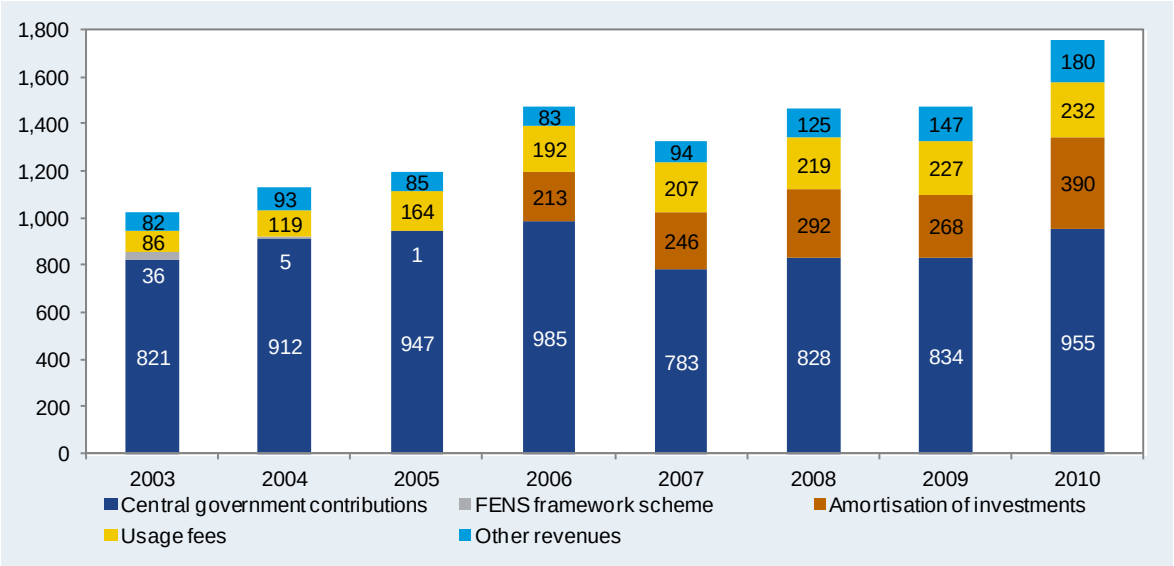
Chart 77 shows the trend in operating revenues from 2003, the year in which the three executive agencies Railinfrabeheer, Railned and Railverkeersleiding began operating under the joint name ProRail. This shows that in 2010 Prorail depended on the government contributions for 76.6% of its income. That is slightly better than in 2003, when government subsidies represented 83.6% of the revenues. This development is attributable both to the increase in other revenues (from € 82 million in 2003 to € 180 million in 2010) and to a rise in income from user fees (from € 86 million in 2003 to € 232 million in 2010) due to both a volume effect and a price effect. A transitional arrangement for the user fees was agreed with the freight transport operators, so that the price effect was kept down until 2006.

135 The payments received from the central government for the installation of fixed assets and replacement of the superstructure are deducted from the central government contributions and presented as "Investment amounts in accrued liabilities". This item is paid off in line with the depreciation of the assets. In the profit and loss account, this appears under the heading "Amortisation of investments".

136 The framework agreement contributions are amounts originating from the NS One-Off Contribution Fund (FENS); they were intended for improvements to the railway infrastructure and were paid until 2005.

137 The other operating revenues consist of "Capitalised production in house" (work done by in-house staff concerning the production of tangible fixed assets) and the "Other operating revenues" (revenues generated by work done by third parties).

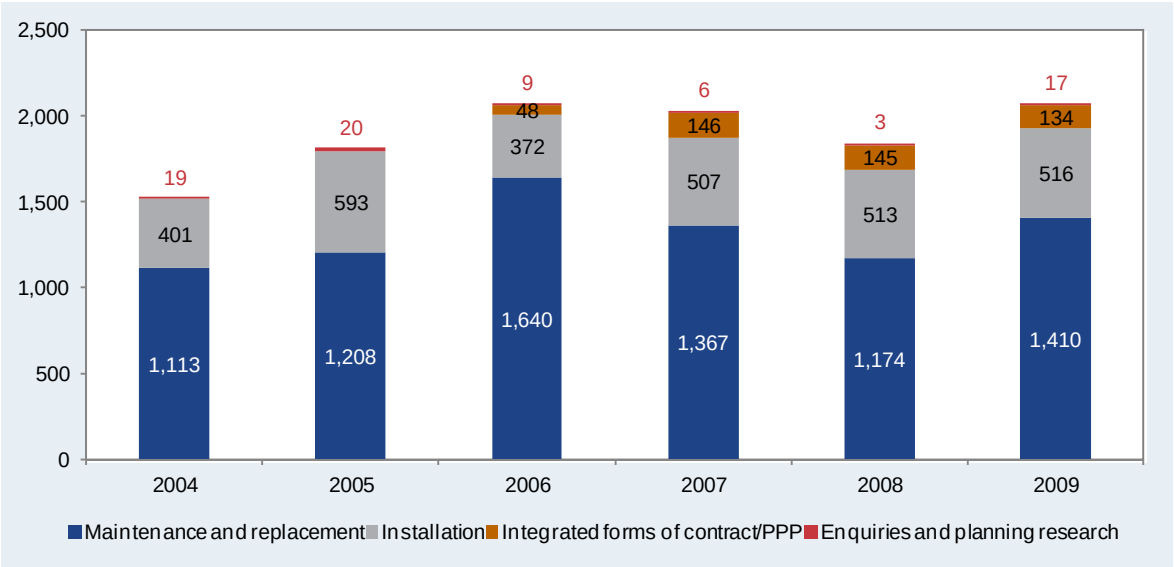
Chart 77: ProRail operating revenues, 2003-2010 (in € million)



Source: ProRail 2003-2010.

Chart 78 shows the budgetary expenditure in the Dutch budget intended for the railways (Infrastructure Fund contribution). It is noticeable that the amounts which ProRail spends on maintenance and installation do not tally precisely with the figures in the budget of the Ministry of Transport and Water Management. In 2007, the budget included € 1 367 million for the management and maintenance of the existing rail infrastructure, whereas Prorail states a figure of € 783 million in its management plan. This discrepancy is due partly to differences in the accounting system. In addition, in the budget the contribution to ProRail is not recorded as a separate amount but is fragmented among various sub-items which also include other minor items of expenditure which do not accrue to ProRail. (Lower House, 2005-2006). The Lower House has difficulty in discerning the public funds spent by ProRail, and that makes it impossible to exercise supervision. In 2010, a parliamentary committee was set up to resolve this issue so that the way in which the rail subsidies are used will be clear in the future.

Chart 78: National Budget Infrastructure Fund, 2004-2009 (in € million)



Source: Lower House of the States General, 2006-2011.

7.2.1.4. Regional authorities

Decentralisation and the introduction of tendering procedures in passenger transport were intended to make public transport better and more efficient. In that connection the Dutch government

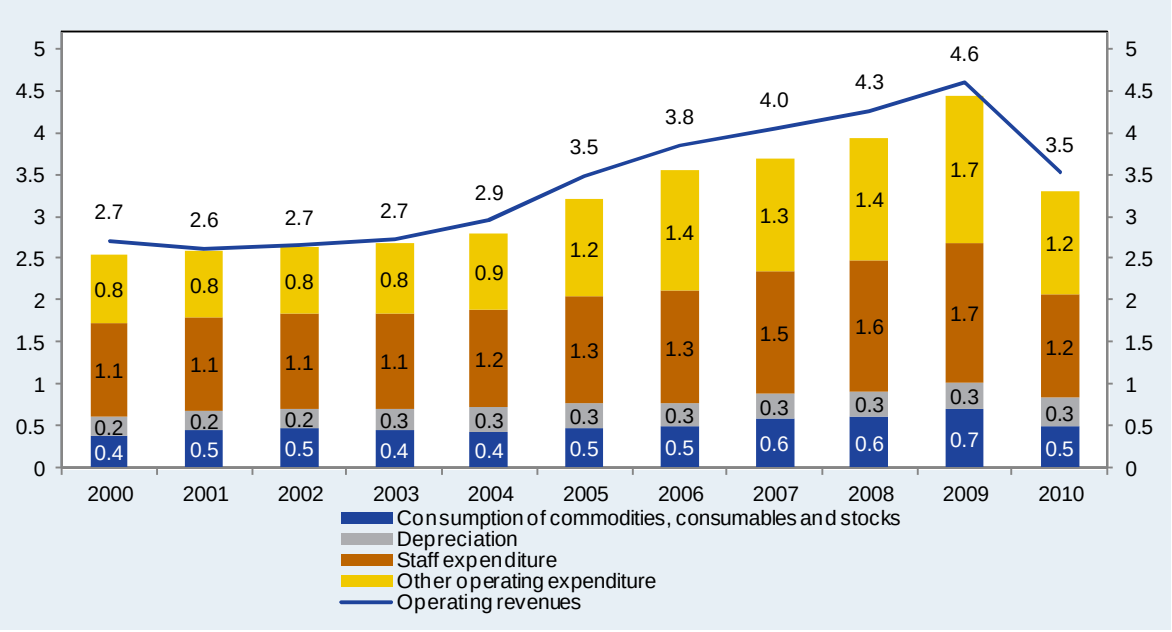
decided that, when decentralisation was introduced, the level of subsidies to the regional authorities should remain unchanged. This system was meant to encourage the regional authorities to conduct their tendering procedures with the aim of achieving a better quality of service or lower costs for the same standard of quality. For example, if the regional authority could cut the costs of rail transport in this way, the savings could be used for other transport facilities.

The BDU which the regional transport entities receive each year is used for the concessions put out to tender, which cover buses, trams and trains. This makes it impossible to separate the subsidies which accrue to the railways. Every year the Ministry of Transport and Water Management pays an average of € 1.6 billion to 12 provinces and 7 municipalities as a contribution for the implementation of the local and regional mobility policy. Of this, roughly € 1 billion is spent on the operation of urban and district transport, and the rest on infrastructure (Hilferink et al., 2010).

7.2.2. OPERATING COSTS

Chart 79 shows the trend in the consolidated operating expenses[138] of all the independent business units at NS in the period from 2000 to 2010. To place the operating expenses in perspective, the corresponding operating revenues are also shown.

Chart 79: Operating revenues and expenses of NV Nederlandse Spoorwegen (in € billion)



Source: NS, 2001 to 2010.

In 2001, the reputation of NS reached a low point. As a result of the EU legislation which stipulated a sound financial position as well as separation of the accounting between the railway infrastructure and rail operations, NS placed too much emphasis on cutting costs. Measures were introduced to streamline processes, and they led to industrial unrest and strikes. Also, the company was not prepared for the rapid growth in passenger numbers caused by the economic boom, resulting in a shortage of equipment and staff in a number of crucial functions. Punctuality dropped to 79.9% in 2001. This situation prompted the departure of the chairman/managing director and the director of internal and external relations, and the dismissal of the entire supervisory board (NS, 2001).

The ensuing years were dominated by the restoration of quality, industrial harmony and management stability at NS. Thanks to a plan for investing almost € 2 billion in new trains over a

[138] The NV Nederlandse Spoorwegen Annual Report contains no information on the individual operating expenses of each independent business unit.

five-year period, passengers could be offered an additional 2 100 seats, on average, each day. A number of recruitment campaigns also reduced the shortages of conductors, engineers and fitters, restoring industrial harmony. All these efforts to improve quality entailed high costs which seriously depressed the operating results.

In 2001, the difference between operating revenues and expenses came to € 38 million, which was 77% down against the previous year (see chart 79). In 2002, the operating result declined for the second successive year, dropping by 55% to € 17 million. Yet in view of the new investment, it was necessary to achieve an adequate return (ROI) on the capital invested. In 2002 and 2003, the ROI achieved came to 0.6% and 1.7% respectively. NS therefore launched an efficiency drive, in order to make structural savings. The measures taken in this connection included the termination of catering on trains in 2002 and a fare increase averaging 4.9% (NS, 2002-2003).

In 2004, the impact of the measures taken in the preceding years was already apparent. Total operating revenues were up by 8% from € 2 729 million to € 2 949 million. The increase was seen mainly in the domestic passenger transport segment (in the season-ticket passengers category), reversing the downward trend in the volume of passengers evident since 2001. Total operating expenses increased by 4.5% owing to a pay increase under the new collective labour agreement. The rise in other operating expenses is attributable to the restructuring of the loss-making international passenger services (see 7.3.2.2).

In 2005, there was a marked rise in revenues (18%), a key factor being that the operating revenues of the Northern Rail concession were included in a full year for the first time. In addition, the revenues generated by domestic passenger services also rose as a result of a fare increase (3.25%) and unexpected passenger growth. The operation of the Northern Rail concession by NedRailways also entailed a rise in expenses. Furthermore, there were increases in the infrastructure usage fee and in energy prices. Nevertheless, according to NS the expenses would have been even higher without the impact of the cost-cutting plan. The operating result climbed to € 292 million, which was double the previous year's figure.

2006 brought a further 11% rise in NS operating revenues, which were up from € 3 474 million to € 3 846 million. Turnover in the passenger transport segment increased by 8% as a result of a rise in the volume of traffic on domestic passenger services (6%) plus an increase in foreign passenger transport and cross-border transport (12%). Account must also be taken of a number of exceptional revenue items such as the profit on the sale of NedTrain Consulting (€ 32 million) and the government compensation (€ 45 million) for the lengthy period during which the Thalys could not run on a high-speed line in the Netherlands. Operating expenses, too, were 11% higher than in 2005. NS attributes this almost entirely to the Strukton Group which, as a result of three takeovers, incurred higher costs for work contracted out and other construction-related expenditure. However, the departure of a large group of expensive employees who took retirement did have a moderating effect on costs in that year.

In the years that followed, the operating revenues continued to grow but not as rapidly as before. In 2007 operating revenues increased by 5%, making this the last year in which they exceeded the operating expenses. NS attributes the 7.6% fall in the operating result in 2008 to rising staff expenses and automation costs. In 2009, operating expenses rose by 13%, far outpacing the growth of operating revenues (8%), and the operating result was down by € 328 million to € 161 million. Once again, this was due mainly to an increase in the average labour costs, owing to the expansion of the workforce by 3 253 FTEs as a result of the NedRailways acquisitions and a bus concession obtained by Qbuzz (see 7.3.2.3). Other operational expenses also increased sharply owing to the additions to provisions resulting from the loss-making contract for the operation of the high-speed train.

In 2010, the sale of Strukton Groep NV to Oranjewoud NV led to a fall in both operating revenues and expenses. The Strukton group had 6 000 employees. In 2009, turnover came to € 1.4 billion

with an operating profit of € 13 million. If the figures are adjusted to take account of the sale of Strukton, the operating profit increased by € 84 million in 2010. Nevertheless, the outlook for NS remains uncertain, partly because of the worrying financial situation relating to the high-speed train, and partly because of the question mark over the extension of the concession for the main rail network after 2015.

7.2.3. DEBT

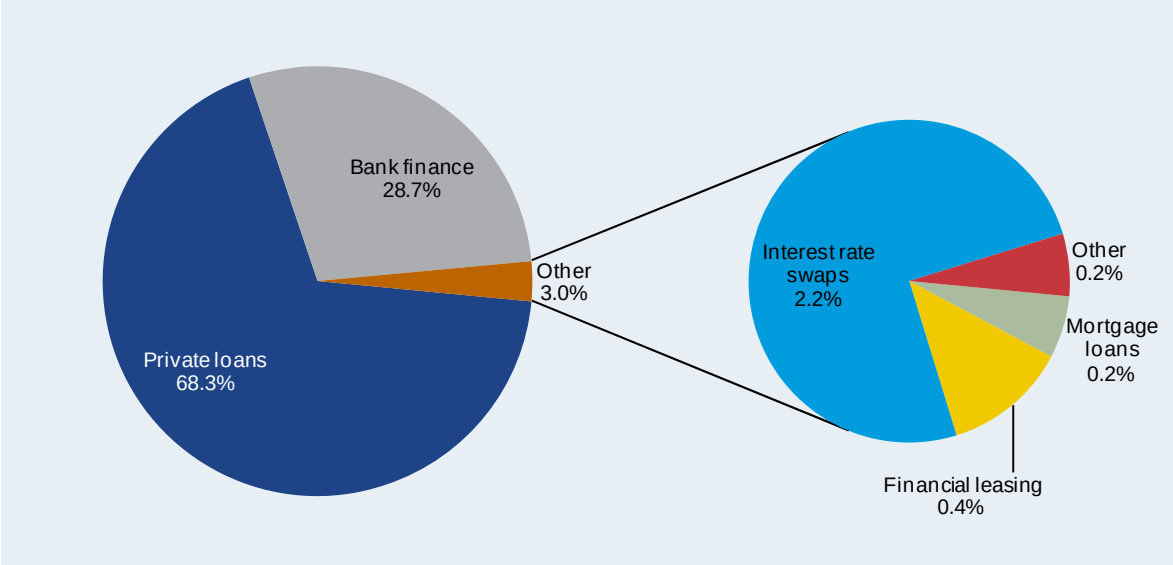
The financial liabilities of NS[139] in 2002 increased strongly (82.8%) compared to the previous year (see table 20). The shares in the executive agencies (Railinfrabeheer, Railned, Railverkeersleiding and Railinfratrust) were transferred to the government on 1 July 2002. In conjunction with that, the government effected early repayment to NS of the third-party loans re-lent to Railinfrabeheer. This put the loans back on the NS balance sheet.

Table 20: Financial liabilities of NV Nederlandse Spoorwegen (in € million)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Long-term loans	459	444	844	770	800	750	786	794	839	785	315
Short-term loans	36	26	15	6	3	3	248	232	244	292	387
Total Fin. Liabilities	495	470	859	776	803	753	1 034	1 026	1 083	1 077	702

Source: NS, 2001 to 2010.

Chart 80: Structure of the financial liabilities (on 31 December 2009)



Source: NS, 2001 to 2010

In the ensuing years the financial liabilities of NS initially declined before rising sharply again in 2006 against the previous year (37.3%). This was due mainly to the growth of short-term borrowings which increased to 24% of total financial liabilities in 2006. In its annual report, NS explains this by saying that solvency declined in 2006 as a result of the strong rise in short-term liabilities. This mainly concerns the amounts received in advance on the student travel pass, instalments claimed on work in hand, and the increase in debts to credit institutions (NS, 2006).

139 Figures for the financial liabilities of NS were compiled in accordance with the Dutch GAAP standards up to 2005. Since 2006 there has been a switch to IFRS standards for preparing the consolidated accounts.

In the period 2006-2009, the financial liabilities of NS varied little before declining by 34.8% in 2010 as a result of the sale of Strukton. This fall exceeded the decline in the operating income (23.4%) due to the disposal of the business segment (see 7.2.1.2). While this put the operating revenues at their 2005 level, the financial liabilities were at their lowest since 2002.

7.2.4. ANALYSIS OF THE RATIOS

So that the NS results for the period 2000-2010 can be assessed, table 21 shows the ratio between revenues and investments (Return On Investment or ROI) and table 22 shows the solvency of the railway operation.

While the return on investment (ROI) was positive up to 2003, it was fairly low. In 2004 this ratio stood at 5.5%, which was considerably better than in 2003 but still not enough to carry on investing and guarantee the long-term continuity of the business. NS itself states that an ROI of at least 7% is necessary in order to continue investing in growth and quality (NS, 2004). The only year in which the ratio approached this target was 2007 with an ROI of 6%. According to NS, the ROI was considerably higher than its 2006 level because of a reduction in the rate of corporation tax from 29.6% in 2006 to 25.5% in 2007. In subsequent years, the return declined again because rising costs constantly eroded the profits on ordinary operations. In 2010, NS tried to reverse this trend by hiving off the business segment Rail Infrastructure & Construction, boosting the ROI above the 2009 figure.

Table 21: NS profitability ratio

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ROI	3.8%	0.8%	0.6%	1.7%	5.5%	4.2%	3.7%	6.0%	4.9%	2.2%	3.4%

Source: NS, 2001 to 2010.

NS has a very high solvency ratio. In 2006, the ratio of capital to balance sheet total dropped by 6% owing to the sharp rise in short-term liabilities. Solvency declined again in 2009, dropping to its lowest level for the period 2000-2010 (48%). This was due to an extra dividend of € 1.4 billion paid to the Dutch government as a result of a survey of the NS asset structure. In 2010, solvency again reached 53%, thus increasing against the previous year. The main factor here was the sale of Strukton.

Table 22: NS solvency ratio

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Solv.	54%	71%	67%	68%	67%	64%	58%	58%	58%	48%	53%

Source: NS, 2001 to 2010.

7.3. CONCLUSION

The formal reason for reforming the Dutch railways was the European Directive 91/440/EEC which stipulated separation of the infrastructure from operations. But the Dutch government had already been working for some years on preparations for major reforms of public transport. The growth of road traffic and the loss of the profitable coal transport business had led to serious problems for the Dutch railways by around 1970. From the early 1990s, in particular, the public had been unhappy about the annual financial support to the railway company because these subsidies placed a heavy burden on the budget.

In 1992, the Wijffels Commission recommended that the links between NS and the government should be dismantled via vertical separation of the infrastructure from the operation of transport services. It also recommended horizontal separation between passenger and freight transport, infrastructure management and capacity management. Only the infrastructure was to continue to

receive funding from the government, which also became totally responsible for policy. Rail transport services were to be operated on a commercial basis, and the NS subsidies would be phased out by the year 2000. This privatisation led NS to concentrate mainly on passenger transport, because freight services in the Netherlands generated too low a return. In 2000 the freight transport segment was hived off and sold to Deutsche Bahn group.

In 1999 a model was proposed for the future situation of the rail sector, in which competition on the track was permitted for both passenger and freight services. It was decided to allow competition "for" the track in the case of passenger transport, and competition "on" the track in the freight sector. The installation and maintenance of the infrastructure were vertically separated from NS by removing them from the holding company and transferring them to a legal entity, ProRail BV, in which the government is the sole shareholder.

In addition, the Dutch railway network was divided into a main rail network and decentralised train services. These were routes which NS had classed as unprofitable and which were to be contracted out. In the case of the main rail network it was decided to award the concession by private contract up to 2015. The concession comprises a number of performance standards which NS must meet. Fines are imposed if the set standards are not achieved. In addition, the provinces were formally authorised to grant, modify or withdraw concessions for regional train services. The regional concessions were granted both to NS and to a number of outside companies.

Examination of the effect of opening up the market in freight transport shows that the introduction of competition has led to growth, although the growth is rather modest because the railways only carry a small proportion of freight traffic in the Netherlands for topographical reasons. Moreover, the Netherlands has a good alternative for transporting bulk goods, namely inland waterways. Since competition was first permitted in 1998, the number of market players has grown strongly; this applies particularly to foreign companies. They concentrate heavily on transport to and from the port of Rotterdam. Nevertheless, DB Schenker Nederland still carries most of the rail freight. The new entrants have a combined market share of 25%. This puts the Netherlands among the leading group of European Union countries in terms of market forces.

In the case of regional passenger transport, the number of passengers increased by 11.5% between 2000 and 2010. NS remains the biggest rail transport operator with a market share of 95% in 2010. In the same period, the volume of traffic carried by the other operators on the decentralised regional lines more than doubled. The effect of decentralisation is estimated at a 20% increase in passengers. Decentralisation has also led to better integration with other public transport services, and regional and local authorities have taken measures which would never have happened in the past (increase in the number of late and early trains, higher frequency, renovation of equipment and stations). But the regional rail operators also encountered a number of problems owing to the strong market position of NS. For instance, there have been problems with the coordination of service schedules and with keeping sales outlets open. In addition, the external companies feel obliged to follow the NS strategy on fares. Another sticking point is the availability of the necessary rolling stock for which there is no second-hand market.

Examination of the financial flows accruing to the railways in the Netherlands reveals not only that they have increased but also that there is no easy way of recording them. Rail expenditure is highly fragmented, and there is a lack of transparency regarding the available rail budgets. Furthermore, the amounts which ProRail states for infrastructure maintenance and installation in the annual reports do not tally with the figures shown in the budget. This makes it difficult for the Lower House to see how ProRail has spent the government funds, rendering it impossible to exercise supervision.

A financial analysis of NS shows that the decisions taken in 2001, the year in which the company's reputation was at a low ebb, produced definite, positive results. On the one hand, a large-scale investment plan together with a number of specifically targeted recruitment drives brought about an improvement in quality. This entailed high costs which in the first few years thereafter seriously

depressed the operating profits. In 2002 and 2003 it was decided to launch an efficiency drive in order to achieve structural savings. The impact of the cost-cutting measures was already apparent in 2004. Year by year increases in operating expenses were much lower than the rise in operating income. Moreover, the increase in operating expenses was attributable mainly to the active acquisitions policy pursued by NS, which acquired a number of concessions in other countries, including Britain. Only in 2009 was the steep rise in operating expenditure due to the increase in provisions on account of the loss-making contract for the operation of the high-speed train. The sale of the business segment Rail Infrastructure & Construction (Strukton) in 2010 in turn had a very beneficial effect on the operating results, also reducing the financial liabilities to their lowest level since 2002. Nevertheless, the outlook for NS remains uncertain, partly because of the worrying financial situation relating to the high-speed train, and partly because of the question mark over the extension of the main rail network concession after 2015.

8. GENERAL CONCLUSION

The European Union tried, by means of its railway Directives, to break up a number of natural monopolies with a view to creating a more efficient railway system. It was found that, throughout Europe from 1960 onwards, the growth of road traffic was accompanied by a steady decline in the share of the railway sector in both freight and passenger transport. In addition, the financial situation of the national railway companies constantly deteriorated, so that from the 1970s onwards the income was no longer enough to cover all the costs. This obliged the various national governments to apply support measures. In the early 1990s, there was growing public dissatisfaction because the annual subsidies were placing ever heavier burdens on the budget. With the Directive 91/440/EEC, Europe initiated the liberalisation of the railway market by abolition of the natural monopolies accompanied by the introduction of competition and separation of the infrastructure and operation in order to make better use of public money and to cut costs.

The driving force behind this fundamental reform of network industries is the economic theory relating to transaction costs and the vertical integration of businesses. In practice, however, it seems that the assumptions made in this connection are difficult to support, and that there is no simple answer to the question which organisational model will produce the biggest consumer surplus. For that it is necessary to quantify the transaction costs. This is a difficult process, and most models only provide an indirect indication of the total transaction costs.

The study on the implementation of the European legislation in the Member States shows that there are still considerable variations in the way in which the directives are applied; this is attributable to the complexity of the subject and the associated circumstances. It is reflected in the way in which the separation of the infrastructure and the transport services within the railway companies was carried out, and in the degree of opening of the market in freight and passenger transport. The Netherlands opted for a railway undertaking with full vertical separation, in which two separate companies deal with the infrastructure and operations. In France, there is a legal separation between infrastructure and operations but not a de facto one. The other countries studied adopted a form of holding company structure. And that type of structure was also implemented in varying forms, ranging from a holding company which operates purely as a controlling company, as in Germany, to the Belgian holding structure which is not only the group's parent company but is also responsible for building, maintaining and managing the stations, and is the employer of all the railway workers. Some countries have also gone much farther than others in regard to opening up the railway market to private rail operators. For instance, Dutch and German passenger transport has long been accessible to outside companies, allowing keen competition to develop. The advantages for consumers cannot be entirely measured and demonstrated. Research on customer satisfaction in the Netherlands has shown that while opinions have become more favourable, that does not apply to ticket prices which have continued to rise despite the introduction of competition.

Will the measures imposed by Europe for liberalising the railway market lead to the desired level playing field? On the one hand, the dominance of the former monopolist means that private rail operators face major obstacles, even just to gain a small share of the market. On the other hand, the financial analysis of the railway companies reveals wide variations in economic performance. The combination of better balance sheet figures and a bigger domestic market means that some major players such as DB AG are financially better off, giving them superiority over the smaller railway companies. This raises the question whether these circumstances will ultimately lead to distortion of competition. If DB AG and SNCF persist in their present acquisitions policy, that could lead to greater concentration and reduce the chances of a competitive market.

GLOSSARY

ARAF:	Autorité de régulation des activités ferroviaires
BEV:	Bundeseisenbahnvermögen
BKartA:	Bundeskartellamt
BNetzA:	Bundesnetzagentur
BR:	British Railways
BRH:	Bundesrechnungshof
CEO:	Chief Executive Officer
CFF:	Chemins de fer fédéraux
CFO:	Chief Financial Officer
COTIF:	Convention concerning international carriage by rail
CPRP:	Caisse de prévoyance et de retraite du personnel
DB AG:	Deutsche Bahn AG
DB ML AG:	Deutsche Bahn Mobility Logistics AG
DB:	Deutsche Bundesbahn
DCF:	Direction de la circulation ferroviaire
DR:	Deutsche Reichsbahn
EBA:	Eisenbahn-Bundesamt
EBIT:	Earnings Before Interest and Taxes
EBO:	Eisenbahn- Bau- und Betriebsordnung
EC:	Eurocity
EC:	European Commission
EIBV:	Eisenbahninfrastruktur-Benutzungsverordnung
EPIC:	Etablissement public industriel et commercial
EPSF:	Etablissement public de sécurité ferroviaire
ERTMS:	European Railway Traffic Management System
EU:	European Union
EWS:	English Welsh & Scottish Railway Limited
FENS:	NS One-Off Contribution Fund
FES:	Economic Structure Reinforcement Fund
FPS:	Federal Public Service
FTE:	Full-time equivalent
GDP:	Gross domestic product
GVG GmbH:	Georg Verkehrsorganisation
HSA:	High Speed Alliance
HSL:	High-speed line
IC:	Intercity
ICE:	Intercity-Express
IR:	Inter-regional trains
IT:	Information Technology
IVW:	Inspectie Verkeer en Waterstaat
KiM:	Kennisinstituut voor Mobiliteitsbeleid
NE-bahn:	Nichtbundeseigene Eisenbahn
NMa:	Netherlands Competition Authority
NS:	Dutch Railways
NV:	Naamloze vennootschap
OECD:	Organisation for Economic Co-operation and Development
OV-chipkaart:	Public transport smart card
pkm:	passenger-kilometres
PPP:	Public-Private Partnership
PPP:	Purchasing Power Parity
ptkm:	passenger-tonne-kilometres
RegB:	Regierungskomission Bahn

RENFE:	Red nacional de los ferrocarriles españoles
RER:	Réseau express régional
RFF:	Réseau ferré de France
RIF:	Railway Infrastructure Fund
RKB:	Regierungskommission Bundesbahn
ROCE:	Return on capital employed
ROI:	Return on investment
SA:	Société anonyme
SAAD:	Service annexe d'amortissement de la dette
SJ:	Stätens Järnväger
SNCB:	Belgian National Railway Company
SNCB:	Belgian National Railway Company
SNCF:	Société nationale des chemins de fer français
SPNV:	Schienengebunden Personen-Nahverkehr
TGV:	Train à grande vitesse
tkm:	tonne-kilometres
TOC:	Train Operating Company
Transfesa:	Transportes Ferroviarios Especiales SA
UK:	United Kingdom
VenW:	Ministry of Transport and Water Management
VROM:	Ministry of Housing, Spatial Planning and Environment
WROOV:	Working Group on Passenger Numbers and Volume of Sales

BIBLIOGRAPHY

Allen, D.W. (2006), Theoretical difficulties with transaction cost measurement, Division of Labor and Transaction Costs, 42 (1), pp.1-14

Benedikt, P. (2008), Railway Reform in Germany: Restructuring, Service Contracts and Infrastructure Charges, Technische Universität Berlin, Berlin

Berchet, G (1998), *Opinion n°68 presented on behalf of the Commission des Affaires économiques et du Plan on the draft finance law for 1999, adopted by the National Assembly, volume XVIII – Land transport*, annex to the minutes of the meeting on 19 November 1998, Senate, ordinary meeting 1998-1999

Birch, I., A. Smyth (1998), Was the Structure adopted for Passenger Rail Privatisation in the UK more appropriate to maintaining the Status Quo?, Europe Transport Conference 1998, Association for European Transport

BMBVS (2009), Verkehr in Zahlen 2009/2010, Federal Ministry of Transport, Building and Urban Development, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin

Booz Allen Hamilton (2006), Privatisierungsvarianten der Deutschen Bahn AG "mit und ohne Netz", Federal Ministry of Transport, Building and Urban Development and Federal Ministry of Finance, Berlin

Boss, A. and A. Rosenschon (2009), Finanzhilfen des Bundes - Eine Bestandsaufnahme, Kiel Working Paper 1567, Kiel Institute for the World Economy

Böttgger, C. (2004), Die Finanzierung des Eisenbahninfrastruktur in Deutschland, Bahn-Report 1/2004, pp. 1 - 4

Brenck, A. and B. Peter (2007), Experience with Competitive Tendering in Germany, Competitive tendering of rail services, ECMT, Paris, pp. 139-164

Brenck, A. and K. Mitusch (2008), Passenger transport liberalisation: The German experience, Workshop on the liberalisation of passenger transport by rail in Belgium, Brussels, 24 April 2008

Buehler, S., A. Schmutzler and M.-A. Benz (2002), Infrastructure Quality in Deregulated Industries: Is there an Underinvestment Problem?, Socioeconomic Institute, University of Zurich, Working Paper No. 0209, August 2002

Caisse des dépôts et consignations (2004), *Note sur la dette du secteur ferroviaire*, Assemblée nationale, commission des Finances, de l'économie générale et du Plan, mission d'évaluation et de contrôle sur le financement du système ferroviaire français

Chabalier, D. (2006), The Europeanization of the Railway Sectors, ECPR, Third Pan-European Conference on EU Politics, Bilgri University, Istanbul

Coase, R. (1937), The nature of the firm, *Economica* 4, pp. 386 - 405

Commission des comptes des transports de la Nation (1998), *Les transports en 1997*, 35th report

Commission des comptes des transports de la Nation (1998), *Les transports en 1997*, 35th report

Commission des comptes des transports de la Nation (2000), *Les transports en 1999*, 37th report

Commission des comptes des transports de la Nation (2000), *Les transports en 1999*, 37th report

Commission des comptes des transports de la Nation (2001), *Les transports en 2000*, 38th report

Commission des comptes des transports de la Nation (2001), *Les transports en 2000*, 38th report

Commission des comptes des transports de la Nation (2004), *Les comptes des transports en 2003*, 41st report

Commission des comptes des transports de la Nation (2004), *Les comptes des transports en 2003*, 41st report

Commission des comptes des transports de la Nation (2005), *Les comptes des transports en 2004*, 42nd report

Commission des comptes des transports de la Nation (2005), *Les comptes des transports en 2004*, 42nd report

Commission des comptes des transports de la Nation (2005), *Les comptes des transports en 2005*, 43rd report

Commission des comptes des transports de la Nation (2007), *Les comptes des transports en 2006*, 44th report

Commission des comptes des transports de la Nation (2007), *Les comptes des transports en 2006*, 44th report

Commission des comptes des transports de la Nation (2008), *Les comptes des transports en 2007*, 45th report

Commission des comptes des transports de la Nation (2008), *Les comptes des transports en 2007*, 45th report

Commission des comptes des transports de la Nation (2009), *Les comptes des transports en 2008*, 46th report and its annexes

Commission des comptes des transports de la Nation (2010), *Les transports en 2009*, 47th report

Commission des comptes des transports de la Nation (2010), *Les transports en 2009*, 47th report and its annexes

Commission des comptes des transports de la Nation (2011), *Les comptes des transports en 2010*, 48th report and its annexes

Conseil supérieur du service public ferroviaire (2001), *Evaluation de la réforme du secteur du transport ferroviaire*

Cour des comptes (2004), *La réforme ferroviaire de 1997: un bilan financier*, rapport public annuel 2003, pp. 253-284

Cour des comptes (2008), *Le réseau ferroviaire. Une réforme inachevée, une stratégie incertaine*, rapport public thématique

Court of Audit (2001), *Le bon emploi des deniers publics par la S.N.C.B. - Audit effectué en exécution de la résolution de la Chambre des représentants du 11 mai 2000*

Court of Audit (2008), *Financement fédéral des missions de service public de la SNCB, d'Infrabel et de la SNCB-Holding - Audit effectué en exécution de la résolution de la Chambre des représentants du 19 mars 2008*

Crozet, Y. (2010), "TGV: le temps des doutes?", Transports, n°460, pp. 87-92

De Bondt, R. (2006), Elementen van de Bedrijfseconomie, Alta Uitgeverij, Leuven-Heverlee

Depoorter, B. (1999), Regulation of natural monopoly, *Encyclopedia of Law and Economics*, Cheltenham, Edward Elgar, pp. 845-865

Descheemaecker (2010), "The future for a smaller European operator", Antwerp Rail School, UA, 17 May

Deutsche Bahn AG (2007), Competition Report 2007, Berlin

Deutsche Bahn Mobility Networks Logistics AG (2008), Zukunft bewegen - der DB-Konzern 2008, Berlin

Di Pietrantonio, L. and J. Pelkmans (2004), "The Economics of EU Railway Reform", *BEEP briefing n°8*, September

ECMT (European Conference of Ministers of Transport) (2005), Railway Reform & Charges for the Use of Infrastructure, OECD Publications Service, Paris

European Commission (1992), "The Future Development of the Common Transport Policy: A Global Approach to the Construction of a Community Framework for Sustainable Mobility - White Paper", COM (92) 494 final, Bulletin of the European Communities, Supplement 3/93

European Commission (1996), "White Paper. A strategy for revitalising the Community's railways", COM(96) 421 final

European Commission (2001), "White Paper: European transport policy for 2010: time to decide", COM(2001) 370 final

European Commission (2003), "Europe at a crossroads. The need for sustainable transport"

European Commission (2004), *EU Energy and Transport in Figures: Statistical Pocketbook*

European Commission (2010), *EU Energy and Transport in Figures: Statistical Pocketbook*

European Commission (2010), Study on Regulatory Options on Further Market Opening in Rail Passenger Transport: Final Report, Everis and NTU

European Commission (2011), *EU Transport in Figures Statistical Pocketbook 2011*

European Commission (2011), *EU Transport in Figures Statistical Pocketbook 2011*

Federal Ministry of Finance: Federal revenue and expenditure account and balance sheet, financial years 1998-2009

Federal Railway Office (2010), Eisenbahnunternehmen in der BRD, Retrieved December 09, 2010 from:"http://www.eba.bund.de/cln_005/nn_202596/DE/Infothek/Eisenbahnunternehmen/EVU/evu__node.html?__nnn=true"

FPS Economy (2010), *Analysis of rail freight in Belgium*

Friebel, G., Ivaldi, M. and Vibes, C. (2003), Railway (de)regulation: A European efficiency comparison, IDEI report nr. 3 on passenger rail transport, University of Toulouse
Gómez-Ibáñez, J. and G. de Rus (2006), *Competition in the Railway Industry*, Cheltenham, Edward Elgar Publishing Limited

Grignon, F. (2010), *Rapport d'information n°55 fait au nom du groupe de travail sur l'avenir du fret ferroviaire, constitué par la commission de l'économie, du développement durable et de l'aménagement du territoire*, enregistré à la Présidence du Sénat le 20 octobre 2010, session ordinaire de 2010-2011

Haenel, H. (2009), *Rapport d'information n°220 fait au nom de la commission des Affaires européennes sur la libéralisation des transports ferroviaires dans l'Union européenne*, annexe au procès-verbal de la séance du 12 février 2009, Sénat, session ordinaire de 2008-2009

Handelsblatt (2003), Bahn verliert Strom-Monopol, published on 19.08.2003, URL: http://www.handelsblatt.com/unternehmen/handel-dienstleister/bahn-verliert-strom-monopol;654267

Hilferink, P. and R. Poppeliers (2010), Financiering van het stedelijk en regionaal openbaar vervoer, NEA, Zoetermeer

Holzhey, M. and F. Berschin, I. Kühl, R. Naumann (2009), Wettbewerber-Report Eisenbahn 2008/2009, im Auftrag des Netzwerkes Privatbahnen e.V. und von mofair e.V., mit Unterstützung der Bundesarbeitsgemeinschaft der Aufgabenträger des Schienenpersonennahverkehrs (BAG-SPNV) e.V.

Infrabel (2006), *Annual Report 2005*

Infrabel (2008), *Annual Report 2007*

Infrabel (2009), *Annual accounts 2008*

Infrabel (2010), *Annual accounts 2009*

Infrabel (2011), *Annual accounts 2010*

INSEE (2007), *Notification du déficit et de la dette publics de l'automne 2007: traitement du service annexe d'amortissement de la dette ferroviaire*

International Transport Forum (2008), *Charges for the Use of Rail Infrastructure 2008*, OECD/ITF report

Ivaldi, M. (2005), Restructuring Railways: In Theory and Practice, CESifo DICE Report 4, pp. 4-9

Joly, B. (2002), *Avis n°70 présenté au nom de la commission des Affaires économiques et du Plan sur le projet de loi de finances pour 2003, adopté par l'Assemblée nationale, tome XVIII - Transports terrestres*, annexe au procès-verbal de la séance du 21 novembre 2002, Sénat, session ordinaire de 2002-2003

Kennisinstituut voor Mobiliteitsbeheer (2008), Decentraal spoor centraal: Quickscan van de marktontwikkelingen in het personenvervoer op gedecentraliseerde spoorlijnen, The Hague

Kennisinstituut voor Mobiliteitsbeheer (2010), Verkenning mobiliteit en bereikbaarheid 2011-2015, The Hague

Kennisinstituut voor Mobiliteitsbeleid (2007), Marktontwikkelingen in het goederenvervoer per spoor 1995-2020, The Hague

Kennisplatform Verkeer en Vervoer (2010), OV-klantenbarometer 2010, Study of customer satisfaction in regional public transport, March 2011

Koninklijk Nederlands Vervoer (2010), Survey of public transport concessions in the Netherlands, 2010 edition, The Hague

Ksoll, M. (2004), Integration of Infrastructure and Transport: an Assessment from Industrial Economics and Railway Perspectives, 2nd Conference on Railroad Industry Structure, Competition and Investment, Evanston, 08-09 October 2004

Liebenstein, H. (1966), Allocative Efficiency vs 'X-efficiency', *American Economic Review* 56, pp. 392-415

Link H. (2003), Rail Restructuring in Germany - 8 years later, Japan Railway & Transport Review 34, pp. 42-49

Link, H. (2004), Rail infrastructure charging and on-track competition in Germany, International Journal of Transport Management, Volume 2, Issue 1, 2004, pp. 17-27

Lower House of the States General (2005), Rail: transport and management plan, Lower House, 2005-2006 session, 29 984, No. 22

Lower House of the States General (2006 to 2011), Budget statements 2006 to 2010, National Government

Lower House of the States General (2009), Management of ProRail by the Ministry of Transport and Water Management, Lower House, 2008-2009 session, 31 919, No. 1-2

Lower House of the States General (2009), State policy on shareholdership, Lower House, 2009-2010 session, 28 165, Nr. 105

Marini, P. (2004), *Rapport général n°74 fait au nom de la commission des Finances, du contrôle budgétaire et des comptes économiques de la Nation sur le projet de loi de finances pour 2005, adopté par l'Assemblée nationale, tome III - Les moyens des services et les dispositions spéciales (Deuxième partie de la loi de finances), Annexe n°15 - Equipements, transports, aménagement du territoire, tourisme et mer: II. - Transports et sécurité routière: Transports terrestres et intermodalité*, annexe au procès-verbal de la séance du 25 novembre 2004, Sénat, session ordinaire de 2004-2005

Marini, P. (2006), *Rapport général n°78 fait au nom de la commission des Finances, du contrôle budgétaire et des comptes économiques de la Nation sur le projet de loi de finances pour 2007, adopté par l'Assemblée nationale, tome III - Moyens des politiques publiques et dispositions spéciales (Deuxième partie de la loi de finances), Annexe n°32 - Transports*, annexe au procès-verbal de la séance du 23 novembre 2006, Sénat, session ordinaire de 2006-2007

Merkert, R. (2010), An empirical study on the transaction sector within the rail firms, Transportmetrica, 2010, pp. 1-16

Merkert, R. (2010), Changes in transaction costs over time - The case of franchised train operating firms in Britain, Research in Transportation Economics, 29 (2010), pp. 52-59

Meurs H., E. Rosbergen and A. Stoelinga (2004), Decentralisatie en marktwerking in het openbaar vervoer: De ervaringen tot nu toe stemmen hoopvol, Colloquium Vervoersplanologisch Speurwerk 25 and 26 November 2004, Zeist

Ministry of Ecology, Sustainable Development, Transport and Housing (2011), *Transport key figures, 2011 edition11,* Benchmarks

Ministry of Transport and Water Management (2008), Spoor in beweging, Final report on the evaluation of railway legislation, The Hague

Moesen, W., T. Van Puyenbroeck and V. Van Rompuy (2006), Handboek Openbare Financiën: Economie en overheid, Acco, Leuven

Murray, A. (2001), Off the Rails: Britain's Great Rail Crisis - Cause, Consequences and Cure, Verso, London

Nash, C. (2009), *When to Invest in High Speed Rail Links and Networks?*, Discussion paper, International Transport Forum (ITF-OECD) 18th Symposium, Madrid, 16-18 November

Nash, C. and C. Rivera-Trujillo (2004), "Rail regulatory reform in Europe - principles and practice", Conference on Competition in the rail industry, Madrid, September

National Accounts Institute (2008), *National accounts – General government accounts 2007*

NEA, OGM, University of Oxford, TINA, Erasmus University Rotterdam, TIS.pt, 2007, Erail Monograph Germany, Rijswijk, The Netherlands, European Commission, DG Transport and Energy

Netherlands Railways (2001-2010), Annual reports 2001-2010, Utrecht

OECD (2005), Structural Reform in the Rail Industry, OECD, Paris

Pittman, R. (2005), Structural Separation to Create Competition? The case of Freight Railways, *Review of Network Economics*, Volume 4, Issue 3, Article 1

Project Group on the Evaluation of Railway Legislation, (2008), Spoor in beweging. Final report on the evaluation of railway legislation, Ministry of Transport and Water Management, Mobility

ProRail (2003 to 2010), Annual Report 2003 to 2010, Utrecht

Rail Cargo (2009), Spoor in cijfers 2009, Hoogvliet

Rail Cargo (2010), Spoor in cijfers 2010, Hoogvliet

Ramaekers P., T. de Wit and M. Pouwels (2009), Hoe druk is het nu werkelijk op het Nederlandse spoor? Het Nederlandse spoorgebruik in vergelijking met de rest van de EU-27, Statistics Netherlands, The Hague/Heerlen

RFF (2004), *Financial Report 2003*

RFF (2006), *Financial Report 2005*

RFF (2010), *Financial Report 2009*

RFF (2011), *Financial Report 2010*

Rothengatter, W. (2010), Regulation in Transport, Lecture notes for the Franqui Chair Lecture, Antwerp University

Schreyer, C. and C. Doll, M. Maibach, R. Zandonella, H. Lückge (2010), Verkehrsträgeranalyse: Kosten, Erträge und Subventionen des Strassen-, Schienen- und Luftverkehrs in Deutschland, Infras, Fraunhofer-ISI, Karlsruhe

Seidel, B. (2002), From Directive to Practice: German Railway Industry in Transition, European Transport Conference 2002, Association of European Transport, Cambridge

Service de Régulation du Transport ferroviaire et de l'Exploitation de l'Aéroport de Bruxelles-National (2009), *Activity report 2006-2008*

Slack, B. and A. Vogt (2007), Challenges confronting new traction providers of rail freight in Germany, Transport Policy 14/2007, pp. 399-409

SNCB (2004), *Rapport du Collège des Commissaires à l'Assemblée générale du 28 mai 2004 - Exercice 2003*

SNCB (2005), *Le Rapport du Collège des Commissaires à l'Assemblée générale du 31 mai 2005 - Exercice 2004*

SNCB (2009a), *Vous offrir plus d'air. Annual report 2008*

SNCB (2009b), *Rapport du Collège des Commissaires à l'Assemblée Générale des Actionnaires du 19 mai 2009 sur les comptes annuels pour l'exercice clos le 31 décembre 2008*

SNCB (2010a), *Rapport du Collège des Commissaires à l'Assemblée Générale des Actionnaires du 27 mai 2010 sur les comptes annuels pour l'exercice clos le 31 décembre 2009*

SNCB (2010b), *Destination mieux. Annual Report 2009*

SNCB Group (2010), *Rapport de développement durable 2009*

SNCB-Holding (2006), *Annual Report 2005*

SNCB-Holding (2007), *Annual Report 2006*

SNCB-Holding (2008), *Annual Report 2007*

SNCB-Holding (2009), *Annual Report 2008*

SNCB-Holding (2010), *Annual Report 2009*

SNCF (2005), *Financial Report 2004*

SNCF (2006), *Financial Report 2005*

SNCF (2007), *Financial Report 2006*

SNCF (2008), *Financial Report 2007*

SNCF (2009), *Financial Report 2008*

SNCF (2010), *Financial Report 2009*

SNCF (2010a), *Financial Report 2009*

SNCF (2010b), *Rapport d'activité et d'écomobilité 2009*

Thalys International (2010), *Annual accounts 2009*

Viscusi, W., J. Harrington and J. Vernon (2005), Economics of Regulation and Antitrust, The MIT Press, Cambridge, Massachusetts

Wijffels H.H.F., R.J. In't veld en J.F.A. de Soet (1992), Sporen voor straks. Recommendation on the future relationship between the government and Netherlands Railways, presented to the Minister of Transport and Water Management

Williamson, O. (1985), The Economic Institutions of Capitalism, The Free Press, New York

Williamson, O. (1991), Comparative Economic Organization: The Analysis of Discrete Structural Alternatives, Administrative Science Quarterly, Vol. 36, No. 2, pp. 269-296

Wolmar, C. (2001), Broken Rails: How Privatisation Wrecked Britain's Railways, Aurum Press, London

Zauner, M. (2004), Vertical Integration and Discrimination in the German Railway Sector: Results of a Questionnaire Survey, Discussion paper 2004/1, Stuttgart University

ANNEXES

ANNEX 1: Formulas for the ratios used

1. SHARE OF STAFF COSTS IN VALUE ADDED

	Heading codes (full format)
Numerator (N)	
Wages and salaries, social security expenditure and pensions	+ 62
Pension provisions: net allocation or net use and write-backs	+ 635
Denominator (D)	
Sales and service activities	+ 70/74
Operating subsidies and compensatory amounts obtained from government	- 740
Supplies and goods	- 60
Services and miscellaneous goods	- 61

Ratio = N/D x 100

Constraints(s) on calculation of the ratio:

Positive staff costs and value added

2. SHARE OF ALLOCATIONS TO DEPRECIATION, IMPAIRMENTS AND PROVISIONS FOR CONTINGENCIES IN VALUE ADDED

	Heading codes (full format)
Numerator (N)	
Allocations mentioned above, charged to the operating account	+ 630 + 631/4 + 635/7 - 635
Denominator (D)	
Sales and service activities	+ 70/74
Operating subsidies and compensatory amounts obtained from government	- 740
Supplies and goods	- 60
Services and miscellaneous goods	- 61

Ratio = N/D x 100

Constraints(s) on calculation of the ratio:

Positive value added

3. LEVEL OF BORROWING COSTS IN RELATION TO VALUE ADDED

	Heading codes (full format)
Numerator (N)	
Borrowing costs	+ 650
Amount of discount charged to undertakings on debt trading	+ 653
Denominator (D)	
Sales and service activities	+ 70/74
Operating subsidies and compensatory amounts obtained from government	- 740
Supplies and goods	- 60
Services and miscellaneous goods	- 61

Ratio = N/D x 100

Constraints(s) on calculation of the ratio:

Positive value added

4. NET RETURN ON CAPITAL AFTER TAX

	Heading codes (full format)
Numerator (N)	
Profit (loss) for the year (after tax)	+ 9904
Denominator (D)	
Equity	+ 10/15

Ratio = N/D x 100

Constraints(s) on calculation of the ratio:

Positive capital base
12-month financial year

5. NET RETURN ON TOTAL ASSETS BEFORE TAX AND DEBT CHARGES

	Heading codes (full format)
Numerator (N)	
Profit (loss) for the year (after tax)	+ 9904
Debt charges	+ 650 + 653
Interest subsidies granted by the government and imputed to the profit and loss account	- 9126
Tax on the result for the year	+ 9134
Denominator (D)	
Total assets	+ 20/58

Ratio = N/D x 100

Constraints(s) on calculation of the ratio:

12-month financial year

6. SOLVENCY

	Heading codes (full format)
Numerator (N)	
Capital base	+ 10/15
Denominator (D)	
Total liabilities	+ 10/49

Ratio = N/D x 100

Constraints(s) on calculation of the ratio:

-

7. ACQUISITIONS OF TANGIBLE FIXED ASSETS IN PROPORTION TO VALUE ADDED

	Heading codes (full format)
Numerator (N)	
Tangible fixed assets acquired during the year (including capitalised production)	
Capital gains on tangible fixed assets acquired from third parties	+ 8161 à 8166
Depreciation and impairments on tangible fixed assets acquired from third parties	+ 8221 à 8226
	- 8291 à 8296
Denominator (D)	
Sales and service activities	
Operating subsidies and compensatory amounts obtained from government.....	+ 70/74
Supplies and goods	- 740
Services and miscellaneous goods	- 60
	- 61
Ratio = N/D x 100	

Constraints(s) on calculation of the ratio:

Positive value added

8. ACQUISITIONS OF TANGIBLE FIXED ASSETS IN PROPORTION TO TANGIBLE FIXED ASSETS AT THE END OF THE PREVIOUS YEAR

	Heading codes (full format)
Numerator (N)	
Tangible fixed assets acquired during the year (including capitalised production)	
Capital gains on tangible fixed assets acquired from third parties	+ 8161 à 8166
Depreciation and impairments on tangible fixed assets acquired from third parties	+ 8221 à 8226
	- 8291 à 8296
Denominator (D)	
Acquisition value of tangible fixed assets at the end of the previous year	
Capital gains on tangible fixed assets at the end of the previous year	+ 8191P à 8196P
Depreciation and impairments on tangible fixed assets at the end of the previous year.....	+ 8251P à 8256P
Ratio = N/D x 100	- 8321P à 8326P

Constraints(s) on calculation of the ratio:

12-month financial year

ANNEX 2: Federal expenditure for DB AG and the railway system as a whole (in € million)

Application	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Interest-free loans	2 340	2 458	1 972	1 653	236	561	609	336	310	344	253	95	98	88	30	10
Future investment programme	0	0	0	0	0	0	0	523	930	398	268	114	0	0	25	50
Construction cost contribution	0	0	119	201	1 587	1 936	1 984	1 944	2 133	3 336	2 432	2 508	2 156	2 288	2 194	37
Construction cost contribution – past costs	1 595	2 223	1 599	925	853	892	735	992	780	0	72	0	0	0	0	0
Transport infrastructure financing company for the railways	0	0	0	0	0	0	0	0	0	0	247	450	683	954	984	1 120
Sub-total	3 935	4 681	3 690	2 779	2 676	3 389	3 328	3 795	4 153	4 078	3 272	3 167	2 937	3 330	3 233	1 217
Noise abatement	0	0	0	0	0	1	7	19	41	56	52	51	40	53	100	100
Municipal Transport Financing Act	205	190	171	130	119	98	99	101	134	131	118	48	63	65	133	124
Resources under the Capital City Agreement	0	0	0	11	31	24	18	21	16	13	16	8	5	0	0	0
Construction cost contribution - Fonds "Opbouwhulp voor schade na overstroming 2002" [flood damage repair fund]	0	0	0	0	0	0	0	0	0	54	14	39	0	0	0	0
Civil defence (expenditure on investment)	5	5	3	2	4	1	0	1	1	2	2	3	2	2	2	2
Total budget items relating to investment	**4 145**	**4 876**	**3 864**	**2 922**	**2 830**	**3 513**	**3 452**	**3 937**	**4 345**	**4 334**	**3 474**	**3 316**	**3 047**	**3 450**	**3 468**	**1 443**
Material costs (past costs - Deutsche Reichsbahn)	1 324	1 181	1 038	895	752	608	465	322	179	0	0	0	0	0	0	0
Staff costs (past costs - Deutsche Reichsbahn)	1 938	1 776	1 603	1 470	1 189	1 001	758	516	264	0	0	0	0	0	0	0
Total past costs not relating to investment	**3 262**	**2 957**	**2 641**	**2 365**	**1 941**	**1 609**	**1 223**	**838**	**443**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Subsidy for regional short-distance passenger transport by DB AG	3 784	3 974	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Payment for maintenance and operation of level crossings	135	79	77	82	76	88	74	88	90	90	83	76	75	78	77	79
Civil defence (expenditure excluding investment)	11	11	7	5	10	7	7	6	6	6	7	6	6	7	6	6
Contribution to DB AG for track maintenance	1	5	10	4	6	1	3	2	3	3	3	3	2	2	2	1
Total other expenditure	**3 931**	**4 069**	**94**	**91**	**92**	**96**	**84**	**96**	**99**	**99**	**93**	**85**	**83**	**87**	**85**	**86**
Federal expenditure for DB AG	**11 338**	**11 902**	**6 599**	**5 378**	**4 863**	**5 218**	**4 759**	**4 871**	**4 887**	**4 433**	**3 567**	**3 401**	**3 130**	**3 537**	**3 553**	**1 529**
Contributions to Bundeseisenbahnvermögen (BEV)	2 425	1 277	5 108	4 216	4 928	5 702	5 740	3 457	5 862	5 796	5 537	5 472	5 361	5 263	5 028	5 436
Borrowing by BEV	2 761	3 740	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal contribution to railway insurance company (pensions for former employees of DB AG)	0	161	199	234	253	298	308	335	318	369	355	351	358	363	360	361
Sickness benefits paid to DB officials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0
Total BEV	**5.186**	**5.178**	**5.307**	**4.450**	**5.181**	**6.000**	**6.048**	**3.792**	**6.180**	**6.165**	**5.892**	**5.823**	**5.719**	**5.626**	**5.414**	**5.797**
Total federal expenditure excluding regionalisation funds	**16.524**	**17.080**	**11.906**	**9.828**	**10.044**	**11.218**	**10.807**	**8.663**	**11.067**	**10.598**	**9.459**	**9.224**	**8.849**	**9.163**	**8.967**	**7.326**
Regionalisation funds			4.499	6.187	6.136	6.439	6.614	6.866	6.745	6.846	6.810	7.053	7.053	6.710	6.610	6.775
Federal expenditure on German railways including regionalisation funds	**16.524**	**17.080**	**16.405**	**16.015**	**16.180**	**17.657**	**17.421**	**15.529**	**17.812**	**17.444**	**16.269**	**16.277**	**15.902**	**15.873**	**15.577**	**14.101**

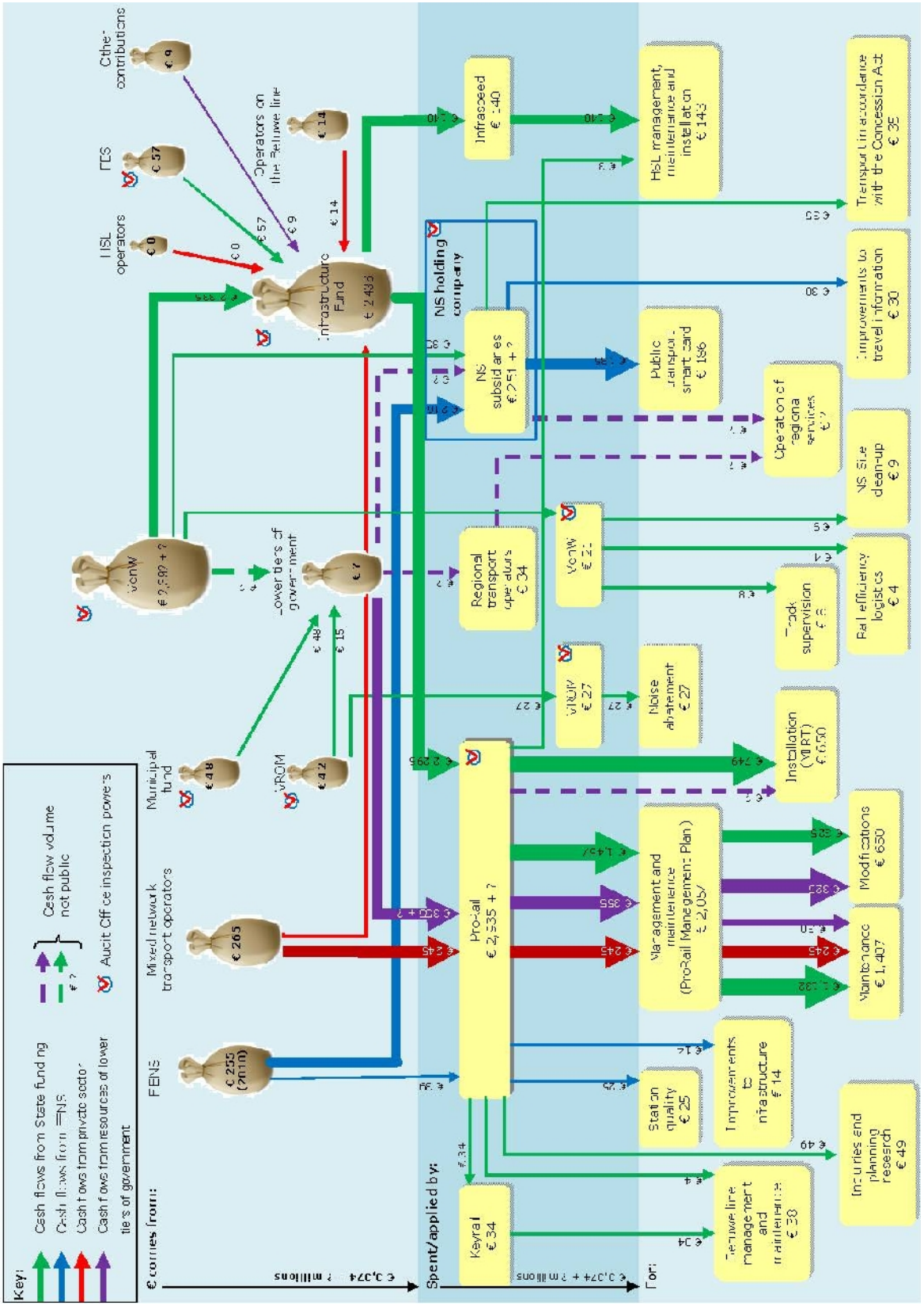
Source: Boss A. et al., 2009 and Federal Ministry of Finance, 1998 to 2009.

ANNEX 3: List of abbreviations of competing rail freight companies in Germany

ARAF:	Autorité de régulation des activités ferroviaires
AVG	Albtal-Verkehrs-Gesellschaft mbH, Karlsruhe
BASF	Badische Annilin- und Sodafabrik (BASF) SE, Ludwichshafen
BCB	Bayerische CargoBahn GmbH, Neu-Ulm, een dochteronderneming van Veolia Cargo Deutschland GmbH
BE	Brohltal-Eisenbahngesellschaft mbH, Niederzissen
boxXpress	boxXpress.de GmbH, Hamburg
EC:	European Commission
CFF:	Chemins de fer fédéraux
CFL Cargo	CFL Cargo Deutschland GmbH, Niebüll
Chemion	Chemion Logistik GmbH, Leverkusen
COTIF:	Convention concerning international carriage by rail
CPRP:	Caisse de prévoyance et de retraite du personnel
Crossrail	Crossrail GmbH, Duisburg
CTL	Car Transport Logistics GmbH, Mainz
DB:	Deutsche Bahn
DCF:	Direction de la circulation ferroviaire
DE	Dortmunder Eisenbahn GmbH, Dortmund, a subsidiary of Veolia Cargo Deutschland GmbH
duisport rail	duisport rail GmbH, Duisburg
EEB	Emsländische Eisenbahn GmbH, Meppen
EGP	Eisenbahngesellschaft Potsdam mbH, Potsdam
Ei.L.T.	Ei.L.T. GmbH, Eisenbahn, Logistik und Transporte, Teltow
Eivel	Eichholz Eivel GmbH, Berlin
EKO Trans	EKO Transportgesellschaft mbH, Eisenhüttenstadt
EPIC:	Etablissement public industriel et commercial
EPSF:	Etablissement public de sécurité ferroviaire
ERS	ERS Railways GmbH, Frankfurt am Main
FTE:	full-time equivalent
EVB	Eisenbahnen und Verkehrsbetriebe Elbe-Weser GmbH Zeven
RIF:	Railway Infrastructure Fund
HGK	Häfen und Güterverkehr Köln AG, Cologne
HHPI	Heavy Haul Power International GmbH, Erfurt
HSL	HSL Logistik, Hamburg
hvle	Havelländische Eisenbahn AG, Berlin
ICE:	Inter-City-Express
Infraleuna	InfraLeuna GmbH, Leuna
IntEgro	IntEgro Verkehr GmbH, Reichenbach im Vogtland
IT:	Information Technology
ITL	ITL Cargo GmbH, Dresden
Kombiverkehr	Kombiverkehr Deutsche Gesellschaft für kombinierten Güterverkehr GmbH & CO. KG, Frankfurt am Main
LEG	Leipziger Eisenbahnverkehrsgesellschaft mbH, Leipzig
LOCON	LOCON Logistik & Consulting AG, Oberuckersee
Lokomotion	Lokomotion Gesellschaft für Schienentraktion mbH, Munich
MKB	Mindener Kreisbahnen GmbH, Minden
MTEG	Muldental-Eisenbahnverkehrsgesellschaft mbH, Meerane
MWB	Mittelweserbahn GmbH, Bruchhausen-Vilsen
NE	Neuss-Düsseldorfer Häfen GmbH & Co. KG, Neuss, Neusser Eisenbahn
NIAG	Niederrheinische Verkehrsbetriebe AG, Moers
NRS	Nordic Rail Service GmbH, Lübeck
OHE	Osthannoversche Eisenbahnen AG, Celle
PCT	PCT Private Car Train
GDP:	Gross domestic product
pkm:	passenger-kilometres
PRESS	Eisenbahnbau- und Betriebsgesellschaft Pressnitztalbahn mbH, Jöhstadt
ptkm:	passenger-tonne-kilometres
rail4chem	rail4chem Eisenbahnverkehrsgesellschaft mbH, Essen

RAN	Railservice Alexander Neubauer GmbH, Karlsruhe
RBB	Regiobahn Bitterfeld Berlin GmbH, Bitterfeld, a subsidiary of Veolia Cargo Deutschland GmbH
RENFE:	Red nacional de los ferrocarriles españoles
RER:	Réseau express régional
RFF:	Réseau ferré de France
RTB	RegioTram Betriebsgesellschaft mbH, Kassel
RTS	RTS Rail Transport Service Germany GmbH, Munich
SA:	Société anonyme
SAAD:	Service annexe d'amortissement de la dette
SBB Cargo	SBB Cargo Deutschland GmbH, Duisburg
SNCB:	Belgian national railway company
SNCF:	French national railway company
FPS:	Federal Public Service
SWT	Stahlwerk Thüringen GmbH, Unterwellenborn
TGV:	High-speed train
tkm:	tonne-kilometres
TWE	Teutoburger Wald-Eisenbahn AG, Gütersloh, a subsidiary of Veolia Cargo Deutschland GmbH
TXL	TX Logistik AG, Bad Honnef
EU:	European Union
UK:	United Kingdom
VPS	Verkehrsbetriebe Peine-Salzgitter GmbH
WAB	Westfälische Almetalbahn GmbH
WLC	Wiener Lokalbahnen Cargo GmbH
WLE	Westfälische Landes-Eisenbahn GmbH (WLE)
WRS	Wincanton Rail GmbH

ANNEX 4: Overview of railway expenditure in the Netherlands in 2011 (in € million)



Source: Adapted from Dutch Audit Office (*Algemene Rekenkamer*) (2010).

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