

Further Action at European Level
Regarding Market Opening for
Domestic Passenger Transport by
Rail and Ensuring Non-
Discriminatory Access to Rail
Infrastructure and Services

Final Report

November 2012

Prepared for:

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APPENDICES

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- B Stakeholder questionnaire
- C Stakeholder contacts
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Executive Summary

Background

1. In October 2011 the European Commission issued Task Specifications for a “Study to support an impact assessment on further action at European level regarding market opening for domestic passenger transport by rail and ensuring non-discriminatory access to rail infrastructure and services”.
2. The Task Specifications required the contractor to develop case studies, a stakeholder consultation, a problem definition, objectives, policy options and an impact assessment, dealing with two principal issues:
 - “Unbundling” of infrastructure activities from Railway Undertakings (RUs) to ensure non-discriminatory access to infrastructure, continuing the process of separation begun with Directive 91/440/EEC
 - “Market opening” for domestic passenger transport through options for open access “in the market” and compulsory competitive tendering “for the market”
3. The results of the study are expected to support proposals which Directives 2007/58/EC and 2012/34/EU require should be made by 31 December 2012.
4. This document is the Final Report of the study and documents the definition of the problem, development of objectives, analysis of options and their impacts and, finally, our conclusions. The report and associated Appendices include the results of the stakeholder consultation and the findings of the industry research.

Introduction

5. The purpose of this study was to support the Commission in determining how best to secure market opening for domestic passenger services and to improve access to rail infrastructure. This initiative involves organising market opening and creating framework conditions that improve transparency and eliminate discriminatory behaviour, with a view to encouraging the development of high quality, customer focused and competitive rail services, particularly in domestic passenger markets. In principle, it could be achieved through a number of different policy options, each having different costs of implementation as well as economic, financial, environmental and other impacts.
6. In accordance with the Task Specification, the study has drawn on a range of research activities and analysis, in particular:
 - Research into the current situation in the rail sector in different Member States
 - A consultation exercise in which industry stakeholders were invited to offer views on problems and policy options for addressing them
 - A detailed investigation of the key problem faced by the industry and the underlying drivers
 - The definition of general, specific and operational objectives reflecting the problem analysis and guiding the development of detailed policy options

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- A qualitative and quantitative Impact Assessment to identify appropriate policy options for implementation through further legislation
7. In the remainder of this Executive Summary, we set out our main findings and conclusions and briefly discuss the associated policy implications.

Problem definition and policy objectives

8. The key problem to be addressed through further policy measures, identified at the start of the study, is the relatively low share of rail in passenger and freight markets across the EU. Our analysis indicates that this problem can be linked to:
- Technical and administrative barriers relating to interoperability and safety (outside the scope of this study)
 - Network barriers and bottlenecks resulting from the governance of rail infrastructure
 - Legal barriers constraining the development of competition in passenger markets
9. We also concluded that competition was further constrained by the quality and capacity of rail infrastructure. This last issue raises questions about the adequacy of rail-sector financing, which are also outside the scope of the present study, but infrastructure constraints must nevertheless be taken into account in assessing the impact of different policy options on market opening and competition.
10. More specifically, our problem analysis highlighted:
- The relatively low and/or variable service quality of rail services in many Member States, and the dissatisfaction with some aspects of the service expressed by passengers through the Eurobarometer survey.
 - Variable efficiency across the various national rail industries, at least when measured in terms of the intensity of use of rail infrastructure and rolling stock, recognising that high level comparisons of the kind undertaken cannot take account of the specific characteristics of individual networks and services.
 - The relative strength and competitive advantage of incumbent rail operators and the slow development of competition in many Member States, partly the result of discriminatory behaviour of various kinds, particularly where Railway Undertakings and Infrastructure Managers are integrated.
 - The presence of restrictive market access rules and/or licence requirements in some Member States, as well as the difficulties faced by new entrants in securing access to rolling stock, ticketing systems and other rail-related services needed to commence commercial operations.
11. Given these findings, we defined a general objective, together with supporting specific and operational objectives, providing a focus for the development of policy options for addressing the problem. Our general objective captures the need to “improve the competitiveness of the rail sector vis-à-vis other modes by improving the quality of services and enhancing its operational efficiency”, while highlighting the need to “enhance competition, eliminate market distortions and improve the structure of EU rail markets”. We consider that it will also be important for any future policy measures to meet a key supporting objective to

“ensure that unbundling is applied in a consistent and transparent manner across Member States”, thereby improving transparency and removing the scope for discrimination in favour of incumbent rail operators.

Policy options

12. There are a wide range of policy options potentially available to address the problem and meet the objectives described above. Moreover, options can be applied in different combinations, resulting in an even greater number of possible packages of measures for analysis. However, in our view the key dimensions of policy for consideration are limited to:
 - Whether institutional separation in relation to infrastructure management, in addition to decision-making and organisational separation, needs to be enforced, and how far separation arrangements are extended to infrastructure management functions other than capacity allocation and setting access charges
 - How far legislative change can or should address the difficulties that new entrants frequently face in gaining access to skilled railway staff, rolling stock, and key rail-related services and facilities (such as ticketing and fares systems) often provided by incumbent Railway Undertakings rather than Infrastructure Managers
 - The specific requirements relating to compulsory competitive tendering of Public Service Contracts (PSCs), notably the extent to which the size of such contracts can or should be limited by legislation in order to foster market opening and competition
 - The extent to which open access is permitted, in particular the degree to which legislation permits restriction on open access in order to protect the economic equilibrium of services operated under PSCs
13. There is no clear consensus within the European rail industry on the appropriate response to these issues, as demonstrated by the stakeholder consultation exercise. In particular, while there is considerable support for further market opening, at least in the form of competitive tendering of PSCs, views on the need for, and likely effects of, further unbundling are polarised. For example, ministries, rail regulators, competition authorities, new entrant operators, independent Infrastructure Managers and passenger representative organisations tended to be fully supportive of institutional separation as a means of eliminating discriminatory behaviour and fostering competition, whereas vertically-integrated rail organisations emphasised the potential loss of management efficiencies and economies of scope resulting from separation.
14. This lack of consensus reflects the difficulties of interpreting the evidence, which is largely derived from individual case examples, industry-based analysis frequently undertaken for a different purpose and academic studies focusing on a limited set of issues. In addition, much of the evidence must be qualified as relating to the specific institutional, regulatory, economic, geographic and demographic characteristics of a particular Member State. We nevertheless undertook a comprehensive review of the evidence on the impact of unbundling

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and market opening to date in order to inform a qualitative assessment of policy options.

15. Our review of the evidence on unbundling and the potential for integrated rail organisations to act in a discriminatory manner supports the case for significant further unbundling, in terms of both:
 - The form of separation of infrastructure and train operator activities
 - The scope of activities covered
16. We also note that there is no evidence that further unbundling would necessarily lead to significant additional transaction costs. We concluded that full institutional separation of infrastructure management functions, including essential functions as well as investment decisions and maintenance, would support market opening while increasing the transparency of costs and decision-making, and hence merits further consideration.
17. We considered whether infrastructure users should have access to fora in which they can express their opinions. We concluded that further work would be required before such committees could be considered an appropriate or useful mechanism in the context of institutional separation.
18. We note that means are available to relieve PSC operators of financial risk related to the residual value of rolling stock, and that the introduction of national ticketing arrangements could also contribute to removing a barrier to entry. At the same time, we consider that it would not be appropriate to introduce prescriptive legislation in either of these areas, as Competent Authorities would need flexibility to implement the necessary changes in a way that took account of national market conditions.
19. We conclude that there is a case for further market opening, supported by further institutional reform in order to establish a framework for non-discriminatory access to EU rail markets.
20. In relation to the procurement of PSCs, we consider that the objective of enhancing competition and eliminating market distortions is best met through compulsory competitive tendering, subject to a de minimis threshold that would allow Competent Authorities to procure limited transport services without incurring the costs of a competition. It may also be appropriate to consider upper limits on the size of PSCs, to improve financial transparency and to help prevent competitive procurement processes from being foreclosed to all parties except the incumbent operator. However, any limits would need to be expressed in a way that allowed Competent Authorities to define economically and operationally coherent packages of services.
21. In our view, Member States and Competent Authorities must be permitted to protect the economic equilibrium of PSCs. In the absence of such protection, it is likely that PSC services would be undermined by open access, since open access operators would be able to “cherry pick” the most commercially viable flows on which the funding of PSCs frequently depends. In addition, we consider that protection should be on the basis of a case-by-case review of the economics of PSC services. Legislation simply permitting open access on “routes” not covered by

PSCs might leave few or no routes on which open access was permitted, and lead to the creation of PSCs with the deliberate objective of preventing open access.

Qualitative Impact Assessment

22. We carried out a qualitative Impact Assessment against a range of economic, quality and other factors, of options agreed in discussion with the Commission.
23. We identified the following as most likely to meet the policy objectives highlighted above:
 - **Unbundling option U2:** full institutional separation, involving separate ownership of rail operations and infrastructure management and covering a wider range of infrastructure management functions including essential functions, maintenance planning and investments
 - **Market opening package 4:** compulsory competitive tendering (subject to a de minimis threshold and potentially a maximum contract size), open access (subject to an economic equilibrium test), requirements to relieve PSC operators of financial risk related to the residual value of rolling stock, and an enabling clause allowing the implementation of national ticketing arrangements
24. We subjected these measures, both separately and combined, to a quantitative Impact Assessment.

Quantitative Impact Assessment

25. We recognise that there is uncertainty over the level and timing of the impacts following any implementation of these policy options. As already noted, while there is experience of similar arrangements in some Member States, differences in regulatory and institutional arrangements as well as in geographic and demographic factors affecting rail markets make it difficult to identify robust modelling assumptions capable of supporting a quantitative analysis of pan-European effects.
26. In particular, we note that:
 - In Germany, there has been some market opening in the form of competitive tendering of local services by Competent Authorities. There is evidence that this has resulted in significant lower contract prices but, given the focus on contracts for local services of limited size (below 5 million train-kilometres per year), this outcome need not necessarily apply to long distance and other services.
 - The rail sector in Great Britain demonstrates that competition for the market can become well-established and, while introducing some additional transaction costs, bring benefits in terms of innovation and service improvements. However, the current structure of the British rail sector is the result of a fundamental redesign of the governance, institutional and regulatory framework of a kind that could not be replicated in other Member States simply through EU-level legislation. Experience in Great Britain is therefore likely to be only a limited guide to the effects of implementing the policy options described above.

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- In Italy, the entry of NTV demonstrates that the introduction of commercial services on a significant scale can be possible where capacity is unconstrained and providing the entrant has access to, or at least can circumvent the need for, established ticketing systems. It also demonstrates that such entry can stimulate competition in fares, although the long run reduction in fares is not yet clear. Again, however, the experience is still limited to the high speed sector, and there is no comparable evidence of scope for commercial entry into urban and other rail markets in Italy traditionally served by the subsidised incumbent.
 - In the Czech Republic, institutional separation was soon followed by the entry of open access operators who have not reported significant discriminatory behaviour. However, the conditions necessary for entry, a profitable route with spare capacity, may not be widely found elsewhere.
 - While Sweden was the first Member State to introduce complete unbundling and competitive tendering for local and long distance services, in practice competition was introduced only gradually. More specifically, it was 10 years before an effective rolling stock leasing market began to develop and 20 years before all markets were open to competition. Lags of this kind reflect the particular institutional, market and other characteristics of a Member State, which cannot be easily captured in the modelling of impacts across the EU.
27. Against this background, we emphasise that in undertaking a quantitative assessment of policy options, we necessarily applied professional judgement as well as drawing on the available evidence in order to develop assumptions. Moreover, the results are sensitive to variations in the assumptions and must be qualified accordingly.
28. We have presented two scenarios - a conservative one and a more optimistic one - developed using a range of assumptions, applied in agreement with the Commission.
29. The results of the quantitative assessment are dominated by the impact on domestic passenger benefits. They also include an estimated potential €1 billion NPV gain to freight from unbundling option U2, estimates of transaction costs and international passenger benefits.
30. The estimated range of benefits of further unbundling alone are small, with an NPV of between €2.5 billion and €6.5 billion over the 17 years from 2019, reflecting the fact that, in the absence of further market opening, the impacts would be largely limited to those Member States that have already introduced open access and/or some competitive tendering of PSCs. We also note that the range of values indicated by the sensitivity analysis, which is similarly wide in relative terms, suggests that implementation of option U2 in the conservative scenario could result in net disbenefits. This would be the case if any improvement in freight and passenger benefits were more than offset by an increase in transaction costs resulting from the particular approaches to implementation in the different Member States.
31. We estimate, based on the two scenarios presented, that further market opening in the form of package 4, as outlined above, would generate net financial savings with an NPV of between €14 billion and €29 billion over the 17 years from 2019,

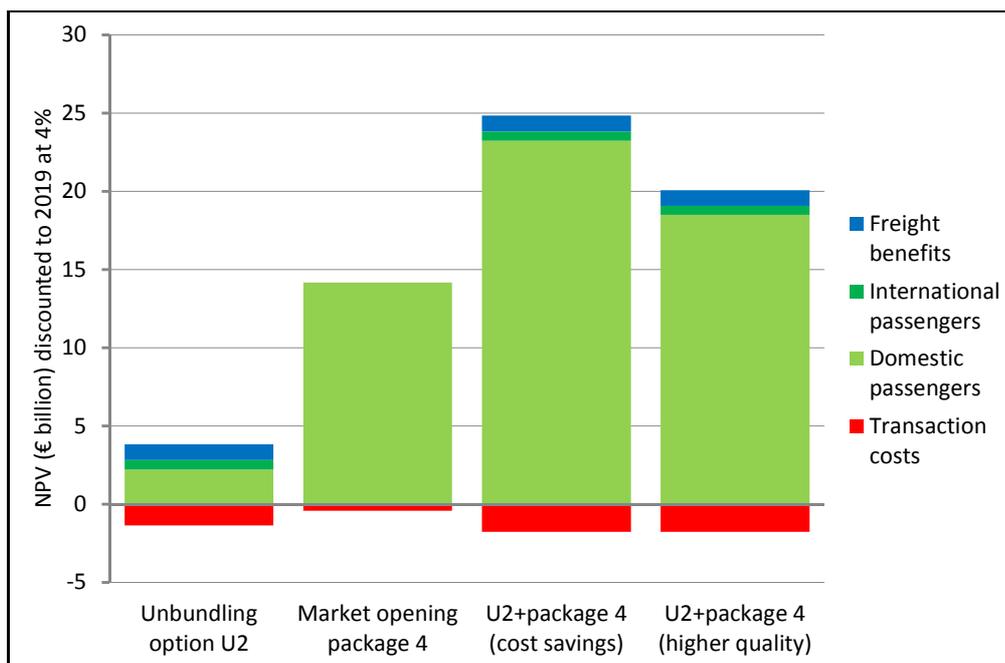
the year in which implementation of legislation is assumed to take effect. We consider that these benefits are significant in absolute terms when compared with total annual industry revenues across the EU. At the same time, the range of values implied by the sensitivity analysis is wide, and the NPV of savings could be less than €5 billion for the conservative scenario with relatively minor changes to our assumptions on the extent of open access, the scope for PSC cost savings, and the timescales over which the full effects of the Fourth Package develop.

32. We examined two illustrative scenarios for a combination of unbundling option U2 and market opening package 4. We estimated, based on the assumptions used in the assessment, that these could, if Competent Authorities focused on maximising the cost savings from competitive tendering, generate net financial savings with an NPV of between €23 billion and €43 billion over the 17 years from 2019. This option would bring few or no improvements in quality and capacity, and hence make little contribution to the objective of increasing rail's market share. As an alternative scenario, if Competent Authorities invested the equivalent of 50% of these savings in improving quality and/or capacity, the net financial savings would have an NPV of between €18 billion and €34 billion over the 17 years from 2019. The financial savings foregone, however, could be expected to buy at least equivalent economic benefits and an increase in rail's market share.
33. However, while this analysis has generated estimates of the impact of further legislation in order to inform the Commission's separate assessment of market opening and unbundling measures, it does not fully capture all of the effects that are likely to be observed in practice. Specifically, unbundling and the disaggregation of PSCs into smaller packages may bring benefits that cannot be easily quantified, such as greater transparency in the use of public funds, which can help to improve decision-making and the efficiency with which such funds are used.
34. The table and figure shown below present the results from the conservative scenario.

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening Package 4	U2+Package 4 (cost savings)	U2+Package 4 (higher quality)
Transaction costs (mean estimate)	-1.37	-0.42	-1.77	-1.77
Domestic passenger benefits	2.21	14.16	23.23	18.50
International passenger benefits	0.62		0.60	0.56
Freight benefits	1.00		1.00	1.00
Total NPV	2.46	13.74	23.06	18.29

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers

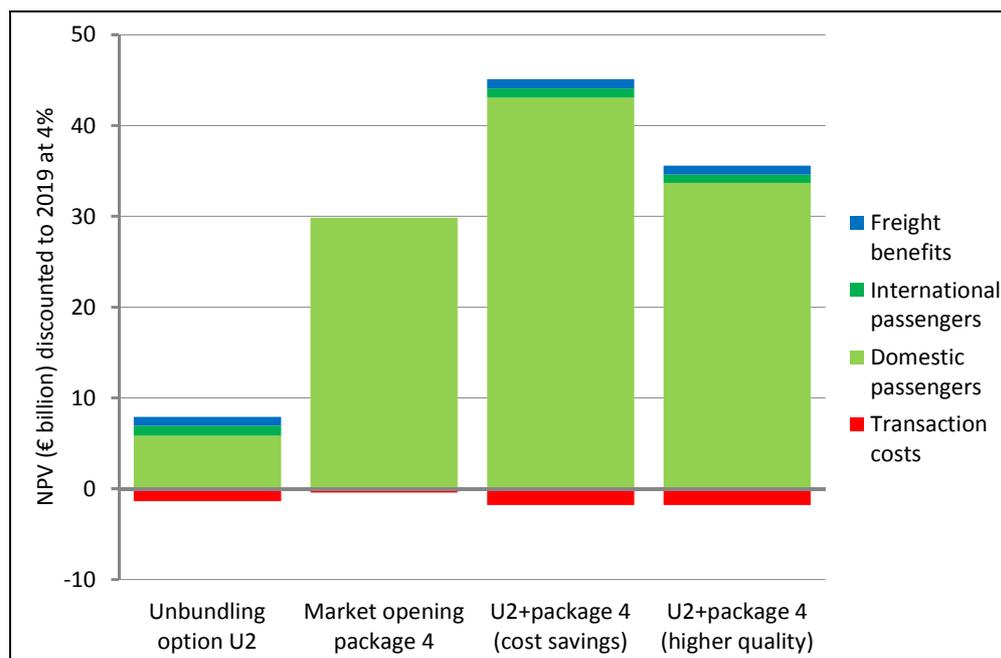
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35. The table and figure shown below present the results from the optimistic scenario.

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Transaction costs (mean estimate)	-1.37	-0.42	-1.77	-1.77
Domestic passenger benefits	5.86	29.85	43.07	33.71
International passenger benefits	1.07		1.05	0.89
Freight benefits	1.00		1.00	1.00
Total NPV	6.56	29.43	43.35	33.83

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers



Policy implications

36. In the light of these findings, we suggest that benefits to rail passengers and freight customers would be considerably greater if unbundling and market opening measures were both implemented as part of an integrated package of industry reforms.
37. At the same time, we note that the timing of the implementation of each element of the package requires careful consideration. In addition, we consider that if further reform is to be successful, it will be important to support it with additional industry initiatives that can be encouraged outside of the formal legislative framework.
38. Market opening will have the greatest chance of meeting the objectives set out earlier if it takes place within a relatively stable and well understood institutional and financial framework. Such a framework should provide for the fullest possible transparency of decision-making across the various infrastructure management functions, such that new entrants can be confident of progressing the introduction of services according to well-defined processes governing access and asset stewardship. Moreover we suggest, on the basis of experience in Great Britain and Sweden, that a minimum period of 18 months should be allowed for institutional changes to take effect and become established. This will ensure that Member States have time to introduce any necessary pan-industry processes and systems, which could be extensive, depending on the approach to implementation adopted in each case.
39. A well-established institutional framework will provide a stable platform for encouraging the development of competitive tendering for PSCs, which we would expect to take effect through a phased approach over a few years. While the precise definition of the phasing would require further consideration, we note that it would need to recognise, inter alia:

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- The need for potential bidders to prepare for, and respond to, a greater number of tendering opportunities
 - The need for Competent Authorities to determine their requirements for rail services in accordance with national, regional and local objectives, and to acquire the necessary skills in competitive procurement, bid evaluation and, at least in some cases, contract negotiation
 - The fact that some contracts, for example for the provision of services on relatively large and complex urban networks, will be more difficult and costly to procure than others and will therefore require more preparation time
 - The critical importance of identifying appropriate and available rolling stock prior to tendering, which will continue to present technical and operational challenges
 - The challenges of implementing ticketing and other systems to support operations, notwithstanding the impact of legislative provisions intended to facilitate the development of such systems at the national level
40. Moreover, it is particularly important that Competent Authorities have time to define and procure PSC services which are necessary but not provided under existing contracts.
41. Finally, as indicated above, we consider that some elements of Package 4 would need to be actively supported through additional, industry-wide initiatives if they are to deliver the expected benefits. In particular, legislation to relieve PSC operators of financial risk related to the residual value of rolling stock, and to allow the introduction of national ticketing, while they will facilitate the development of markets and industry mechanisms supporting competition, will not guarantee that these become established within any given timescale. Hence, we propose that the Commission should actively promote the development and sharing of relevant learning and best practice from across the industry, drawing on established industry forums as appropriate.
42. More specifically, we suggest that the Commission should encourage the development of guidance to Competent Authorities and other stakeholders on issues such as:
- The conditions in which rolling stock leasing companies are prepared to invest in new rolling stock, taking account of experience throughout Europe to date
 - The mechanisms needed to underpin the non-discriminatory operation of national and other ticketing systems, taking account of the impact of smart ticket media and other new technology, and how such a system can operate alongside dedicated tickets issued by individual operators
 - The definition of economic equilibrium and how this should be applied in assessing an application for open access rights
 - The design and definition of packages of PSC services which meet Competent Authorities' needs, are operationally coherent and are attractive to bidders
43. Active participation in such initiatives by Railway Undertakings, Infrastructure Managers, Regulatory Bodies and other stakeholders would, in our view, help to

build understanding of the measures required to support market opening at the national level and support the transition to a more competitive EU rail market.

1 Introduction

Background

- 1.1 In October 2011 the European Commission issued Task Specifications for a “Study to support an impact assessment on further action at European level regarding market opening for domestic passenger transport by rail and ensuring non-discriminatory access to rail infrastructure and services”.
- 1.2 The Task Specifications required the contractor to develop case studies, a stakeholder consultation, a problem definition, objectives, policy options and an impact assessment, dealing with two principal issues:
- “Unbundling” of infrastructure activities from Railway Undertakings (RUs) to ensure non-discriminatory access to infrastructure, continuing the process of separation begun with Directive 91/440/EEC
 - “Market opening” for domestic passenger transport through options for open access “in the market” and compulsory competitive tendering “for the market”
- 1.3 The results of the study are expected to support proposals which Directives 2007/58/EC and 2012/34/EC require should be made by 31 December 2012.

This study

- 1.4 In December 2011 the Commission appointed Steer Davies Gleave to undertake this study. Table 1.1 below sets out the key dates in the study to date.

TABLE 1.1 KEY DATES

Date	Event
19 December 2011	Kick-off meeting
27 January 2012	Submission of Inception Report
9 March 2012	Stakeholder questionnaire issued to stakeholder
30 March 2012	Submission of Inception Report - Final
16 April 2012	End of extension of formal consultation
4 May 2012	Submission of Intermediate Report
23 July 2012	Submission of Draft Final Report
28 September	Submission of Final Report
12 October	First Commission comments on Final Report
17 October	Further discussion on Impact Assessment

Introduction

This Final Report

1.5 This Final Report is structured as shown in Table 1.2 which also shows Appendices relating to each Chapter.

TABLE 1.2 STRUCTURE OF THIS FINAL REPORT

Chapter		Content	Appendices	
1	Introduction	Background and context	J	Glossary
2	Country fiches	Overview of process	K	Country fiches
3	Stakeholder consultation	Quantitative analysis of responses received by 23 April and qualitative analysis	A	Stakeholder consultation
			B	Stakeholder questionnaire
			C	Stakeholder contacts
			D	Stakeholder comments
4	Problem definition	Qualitative analysis of the problem based on desk research and Country fiches	E	Literature review
			F	Problem evidence
			G	Unbundling
5	Objectives	Policy and operational objectives based on the problem definition		
6	Policy options	Policy options developed for Impact Assessment	H	Assessment of options to identify the most effective options packages
7	Impact Assessment	Impact assessments of options for: <ul style="list-style-type: none"> • Optimising the governance of infrastructure management • Opening domestic rail passenger markets 	I	Impact assessment
8	Conclusions	Conclusions on policy options		

1.6 Throughout this report we refer to Member States by the two letter Member State codes listed in Appendix J, Table J.1. In the case of the United Kingdom (UK), we distinguish where relevant:

- Great Britain (GB), with a large standard gauge network
- Northern Ireland (NI), with a smaller broad gauge network which, with the network of Ireland (IE), has derogations from some specific provisions in the relevant EU Directives until 14 March 2013

2 Country fiches

Introduction

- 2.1 The Task Specifications required us to perform a complete overview and an assessment of the regulatory regimes in all 25 Member States with a rail passenger transport system and a more detailed analysis in 4-5 Member States. Cyprus and Malta have no rail passenger transport system.
- 2.2 After discussion with the Commission we agreed to develop country fiches in three levels of detail as set out in Table 2.1.

TABLE 2.1 COUNTRY FICHES

Type	Number	Member States
Full	5	France, Germany, Great Britain, Hungary, Italy
Intermediate	5	Austria, Czech Republic, Netherlands, Poland, Sweden
Basic	16	Belgium, Bulgaria, Denmark, Estonia, Finland, Greece, Ireland, Latvia, Lithuania, Luxembourg, Portugal, Romania, Slovakia, Slovenia, Spain, Northern Ireland

Note: the United Kingdom has separate fiches for “Great Britain” and “Northern Ireland”

Data sources

- 2.3 The country fiches were based on a number of sources of data:
- Background information and statistics provided by the Commission
 - Desk research
 - Interviews with stakeholders in a number of Member States for which we prepared a full or intermediate country fiche, and in some pan-European organisations (see Table 3.2 below)
 - Additional data provided by stakeholders responding to the consultation

Template structure

- 2.4 This information was collated into a template structure summarised in Table 2.2. The country fiches were completed and included in our Intermediate Report on 4 May 2012, but updated where necessary with new and relevant information and the Commission’s comments. The finalised country fiches are attached as Appendix K in alphabetical order of two-letter Member State code (see Appendix Table J.1).

Use of the country fiches

- 2.5 We used the country fiches in the remainder of our study as evidence to inform:
- The problem definition in Chapter 4
 - The development of objectives in Chapter 5
 - The development of policy options in Chapter 6
 - The Impact Assessment in Chapter 7

Country fiches

TABLE 2.2 COUNTRY FICHES: STRUCTURE

Chapter	Content
Evolution of the national market	Changes in volumes of passenger and freight services
	Modal split for passenger and freight services
	New entrants in the rail market
	Main operators by market segment
Institutional background	Regulatory framework: national institutions and their role
	Overview of the incumbent operator (where relevant)
	Costs of unbundling
Market access for new entrants and competition	The effectiveness of the current regulatory framework
	Public service contracts
	Open access operators
	Current cost to market and time to market
	Barriers to entry
Summary of findings	Summary of previous chapters
	Identification of key problem drivers and elements
	Potential examples of best practice
	Summary of data relevant to impact assessment

3 Stakeholder Consultation

Introduction

3.1 The Task Specifications required us to organise a robust stakeholders' consultation process under the guidance of the Commission and according to the Commission's minimum standards for consultation. This comprised two principal elements:

- An online stakeholder survey inviting both responses to specific questions and free format comments, including invitations to provide evidence
- Interviews with key stakeholders in a number of Member States

3.2 Details of the stakeholder consultation process and consultees are summarised in Appendices A to D as set out in Table 3.1 below.

TABLE 3.1 STAKEHOLDER CONSULTATION: APPENDICES

Appendix		Contents
A	Stakeholder consultation	Description of stakeholder consultation process and detailed analysis of responses
B	Stakeholder questionnaire	Copies of stakeholder questionnaire and details of questions
C	Stakeholder contacts	List of stakeholders invited to respond to the questionnaire and stakeholders interviewed
D	Stakeholder comments	Summary of stakeholder comments in response to open questions

Stakeholder interviews

- 3.3 The stakeholder survey was supplemented with a total of 35 interviews as summarised in Table 3.2.
- 3.4 The majority of interviews took the form of face-to-face sessions with significant stakeholders within the Member States for which more detailed country fiches were prepared. In one case, however, it was not possible to arrange a face-to-face session, and the interview was carried out by telephone. In another case the stakeholder agreed to make a written submission in response to our questions.
- 3.5 A full list of the organisations interviewed is included in Appendix C, Table C.2.
- 3.6 Findings from these interviews have been incorporated in the relevant national country fiches included as Appendix K.

Stakeholder consultation

- 3.7 The online stakeholder survey was structured to include a number of common questions, plus satellite questions to be answered by respondents identifying themselves with a particular type of organisation. Key dates in the stakeholder consultation are set out in Table 3.3.

Stakeholder Consultation

TABLE 3.2 STAKEHOLDER CONSULTATION: INTERVIEWS

Rationale	Location	Face-to-face	Telephone	Written
Full country fiche	France	7		
	Germany	6		
	Great Britain	5		
	Hungary	4		
	Italy	4		
Intermediate country fiche	Austria	1	1	
	Czech Republic	1		1
	Netherlands	1		
	Sweden		1	
Pan-European organisations		4		

TABLE 3.3 STAKEHOLDER CONSULTATION: KEY DATES IN PLAN

Action	Date
Letter of Introduction and Questionnaire issued to Stakeholders	9 March 2012
End of formal 4-week Consultation Period	5 April 2012
End of Consultation Period extension	16 April 2012
Interviews with selected Stakeholders	9 April - 14 August 2012
Stakeholder Hearing	29 May 2012

Stakeholder survey

3.8 The stakeholder survey was sent to 427 organisations listed in Appendix C, Table C.1.

Main survey

3.9 The survey comprised a set of Common Questions that all stakeholders invited to take part were able to complete. These questions covered material on:

- The nature of their organisation
- The Member States in which they operated
- The important factors associated with quality of rail services
- The problems that affect the quality of rail services
- The objectives of the Fourth Package policy initiative
- Policy options associated with market opening
- Policy options associated with enhanced independence of infrastructure management

Satellite questions

3.10 A number of types of organisations were invited to respond to extra questions in 25 themes related to the issues that might have greatest relevance to them. The extra questions were prepared and completed by:

- Transport Ministries
- Rail Regulatory Bodies and Competition Authorities
- Public Transport Authorities (Competent Authorities)
- Passenger Railway Undertakings
- Freight Undertakings
- Infrastructure Managers
- Passenger Organisations
- Workers' Representatives
- Rolling Stock Leasing Companies

3.11 Most satellite questions were of relevance to only some of these types of organisation:

- 23 themes were relevant to Transport Ministries
- 3 themes were relevant to Rolling Stock leasing companies

3.12 Further details are provided in Appendix A, Table A.2.

Stakeholders responding

3.13 The effective number of independent responses to individual questions varied from over 90 to as few as 3. After discussion with the Commission we treated every response as bona fide, and did not attempt to make any adjustment for identical responses, but we note that the responses may not all be wholly independent.

The location of respondents' activities

3.14 Respondents were invited to tick boxes listing the Member States in which they were active. Of the 99 respondents:

- 77 identified themselves with a single Member State.
- 22, including holding groups, Railway Undertakings (RUs), rolling stock leasing companies and industry suppliers identified themselves with more than one Member State.

3.15 The respondents ticked a total of 199 boxes, as shown in Figure 3.1. Nine Member States were referred to 10 or more times and 12 Member States were referred to 5 or fewer times. Of the 22 ticking more than one box, it was normally only possible and meaningful to identify holding groups to a “home” Member State.

The nature of respondents activities

3.16 The 99 respondents reported 172 different industry roles shown in Figure 3.2:

- 38 described themselves as having a single role
- 35 described themselves as having more than one role
- 26 described their role as “other”

FIGURE 3.1 RESPONDENTS' SELF-REPORTED LOCATION OF ACTIVITY

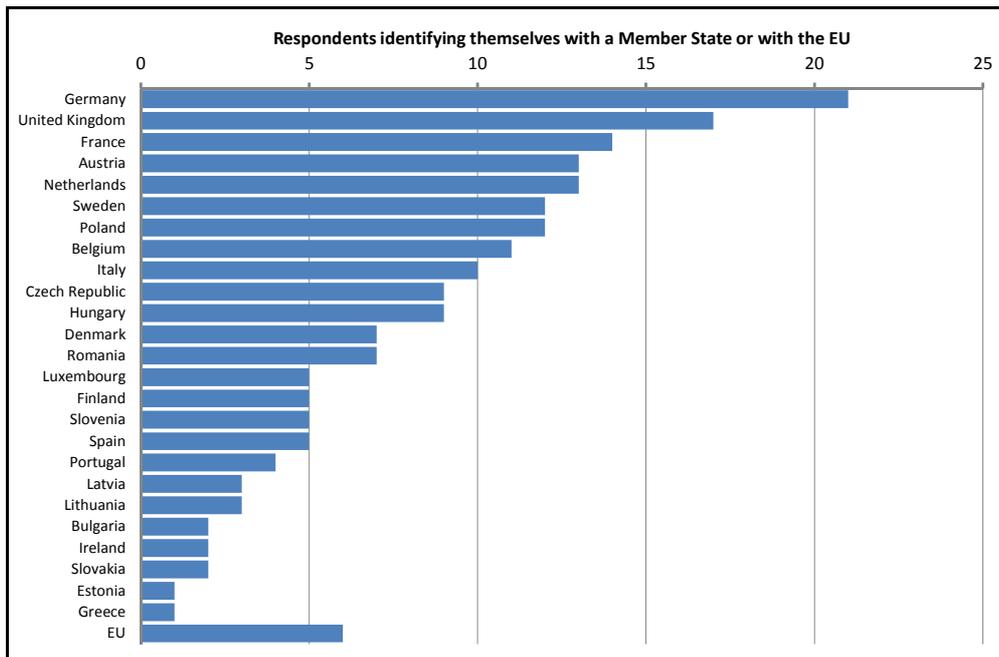
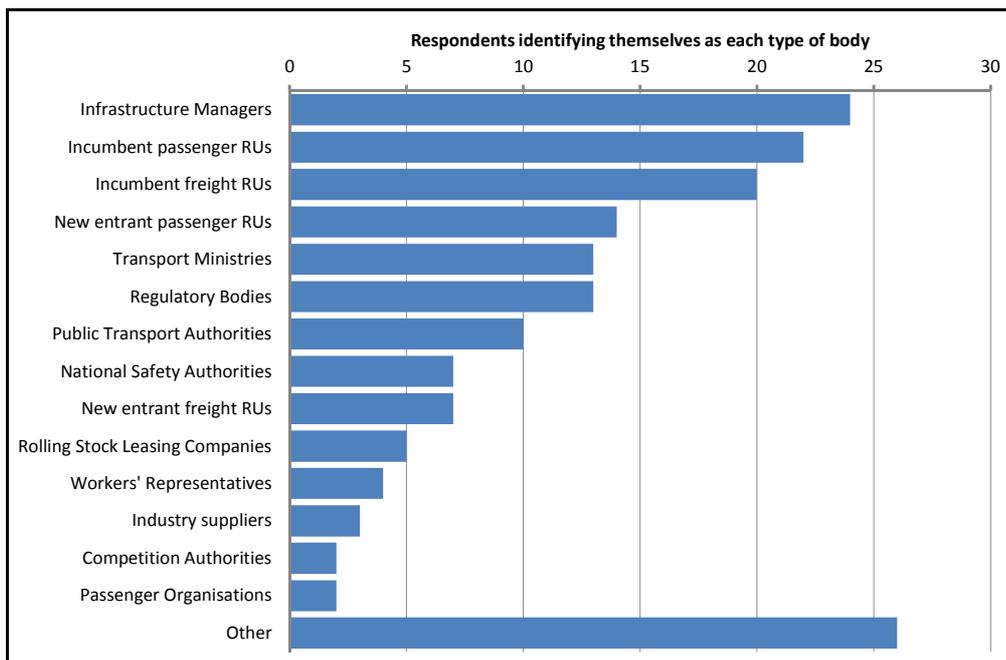


FIGURE 3.2 RESPONDENTS' SELF-REPORTED TYPE OF ACTIVITY



3.17 Respondents might have more than one role for reasons such as:

- Railway Undertakings identifying themselves as both passenger and freight, or as incumbent in one Member State and new entrant in one or more others
- Holding companies identifying all the roles fulfilled by their subsidiaries
- Regulatory bodies which are also competition authorities
- Representative bodies that represent different types of stakeholder

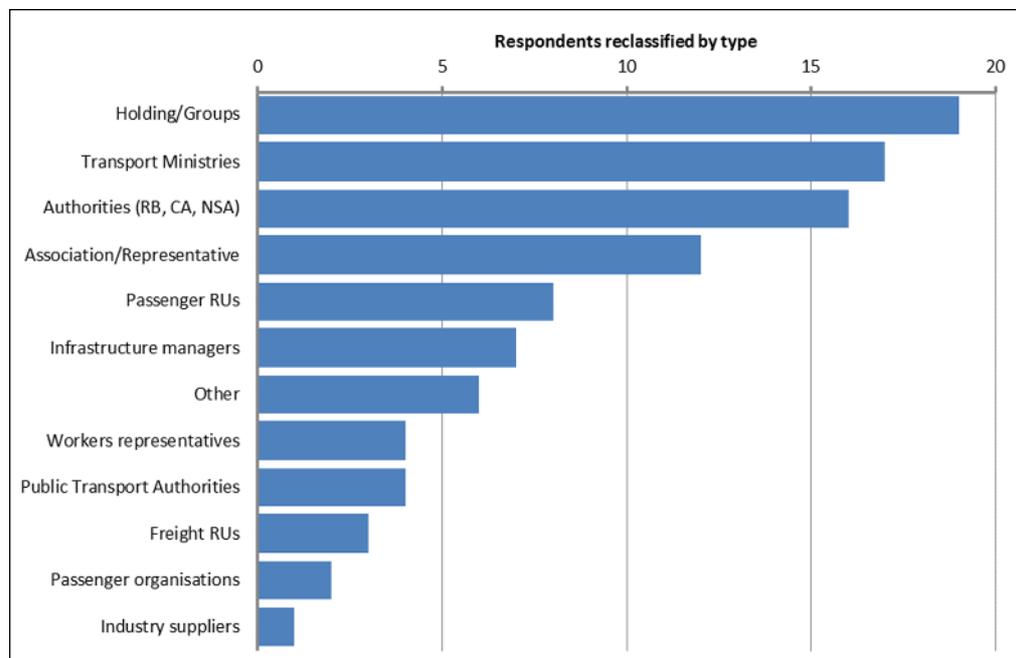
Reclassification of respondents

3.18 As noted above, we received few responses from some Member States and types of organisation. We concluded that it would not be possible to analyse systematically either by the 25 Member States with railways or, in some cases, by the 14 plus “other” respondent types. After careful review of the identity of the respondents we therefore reclassified them to provide a clearer basis for analysis:

- From the organisation name provided, we identified and distinguished:
 - Holdings/groups
 - Associations/representatives
- For Railway Undertakings:
 - We combined incumbent and new entrant passenger RUs as “Passenger RU”
 - We combined incumbent and new entrant freight RUs as “Freight RU”
- We combined into a single category of “National Authorities” three different types of respondent, all with at least some regulatory role:
 - Regulatory bodies
 - Competition authorities
 - National safety authorities

3.19 Figure 3.3 shows the results of the reclassification which reduces 14 plus “other” respondent types to 11 plus “other”.

FIGURE 3.3 RESPONDENTS RECLASSIFIED



Analysis

3.20 We carried out a systematic analysis of the survey responses. Even with a relatively small sample, we were able to identify patterns such as:

- Responses equally spread across all options, where we could only conclude that views varied.

Stakeholder Consultation

- Responses dominated by the extreme options, where we could only conclude that views were polarised with no consensus.
 - Similar (and sometimes consecutive) questions, or different approaches to analysis of the same question, supporting inconsistent or contradictory conclusions. For example, in some cases respondents collectively “rated” options from positive to negative differently from how they “ranked” them from first to last.
- 3.21 However, even after reclassification, there was only limited scope to carry out meaningful analysis by respondent type, or to find any consistency of response within a respondent type, as described in detail in Appendix A. We only received 10 responses from 4 types of organisation and fewer than 5 response from 5 types of organisation, with as few as 3 responses to some questions:
- Disaggregation of responses by Member State was not possible, as there were so few responses identifiable with many Member States.
 - Disaggregation of responses by type of respondent type was rarely meaningful, as in most cases there were few or no responses from some respondent types.
 - Cross-correlation of responses was rarely possible, except on two-way or “Yes”/“No” questions, because most combinations of response did not occur.

Principal findings

- 3.22 We summarise below the principal findings of our analysis of the stakeholder survey. Full details of our analysis appear in Appendix A.

Problems

- 3.23 On problems, the main concerns of stakeholders were:
- Infrastructure constraints, mentioned by 85% of respondents to the relevant question and 75% of all respondents
 - Finance, mentioned in many comments

- 3.24 The Commission reminded us that infrastructure constraints and finance are outside the scope of the current study and the Fourth Package initiative.

Objectives

- 3.25 Between 40% and 70% of respondents agreed with the objectives of the Fourth Package policy initiative, as we discuss in further detail in Chapter 5.

Options for unbundling

- 3.26 Five unbundling options all received every ranking from 1 to 5. Existing separation requirements received the best average ranking, but results were polarised:
- “Existing separation requirements” was generally favoured by holdings/groups, Associations and representatives and Workers’ representatives
 - “Institutional separation applied to all functions of the Infrastructure Manager” was generally favoured by Transport Ministries, National Authorities, Passenger Railway Undertakings and Freight Railway Undertakings
- 3.27 Of those with an opinion, independence of decision-making to ensure non-discrimination received support of:

- 80%, for infrastructure charging
 - 75%, for capacity allocation
 - 50%, for infrastructure planning and financing
 - 40%, for infrastructure maintenance activities

3.28 Creation of a specific body including representatives of all infrastructure users to ensure that their interests are duly taken into consideration received 65% support.

Framework conditions

3.29 The extent of support for framework conditions other than unbundling varied:

 - Support for the creation of rolling stock companies depended on the question
 - There was support for ticket inter-availability but not for through-ticketing
 - There was support for “clear conditions” on staff transfer
 - There was minority support for EU development of PSC compliance criteria on PTAs, but overwhelming support for consultation on any such compliance criteria

3.30 Views were particularly polarised on:

 - Extension of the competences of the Regulatory Bodies
 - Unbundling: with strong support for the status quo and for full separation

3.31 Evidence of stakeholder views in the stakeholder consultation has, where relevant, been taken into account in the following chapters on problem definition, objectives and policy options.

Options for market opening

3.32 Open access and compulsory competitive tendering were both expected to have:

 - Greatest benefit to on board services, ticket prices and passenger information
 - Least benefit to public subsidies to infrastructure and intramodal integration

3.33 Five open access options all received every ranking from 1 to 5:

 - Open access was considered more likely than compulsory competitive tendering to lower ticket prices
 - In some questions, the preferred option was open access everywhere, subject to protection of the viability of PSC services

3.34 Four compulsory competitive tendering options all received every ranking from 1 to 4:

 - Compulsory competitive tendering was considered more likely than open access to reduce funding for PSCs
 - In some questions, stakeholders preferred “A specification of negotiation elements ...” although some stakeholders did not understand what this meant
 - In other questions, stakeholders preferred continuation of existing arrangements

3.35 Examining combinations of policy options preferred by stakeholders, there was:

 - An apparent preference for compulsory competitive tendering of all PSCs
 - No apparent preference for any open access option

Stakeholder Consultation

3.36 In summary, depending on the question:

- For open access, there was either:
 - No preference for any option
 - Preference for open access everywhere, subject to protection of the viability of PSC services
- For compulsory competitive tendering, there was a preference either for:
 - Compulsory competitive tendering of all PSCs
 - “A specification of negotiation elements ...”
 - Continuation of existing arrangements

3.37 Workers representatives expect that any market opening will result in worse working conditions and more strikes. Other stakeholders’ views are more diverse, but many expect more strikes.

4 Problem definition

Introduction

4.1 In this Chapter we define the problem to be addressed by further action on market opening and non-discriminatory access, describing a number of key problems in terms of their root causes and underlying drivers. The problem definition presented below has been informed by:

- The results of the stakeholder survey reported in Appendix A
- An extensive literature review, the results of which, together with a bibliography, are described in Appendix E
- A more detailed account of the evidence for the problem drivers, drawing particularly on the stakeholder survey responses and individual country research, provided as Appendix F on Problem Evidence
- A discussion of the impact of unbundling on efficiency, safety and performance, which has also informed our analysis of the problem, provided as Appendix G
- Country fiches profiling the rail industry in individual Member States, as presented in Appendix K, including the five detailed fiches (see Table 2.1) for France (FR), Germany (DE), Great Britain (GB), Hungary (HU) and Italy (IT)

4.2 The Chapter begins with a discussion of recent developments in rail passenger and freight markets that demonstrate the main problem investigated in the course of this study, the modest modal share of rail in transport. We focused on the period since 2000, the year before the introduction of the First Railway Package.

4.3 The Chapter then sets out a problem tree showing causal links between the main problem, root causes and underlying drivers, before presenting evidence in support of the problem definition.

Market developments

4.4 While the problem definition set out here applies across the EU, an analysis of market developments in recent years demonstrates different trends in rail transport in Member States at different stages of economic development. Accordingly, in the discussion of market trends presented below, we found it useful to comment on overall trends for the EU-27 while distinguishing between:

- The EU-15, which includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK.
- The EU-12, which includes Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovenia and Slovakia.
- The EU-10, comprising the EU-12 with the exception of Cyprus and Malta, which have no national rail sector.

4.5 There are, however, significant differences between the experiences of individual Member States within these groups, reflecting their different economic policies and circumstances as well as differences in their rail-specific strategies, levels of investment and regulatory frameworks. In the course of the discussion, we

Problem definition

highlight a number of trends within particular Member States where these give support to the problem definition.

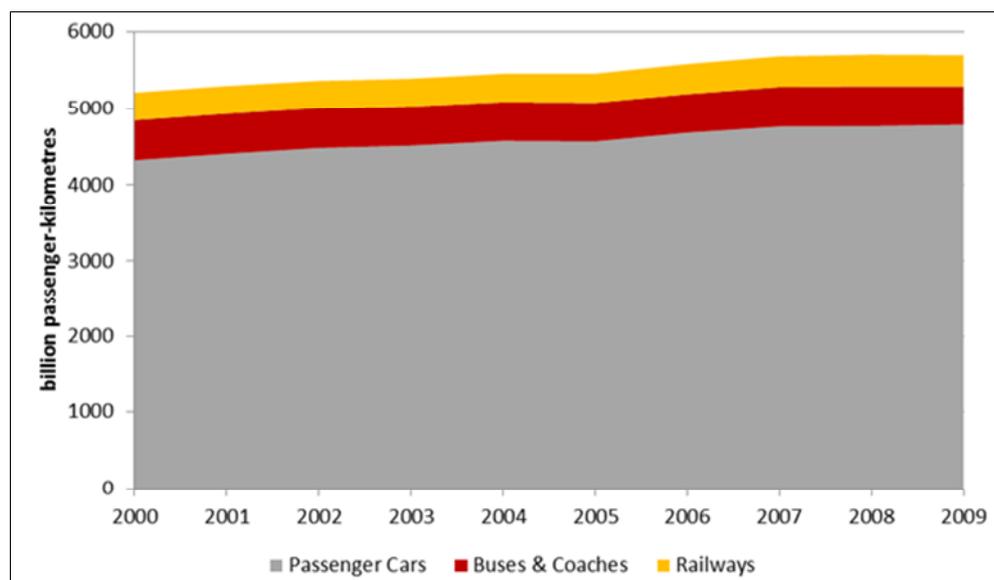
4.6 As noted in our introduction (paragraph 1.6), we refer to both the United Kingdom (UK) and Great Britain (GB) in the course of the discussion, using:

- UK, following the EU's standard Member State naming convention, where presenting comparisons of data
- GB, when discussing examples and issues relating to the industry in England, Wales and Scotland, recognising that this structure does not apply to the vertically integrated, publicly operated railway in Northern Ireland

Passenger transport

4.7 The central problem already identified above is the low and stable share of rail in the EU transport market, as illustrated in Figure 4.1. This shows that the growth of passenger traffic by rail and by bus and coach between 2000 and 2009 was insufficient to reduce the modal share of car traffic. Rail's share of the overall market (measured in passenger-kilometres) amounted to only 6% in 2009, while the private car accounted for some 73%. This represents a similar share of the overall market to that recorded in 2000.

FIGURE 4.1 RAIL AND ROAD PASSENGER VOLUMES IN THE EU-27

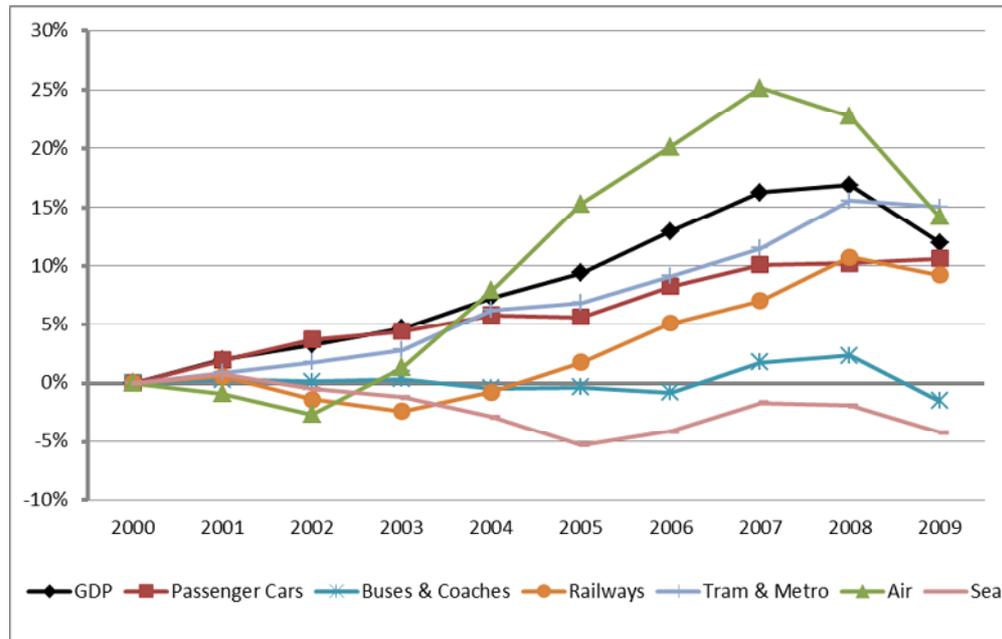


Source: Eurostat, International Transport Forum, UIC, national statistics

4.8 Rail's performance against a number of other transport modes, and in relation to EU GDP, is shown in Figure 4.2, which indicates that rail traffic grew by some 10% over the ten years to 2009, with car traffic growing at a similar rate. By contrast, air traffic grew by 25% to 2008, partly in response to the liberalisation of airline markets and the development of low cost carriers, although growth was checked by the financial crisis and subsequent global recession in 2008 and 2009.

4.9 The relatively limited growth of traffic volumes in rail and other public transport sectors is particularly marked, given the increase in EU output and incomes over the same period.

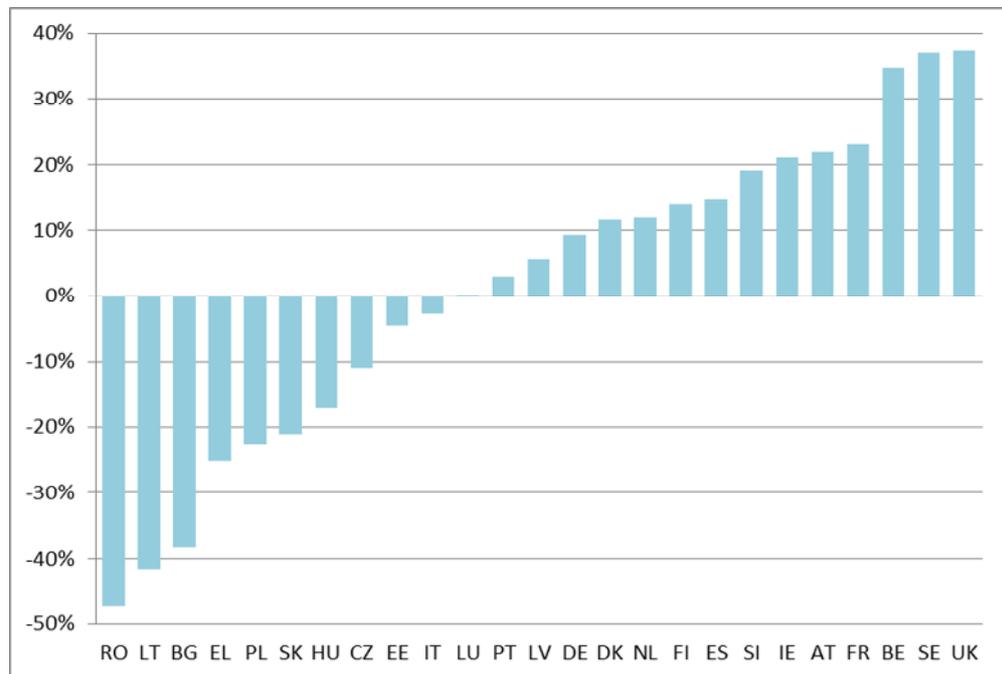
FIGURE 4.2 RAIL PASSENGER VOLUMES AND GDP IN THE EU-27



Source: Eurostat, International Transport Forum, UIC, national statistics

4.10 These trends mask differences between Member States, as shown in Figure 4.3.

FIGURE 4.3 RAIL PASSENGER VOLUMES 2000-2009: BY MEMBER STATE



Source: Eurostat, International Transport Forum, UIC, national statistics

4.11 Rail passenger traffic in the EU-15 increased by 16% between 2000 and 2009, with growth in excess of 30% in Member States such as the UK, Sweden and Belgium. This contrasts with a fall in traffic of 25% in the EU-10 as a whole and falls of more than 35% in Romania, Lithuania and Bulgaria.

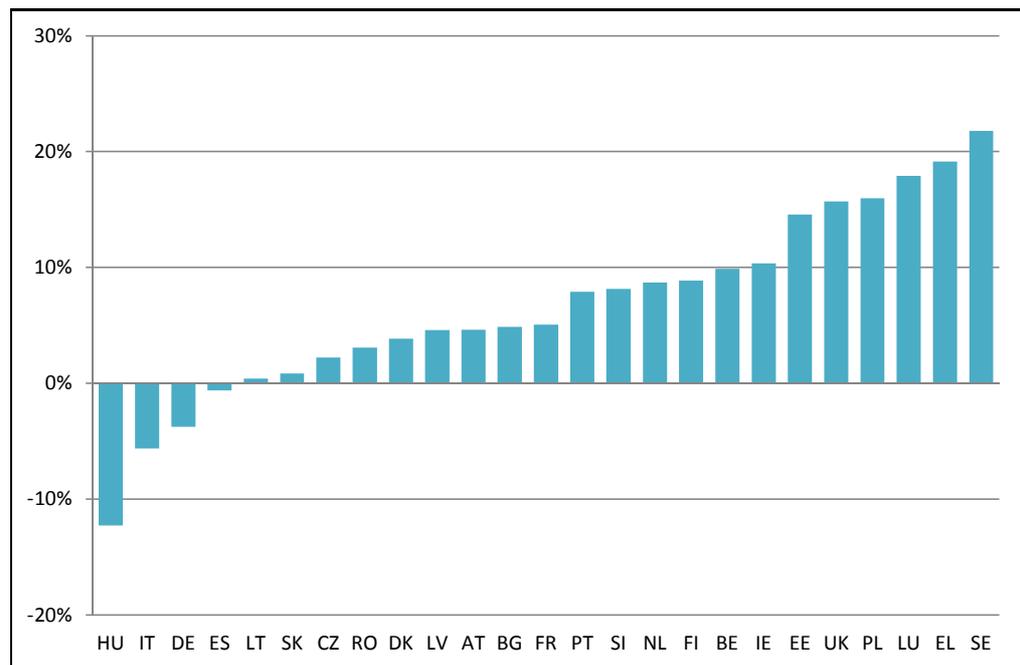
Problem definition

- 4.12 A wide range of factors have contributed to these diverging trends, including:
- A period of relatively strong economic growth across Europe, driving increases in most, if not all, forms of public transport in many of the more developed Member States.
 - Periodic increases in oil and petrol prices, as in 2007 and 2008, that have had the effect of reducing car travel and encouraging a switch to other modes, albeit temporarily.
 - Demographic trends tending to reinforce the growth of rail travel in some Member States, as in the UK where the more rapid increase of employment opportunities and economic prosperity in London and the southeast has tended to increase demand in commuter markets where rail is often the only realistic form of travel.
 - Structural adjustments in many of the EU-10 Member States, notably increased car ownership in response to rising living standards, investment in road infrastructure, and a commensurate fall in the demand for public transport, coupled with a decrease in the quality of rail infrastructure.
 - Ongoing difficulties in securing public funding for rail services, particularly in the EU-10 Member States where a recent CER report¹ suggests that rail operators are often insufficiently compensated for meeting public service obligations (PSOs).
- 4.13 These factors are external to the rail sector and tend to support the view that, in general, rail has responded to market developments over the last ten to fifteen years rather than seeking to influence the market by substantially improving the service offered to potential passengers. More particularly, while rail services in some Member States have benefitted from economic trends encouraging greater rail use, as a whole the sector has failed to compete with the greater flexibility offered by car travel, notwithstanding greater congestion, increased motoring costs and other factors that might have been expected to improve rail's competitive position.
- 4.14 There has been similar variation between Member States in the growth of different rail market segments. The Transport White Paper² reports overall growth in passenger-kilometres of 4.3% between 2005 and 2010 and commensurate growth in urban and suburban and interurban traffic of 4.6% and 4.2% respectively over the same period. Growth in individual Member States across both market segments varies from a decline of more than 10% in Hungary to an increase of more than 20% in Sweden, as shown in Figure 4.4 and Figure 4.5.
- 4.15 The relatively strong growth of high speed traffic of 10.9% across the EU reflects the development of high speed services in a limited number of Member States, and high speed passengers represent a relatively small proportion of total rail passengers.

¹ Public Service Rail Transport in the European Union: An Overview, CER November 2011

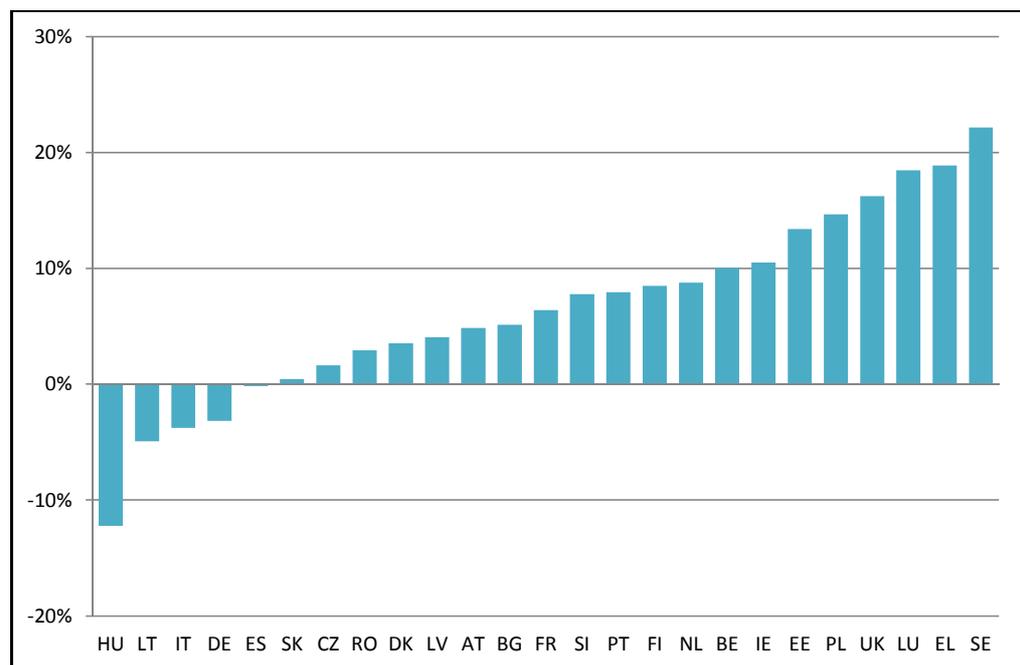
² Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system, COM(2011) 144 final

FIGURE 4.4 RAIL PASSENGER VOLUMES 2005-2010: URBAN/SUBURBAN



Source: Transport White Paper 2011

FIGURE 4.5 RAIL PASSENGER VOLUMES 2005-2010: INTERURBAN



Source: Transport White Paper 2011

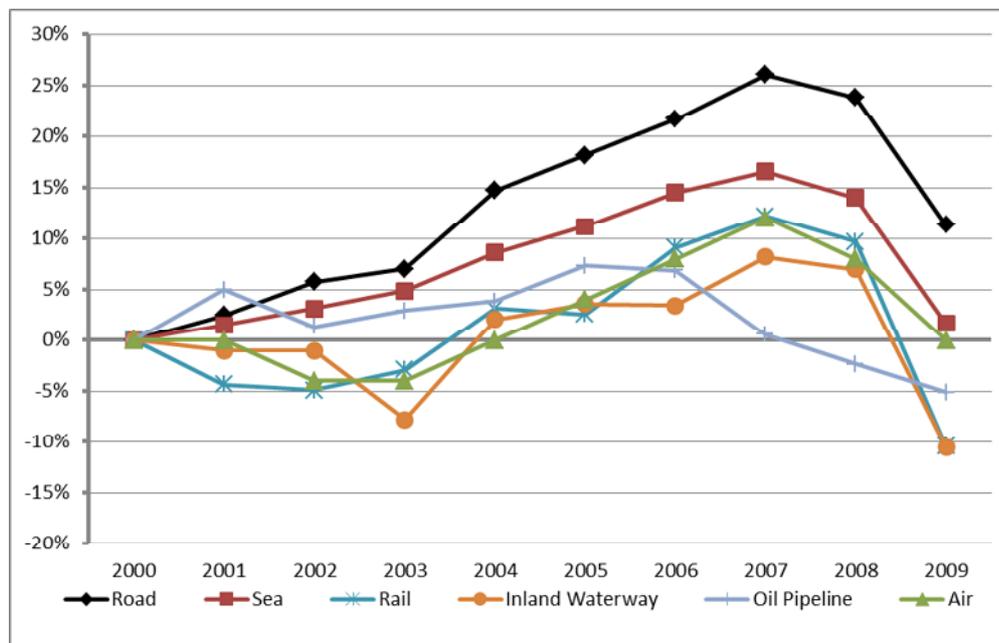
4.16 We discuss further below how far these trends are related to the different characteristics of the rail industry in each Member State, including perceptions of the quality of infrastructure and services and the degree of market opening to date.

Problem definition

Freight transport

- 4.17 The EU freight transport market is dominated by road and sea transport, with rail accounting for a little over 10% of tonne-kilometres transported. Figure 4.6 shows that rail freight volumes grew by just over 10% between 2000 and 2007, before declining with other types of freight transport as a result of the global recession.

FIGURE 4.6 RAIL FREIGHT VOLUMES AND GDP IN THE EU-27



Source: Eurostat, International Transport Forum, UIC, National Statistics

- 4.18 Again, the relative performance of rail in EU freight markets has varied significantly between different Member States. Across the EU as a whole, road-based freight accounted for over 75% of freight volumes transported by land in 2009. However, while the corresponding mode share in the EU-15 remained broadly constant at 80% over the ten years to 2009, the share in the EU-10 increased from 14% to 40%. Moreover, rail freight movements in the EU-10 fell by 15% over the same period, with Bulgaria, the Czech Republic, Estonia, Romania and Slovakia all experiencing falls in freight volumes by rail well in excess of 20%.
- 4.19 These trends support the view that rail freight has also failed to respond effectively to competition in road transport. In the EU-15, rail has established a market niche, maintaining its share of overall freight movements over a sustained period but failing to capitalise on the opportunities presented by strong economic growth and increasing road congestion over the last decade. In the EU-10, the high share of rail freight at the beginning of the decade has been steadily eroded by the growth of road freight, which offers freight customers greater flexibility as well as competitive journey times and prices.
- 4.20 In principle, rail freight markets within the EU have been open for a number of years, and the industry's lack of competitiveness cannot therefore be simply explained by the existence of legal barriers of the kind that continue to restrict competition in domestic passenger services. The problem to be addressed therefore also needs to be defined in terms of technical, physical capacity and

institutional barriers, as discussed below, which have frustrated action to open markets taken at the EU level.

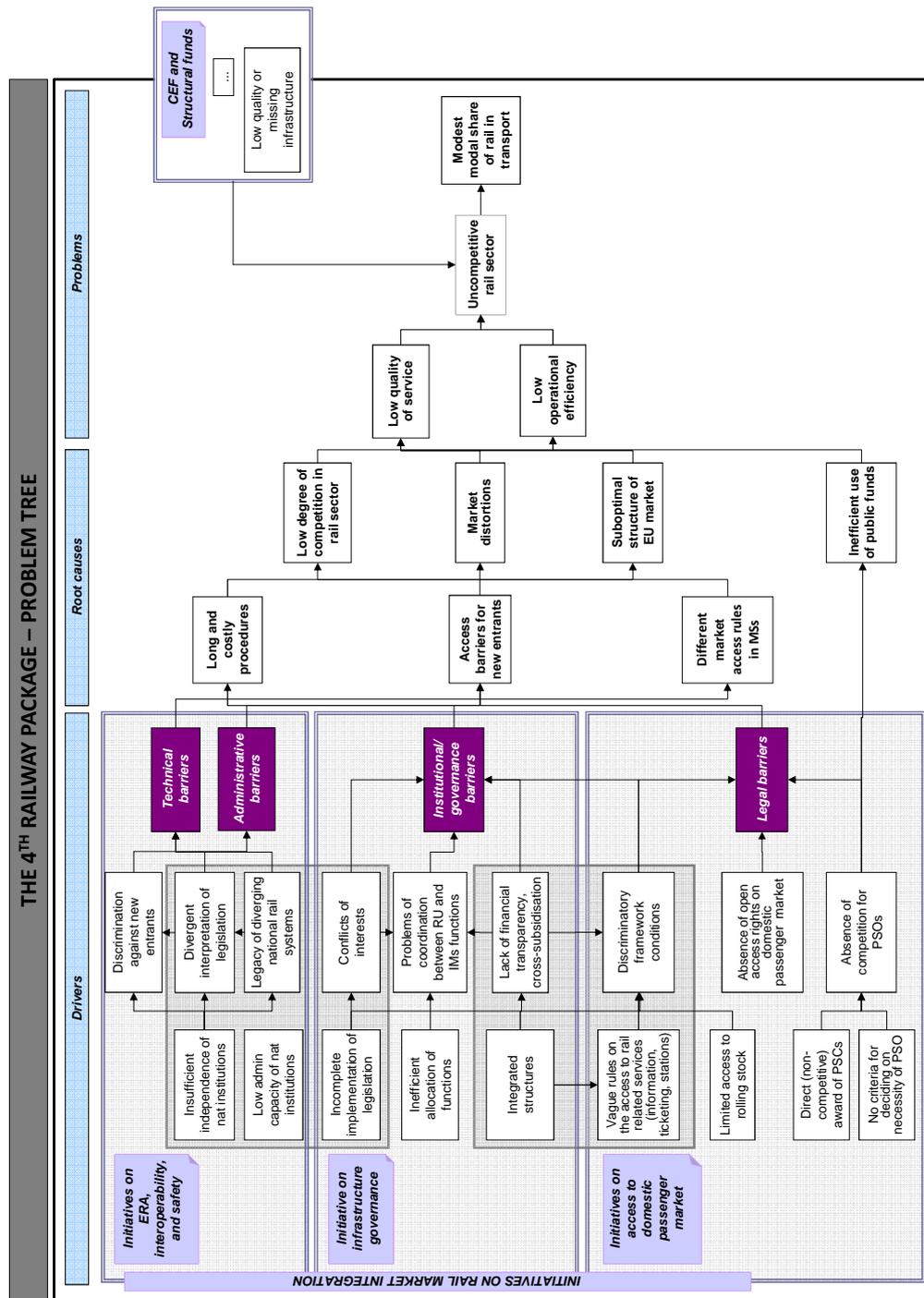
Problem tree

- 4.21 In discussion with the Commission we developed a “problem tree”, shown in Figure 4.7 below, which provides an illustration of how the perceived problems of the rail industry can be related to a number of underlying causes.

Overview

- 4.22 The overarching problem is defined on the right of the figure, with low service quality and low operational efficiency of passenger and freight services undermining the industry’s competitive position relative to road and other transport modes and leading to the low modal shares discussed above. Note that operational efficiency refers here to the efficiency with which assets and resources are used in order to deliver a rail service.
- 4.23 The problem tree also highlights that the current operation of EU rail services has particular implications for the use of public funds, which are typically critical for the overall financial viability of both domestic and international rail services. At present, market mechanisms are insufficiently developed to ensure that value for money from such funding is maximised which, other things being equal, reduces the availability of public funds for other uses. The efficiency with which public funds are deployed is always an important goal of public policy at the regional, national and EU levels, but particularly so during periods of low or uncertain economic growth and constrained public sector resources. This issue and related evidence are discussed in 4.68 to 4.74.
- 4.24 These problems, in turn, reflect:
- The low degree of competition in the sector, with monopolistic Railway Undertakings dominating service provision over a number of years, as demonstrated in paragraphs 4.51 to 4.56.
 - Market distortions arising from the protected position of incumbent Railway Undertakings in some Member States and their consequent ability to secure market power in the more liberalised markets of others, as discussed further in paragraphs 4.62 to 4.67.
 - The sub-optimal structure of EU rail markets, with different Member States taking different approaches to, in particular, open access and the award of Public Service Contracts (PSCs) for rail services, such that there are structural differences between national markets and substantial inefficiencies in many. The evidence for this is considered further in paragraphs 4.62 to 4.67.
- 4.25 To some degree, the effect of these root causes is compounded by physical constraints on European rail networks, notably as a result of poor quality or missing infrastructure, as indicated in the problem tree. Such constraints will need to be addressed if the full benefits of further opening of rail markets are to be secured, largely through national investment to relieve bottlenecks and enhance capacity, supported as appropriate through EU funding mechanisms. However, investigation of the potential impacts of such initiatives is outside the scope of this study and should be addressed through national investment and EU initiatives such as TEN-T and CEF.

FIGURE 4.7 PROBLEM TREE



4.26 The problem tree identifies three key root causes summarising the underlying drivers of the problem examined within the scope of our, or other, work. These are:

- Long and costly procedures:** the development of competition is currently hindered by shortcomings in the administrative procedures underpinning the harmonisation of technical and safety standards and authorisation of Railway Undertakings and vehicles.

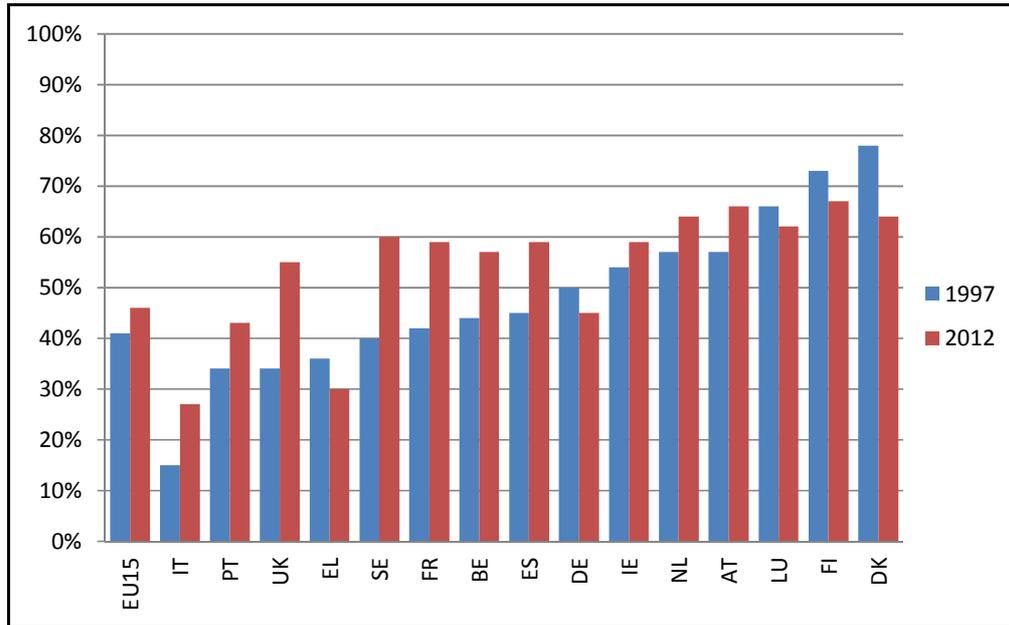
Problem definition

undermined service reliability and hence rail's ability to capitalise on increasing road congestion.

- **Other aspects of service quality:** inadequate investment has also meant that many rail services have failed to keep pace with passenger expectations of service quality, for example in the application of new ticketing and information technology and the quality of the environment at stations and on trains.

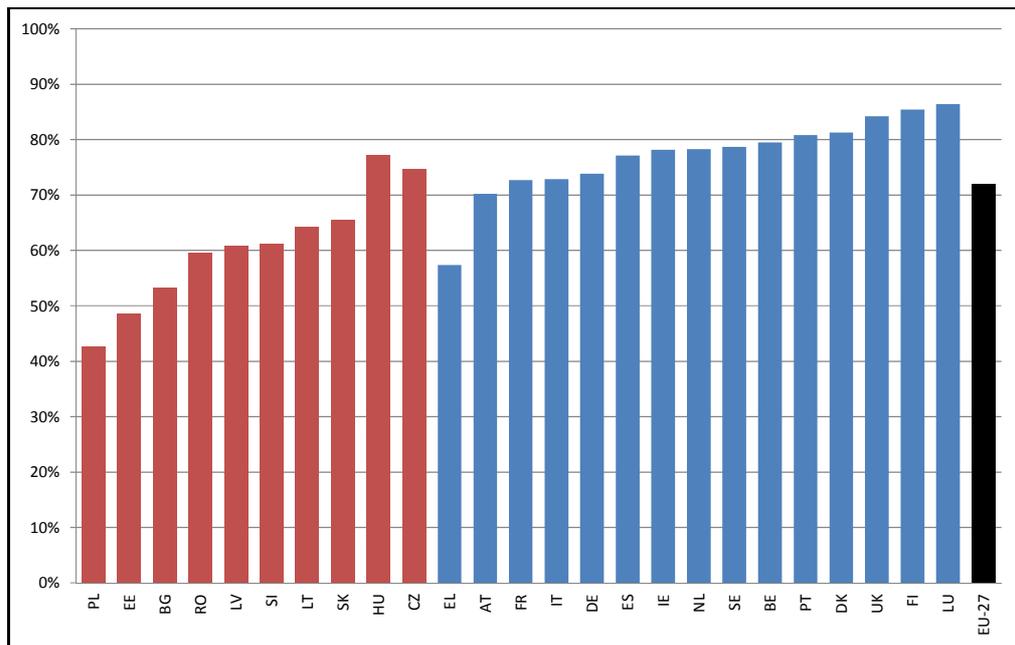
- 4.31 In the next few paragraphs we provide further evidence on these points.
- 4.32 Figure 4.8 to Figure 4.11 below provide evidence of passenger perceptions of different aspects of service quality across the EU, sourced from recent and past Eurobarometer surveys. Perceptions are measured in terms of the percentage of survey respondents stating that they are either “very satisfied” or “rather satisfied” with a particular aspect of the service. These results must be qualified, since expectations in different Member States are likely to be different, and comparisons between them must be made with caution. In addition, the most recent survey results are based on a sample of only 10,000 individuals across the EU (approximately 400 per Member State), and therefore do not reflect the full range of passenger experiences within Member States. They nevertheless tend to support the view that rail services frequently fail to meet passenger expectations.
- 4.33 Figure 4.8 shows the level of, and changes in, overall satisfaction with rail services in different Member States between 1997 and 2012. Satisfaction for these Member States as a whole increased from 41% to 46% over this period but the responses for individual Member States vary considerably. In 10 of the 15 Member States shown there was an increase in satisfaction, and this exceeded 10 percentage points in Belgium, France, Spain, Sweden and the UK. However, a number of Member States with developed rail systems, including Denmark, Germany and Finland, experienced a reduction in satisfaction and the satisfaction score remains below 65% in all but two.
- 4.34 Figure 4.9 to Figure 4.11 indicate that perceptions of poor quality extend to different aspects of both the train and station service:
- Satisfaction with frequency is lowest in the EU-10, consistent with the suggestion that services in these Member States have been cut back in response to constraints on public sector funding of rail.
 - Satisfaction with station facilities and services is also lowest in the EU-10.
 - Satisfaction with punctuality and reliability is no better in the EU-15 than in the EU-10, with a number of Member States with well-developed rail systems recording low scores.

FIGURE 4.8 PASSENGER SATISFACTION: 1997 AND 2012



Source: Eurobarometer May 2012 - special survey 388

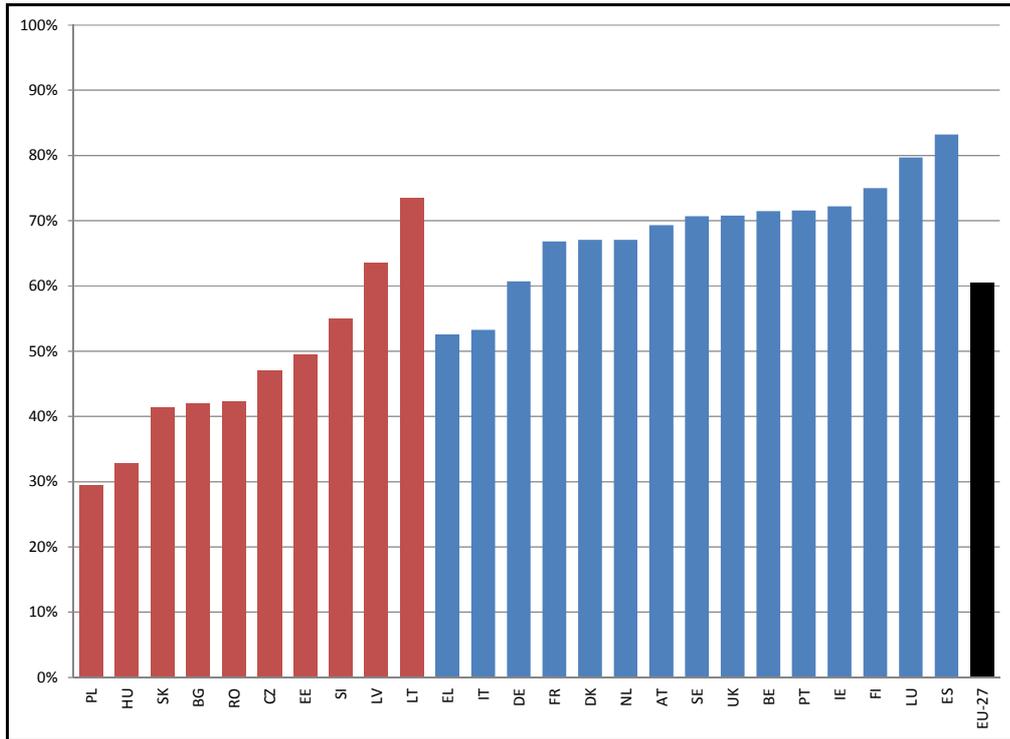
FIGURE 4.9 PASSENGER SATISFACTION: RAIL SERVICE FREQUENCY



Note: red = EU-10, blue = EU-15 (see 4.4), Source: Eurobarometer 2011 - Flash EB No 326

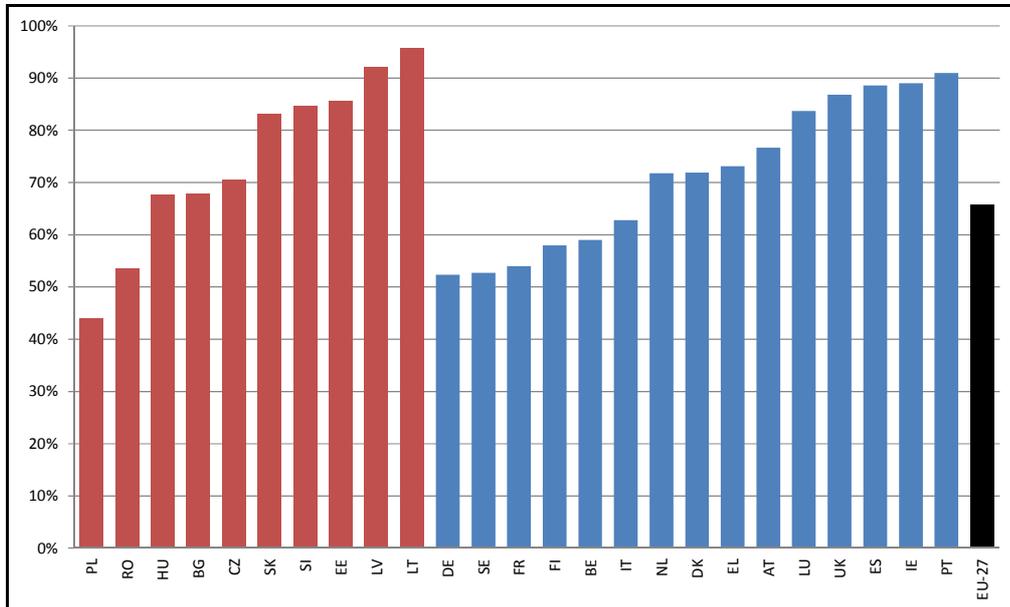
Problem definition

FIGURE 4.10 PASSENGER SATISFACTION: STATION FACILITIES AND SERVICES



Note: red = EU-10, blue = EU-15 (see 4.4), Source: Eurobarometer 2011 - Flash EB No 326

FIGURE 4.11 PASSENGER SATISFACTION: PUNCTUALITY AND RELIABILITY



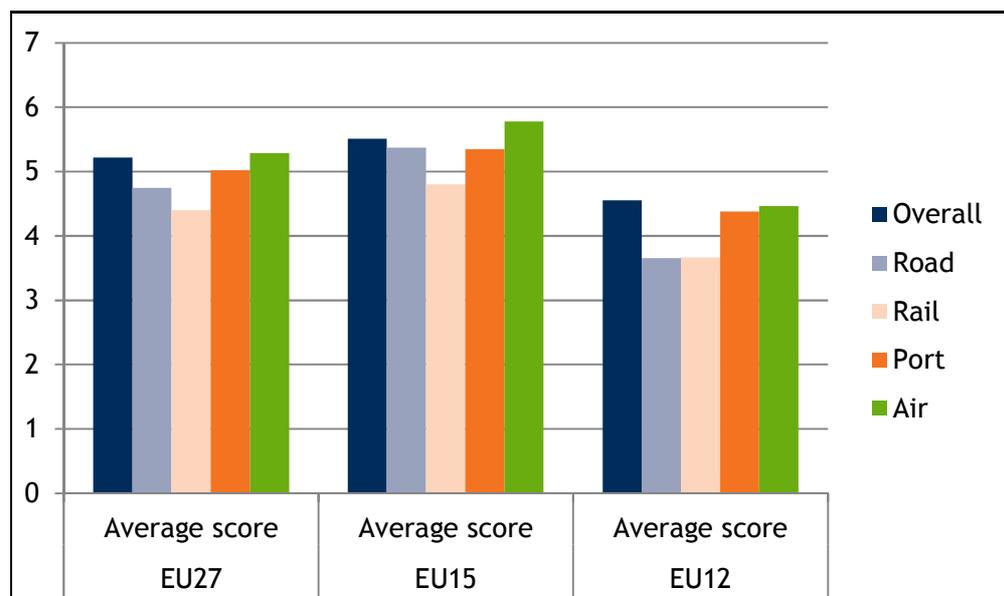
Note: red = EU-10, blue = EU-15 (see 4.4), Source: Eurobarometer 2011 - Flash EB No 326

- 4.35 Some European railway services do not suffer from these shortcomings, notably high speed services, which are frequently subject to airline competition and have successfully captured a substantial proportion of traffic formerly travelling by air. However, conventional rail is not able to leverage many of the advantages of high speed services, in particular where they lack dedicated infrastructure and airline-style service presentation. Further, conventional services have frequently failed to keep pace with passenger expectations of improving service quality, undermining their ability to respond competitively to the attractions of car travel.

- 4.36 We also investigated evidence of perceptions of the quality of rail infrastructure relative to that of other modes, based on data included in The Global Competitiveness Report 2011-2012 produced by the World Economic Forum. This reports the results of an Executive Survey in which respondents in countries around the world, including the EU-27, were asked to score the quality of modal infrastructure on a scale of one to seven. The average score for the transport sector and for each of four modes, for the EU as a whole as well as for the EU-15 and the EU-12, is shown in Figure 4.12.

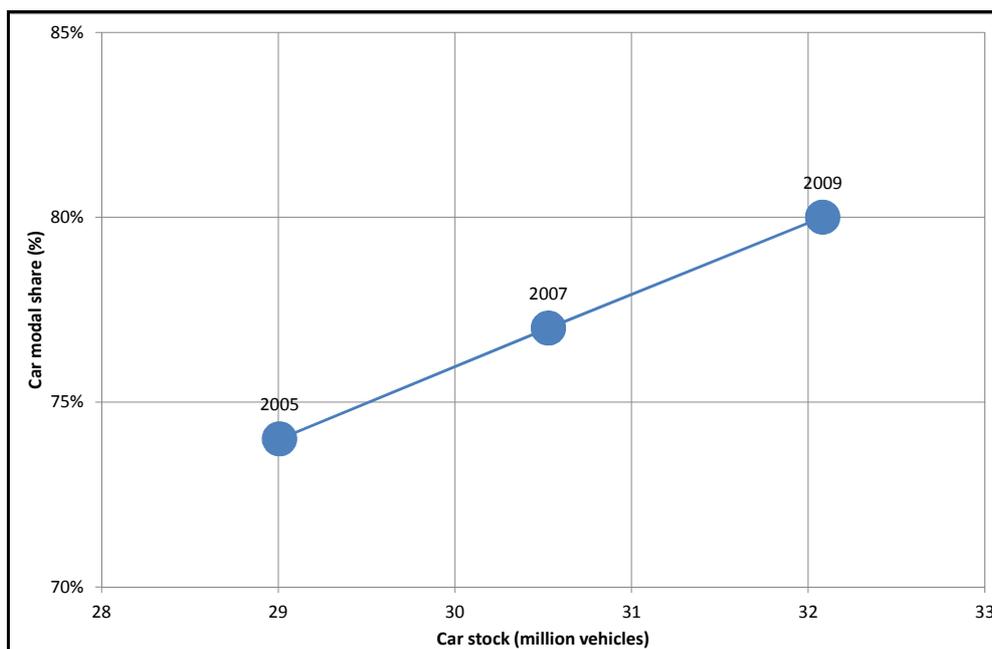
- 4.37 This demonstrates that rail infrastructure was scored the lowest of all the main transport modes among both EU-15 and EU-12 Member States. This suggests that rail infrastructure is generally seen as less reliable and that, where travellers have a choice of mode, they have more confidence in road and air services than in the rail alternative. This observation requires some qualification in the case of the EU-12, where the legacy of under-investment has undermined the quality of both road and rail infrastructure such that the perception of both modes among survey respondents is equally poor. However, any impact on the growth of road transport in these Member States has been offset by strong growth in car ownership, as shown in Figure 4.13.

FIGURE 4.12 QUALITY OF INFRASTRUCTURE: EXECUTIVE SURVEY SCORES



Source: World Economic Forum Global Competitiveness Report 2011-2012

FIGURE 4.13 CHANGE IN CAR OWNERSHIP IN THE EU-12



Source: TREMOVE, Eurostat

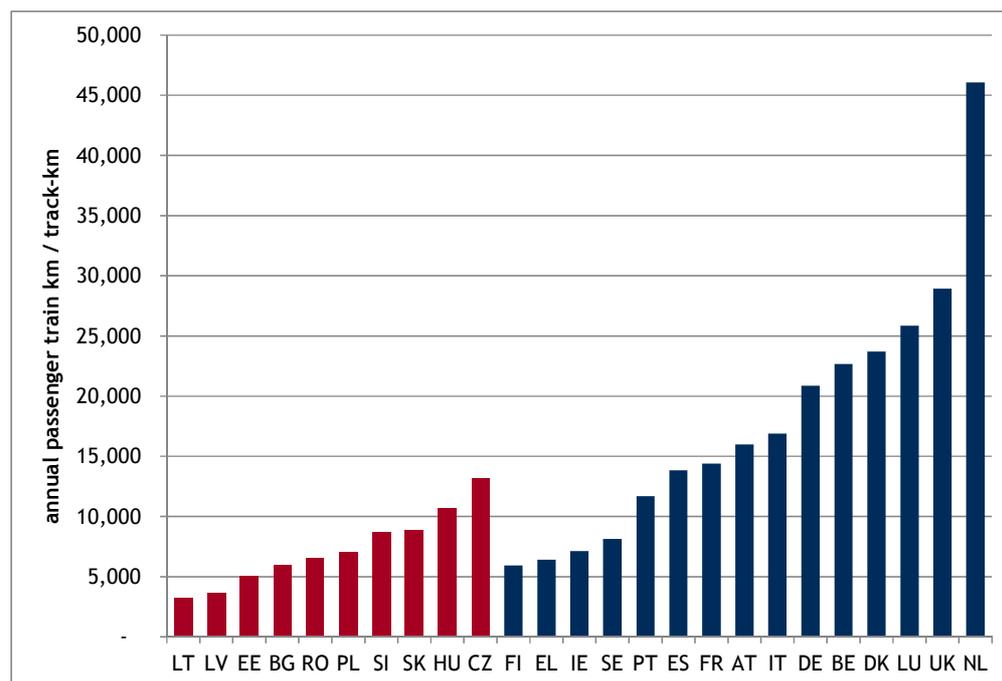
4.38 Overall, the evidence on perceptions of the quality of rail infrastructure and services indicates that there is considerable dissatisfaction across the EU and that this is contributing to rail’s relatively poor competitive position and low mode share. There are likely to be a number of factors underlying the concerns of passengers and other stakeholders about quality, not least historic under-investment resulting in unreliable and constrained infrastructure, particularly among the EU-10. Moreover, there is no simple correlation between satisfaction levels and the extent of market opening in different Member States with, for example, both France and the UK experiencing significant increases in satisfaction in recent years. Nevertheless, Figure 4.8 indicates that the largest increases in satisfaction have been achieved in Sweden and the UK, two Member States in which the degree of rail industry restructuring and market opening over the last 15 years has been substantial.

Low operational efficiency

4.39 Operational efficiency can be measured in different ways and no single measure captures all aspects of efficiency. Moreover, it is difficult to define measures at the national level that allow the efficiency of the rail sector in different Member States to be easily compared. We nevertheless considered a limited number of measures that demonstrate the variation in the intensity of use of key assets as well as in the reliability of train services across the EU.

4.40 Figure 4.14 shows the intensity of use of infrastructure in different Member States, measured in terms of total annual passenger train-kilometres divided by the size of the network in track-kilometres.

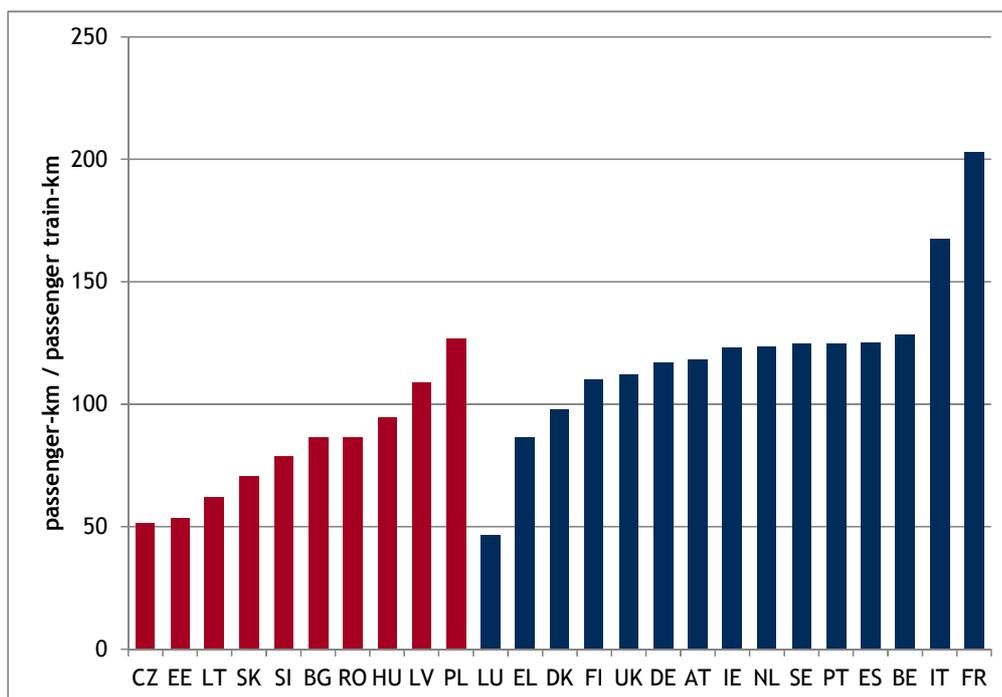
FIGURE 4.14 INTENSITY OF USE OF INFRASTRUCTURE



Source: Rail Market Monitoring Scheme (RMMS) 2012, UIC 2009

- 4.41 The comparison should be treated with caution since this measure can be influenced by a range of factors, a number of which reflect the geographical and demographic characteristics of a Member State rather than levels of efficiency. These include, but are not limited to:
- Population density and distribution, including the distance between major centres of population and the associated impact on both the market for rail travel and the geography of the national rail network
 - The relative importance of commuter markets, which tend to be served by high frequency services in the peak
 - The historic configuration of the rail network, in particular the extent of capacity constraints such as single track line
 - The capacity of the signalling system
 - The quality of the infrastructure in terms of its state of repair and reliability
- 4.42 Nevertheless, Figure 4.14 demonstrates that, while in some Member States the average section of track carries 20,000 passenger trains per year, in others it carries fewer than 10,000 passenger trains per year. This can be interpreted as suggesting that there may be scope for improving the efficiency with which the infrastructure is used in a number of Member States, particularly among the EU-10, although we note that using the infrastructure more intensively is likely to require significant investment in many if not all cases.
- 4.43 We also assessed the efficiency with which train service capacity is used in terms of the average number of passengers per train (passenger-kilometres per train-kilometre), as shown in Figure 4.15.

FIGURE 4.15 INTENSITY OF USE OF TRAIN SERVICES

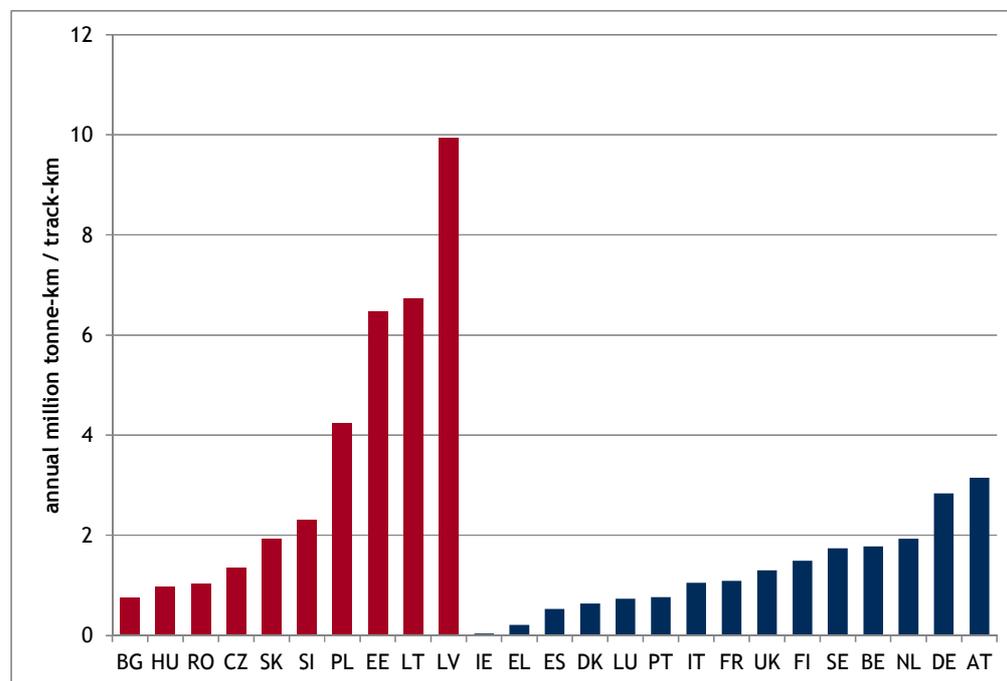


Source: EC Statistical Pocket Book 2011, UIC 2009

- 4.44 This comparison is subject to similar qualifications as Figure 4.14, in that geography and demographics will influence the size of market and the appropriate combination of train size and service frequency for a given route. Hence, we would expect significant variation between Member States in the average number of passengers per train regardless of relative levels of efficiency. In addition, we note that in commercial terms it may be efficient to operate a train with a relatively low number of passengers, provided that the revenue generated covers the associated marginal costs of operation, which are likely to be limited if the additional service can be accommodated within an existing train fleet.
- 4.45 However, the figure provides evidence that there is scope for increasing the utilisation of train capacity, or at least train paths, in some Member States. Again, a number of the EU-10 achieve particularly low levels of utilisation, with trains carrying fewer than 100 passengers on average. This is consistent with the fall in passenger volumes experienced across the EU-10 shown in Figure 4.3 and the associated growth in car ownership reported above.
- 4.46 In contrast, the intensity of use of infrastructure for freight services is higher in a number of EU-10 Member States than in many of the EU 15, as shown in Figure 4.16. The more intensively used freight routes tend, however, to be in the Baltic States, which benefit from strategic port facilities linked to key European destinations by rail, and the scope for operating viable freight services in other Member States is likely to be more limited. In addition, freight services in EU-15, where the infrastructure is heavily used by passenger services, notably the UK and the Netherlands, tend to be capacity constrained, with limited scope for growth in the absence of investment. Nevertheless, taken with the evidence on the intensity of passenger services, the figure suggests that a number of EU-10 and EU-15

Member States could make more efficient use of railway assets to transport both passengers and freight.

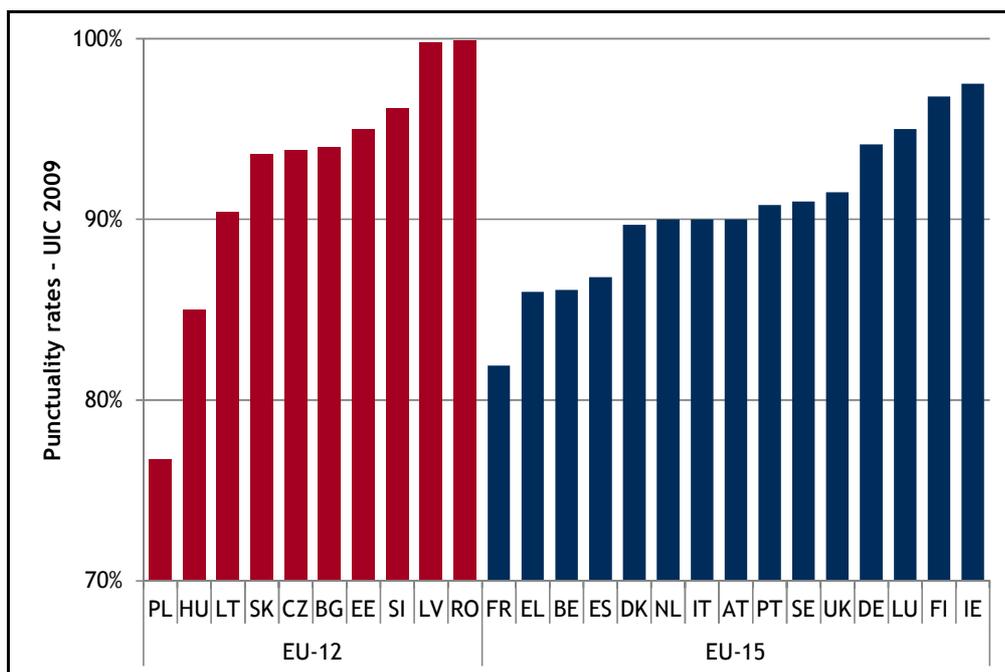
FIGURE 4.16 INTENSITY OF USE OF INFRASTRUCTURE BY FREIGHT



Source: Rail Market Monitoring Scheme (RMMS) 2012

- 4.47 At the same time, when comparing relative levels of infrastructure use, it is important to consider the trade-off between capacity utilisation and operational performance. For a given level of capacity, more intensive operation tends to mean less reliability, since the timetable includes less recovery time and incidents affecting the service have a greater impact on punctuality and cancellations.
- 4.48 Figure 4.17 shows the punctuality of long distance services, measured in terms of the percentage of trains arriving with 15 minutes of their scheduled time, for each Member State.
- 4.49 While the majority of networks achieved a punctuality rate of 90% or above, the figure indicates that punctuality was generally higher in the EU-10, where passenger service frequencies tend to be much lower. However, it also shows that in Member States such as the Denmark, Luxembourg and the UK, rail services achieve comparable levels of punctuality, notwithstanding that the infrastructure is more intensively used than in the EU-10. Again, this may reflect the legacy of under-investment and resulting poor quality of infrastructure in many EU-10 Member States, which limits the extent to which service frequency can be increased while maintaining high levels of punctuality. The effect of rail infrastructure on rail sector performance is considered further below.
- 4.50 Figure 4.17 also highlights the variation in punctuality across the more developed rail networks of the EU-15. Punctuality rates in France, Greece and Spain appear particularly low, given that these Member States operate fewer than 15,000 passenger train-kilometres per track-kilometre and that, at least in the case of France and Spain, the quality of rail infrastructure is relatively high.

FIGURE 4.17 PUNCTUALITY: LONG DISTANCE SERVICES



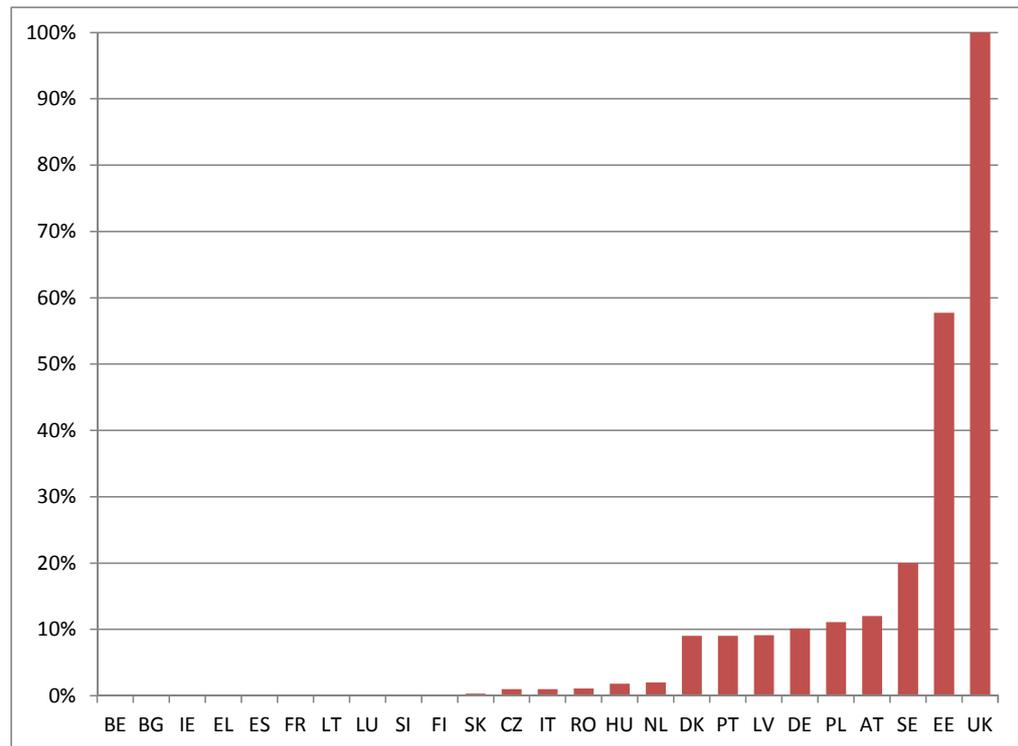
Source: UIC 2009

Evidence of root causes

Low degree of competition in EU rail sector

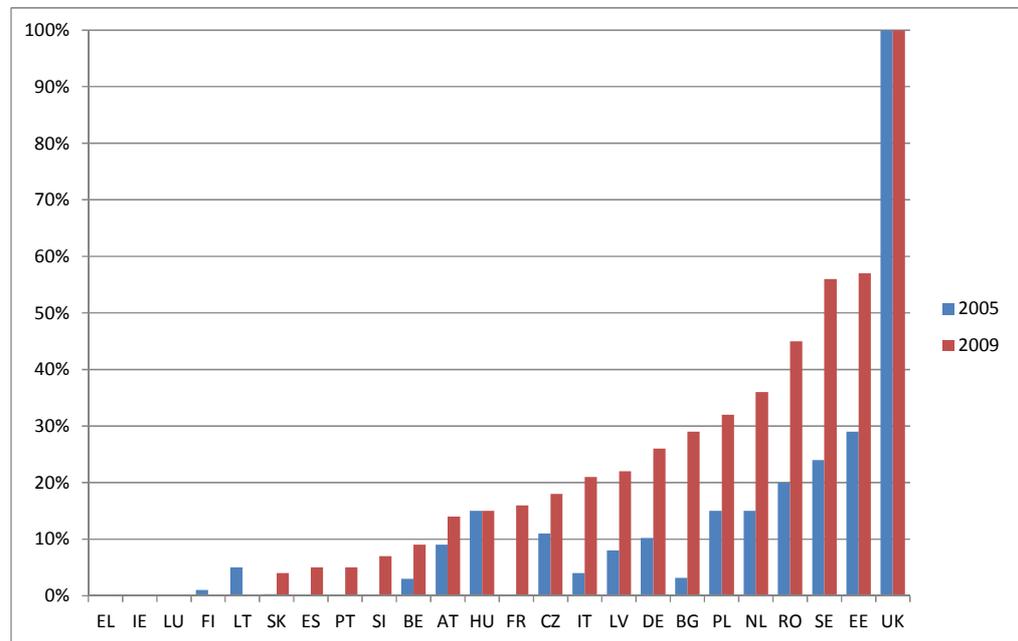
- 4.51 Arguably the most compelling evidence of a low degree of competition in the EU rail sector is the lack of new entry into EU rail passenger and freight markets observed to date. In the case of passenger markets, this can be partly explained by the different levels of market opening that continue to persist in many Member States, as discussed below, which create a legislative barrier to new entry.
- 4.52 In passenger markets the market share taken by non-incumbent Railway Undertakings has varied significantly, even in Member States that have adopted market opening policies, as shown in Figure 4.18, although the variation is partly a reflection of the elapsed time since the policy was put in place. In 2008, the share exceeded 20% in only two Member States, including Great Britain in the United Kingdom, where the national operator, British Rail, was broken up in the mid-1990s as part of the privatisation process.
- 4.53 In freight markets, the level of entry has been greater, as a result of the various market opening measures implemented at the EU-level since 2000, but the impact in terms of the market shares secured by non-incumbent operators has nevertheless been mixed. As Figure 4.19 shows, the share taken by non-incumbents exceeded 40% in only four Member States in 2009.

FIGURE 4.18 MARKET SHARE OF NON-INCUMBENT PASSENGER OPERATORS



Source: Rail Market Monitoring Scheme (RMMS) 2009

FIGURE 4.19 MARKET SHARE OF NON-INCUMBENT FREIGHT OPERATORS



Source: Rail Market Monitoring Scheme (RMMS) 2009

4.54 The pattern of entry clearly reflects a range of factors, not least the elapsed time since market opening, the density of freight flows and the opportunity for making commercial returns. In practice, new entrant operators have focused on the most profitable freight routes, leaving incumbents to serve bulk and other less profitable flows.

Problem definition

4.55 Table 4.1 shows the number of domestic passenger open access operators active in 2012. With the exception of airport links and cross-border operators, all open access services are in long-distance markets, and in the case of NTV in Italy on high speed lines. Experience with commercial services in open access is very recent and has so far only taken place in Austria, Czech Republic, Italy, Sweden and, to a small extent, Germany. Italy has the most significant open access following the introduction of NTV's services. There is also limited competition in the market in the UK, where open access is heavily regulated (to avoid compromising the financial equilibrium of franchises). We discuss further in Appendix F (paragraphs F2.4-F2.25 and F3.24-F3.43) the interaction between open access and public service obligations and the challenges in terms of access to infrastructure capacity and other assets and services needed to commence operations.

TABLE 4.1 OPEN ACCESS OPERATORS ACTIVE DURING 2012

Member State	Operator	Service	Entry	Share of train-kilometres		Comments
				Relevant market	Total market	
Austria	WESTbahn	Long distance	2011	No reliable data available yet		
Czech Republic	RegioJet	Long distance	2011	105,000 passengers in first 3 months Average load factor 80%		
	Leo Express	Long distance	2012	Services launched on 16 November 2012		
Germany	Veolia Verkehr Interconnex	Long distance	2001	< 2%	< 1%	Two operators planning entry 2012/13
Great Britain	Grand Central	Long distance	2007	1.7%	0.4%	Other operators planning entry, but strong regulatory barriers
	Hull trains	Long distance	2002	1.3%	0.3%	
Italy	NTV	High speed	2012	Target 30%	Target 5%	High speed only (at this stage)
Sweden	Öresundståg (Veolia)	Long distance	2010	< 2%	< 1%	Öresundståg's entry led to incumbent SJ's withdrawal from Göteborg-Malmö
	Skandinaviska Jernbanors	Long distance	2012			

Source: Steer Davies Gleave research

4.56 The limited growth in competition described above is reflected in the extent of licensing activity in different Member States. The number of valid licences held by passenger and freight operators in each Member State is shown in Table 4.2.

TABLE 4.2 VALID RAILWAY LICENCES HELD IN 2008

Member State	Valid freight licences	Valid passenger licences
Austria	17	13
Belgium	5	1
Bulgaria	6	2
Czech Republic	33	11
Denmark	11	12
Estonia	13	2
Estonia	10	-
Finland	1	1
France	7	2
Germany	315	302
Greece	0	-
Hungary	22	3
Ireland	-	-
Italy	-	-
Lithuania	21	6
Luxembourg	2	1
Latvia	4	3
Netherlands	-	-
Poland	67	29
Portugal	2	1
Romania	25	4
Sweden	17	8
Slovenia	2	1
Slovakia	1	4
UK	26	45

Source: Rail Market Monitoring Scheme (RMMS) 2009

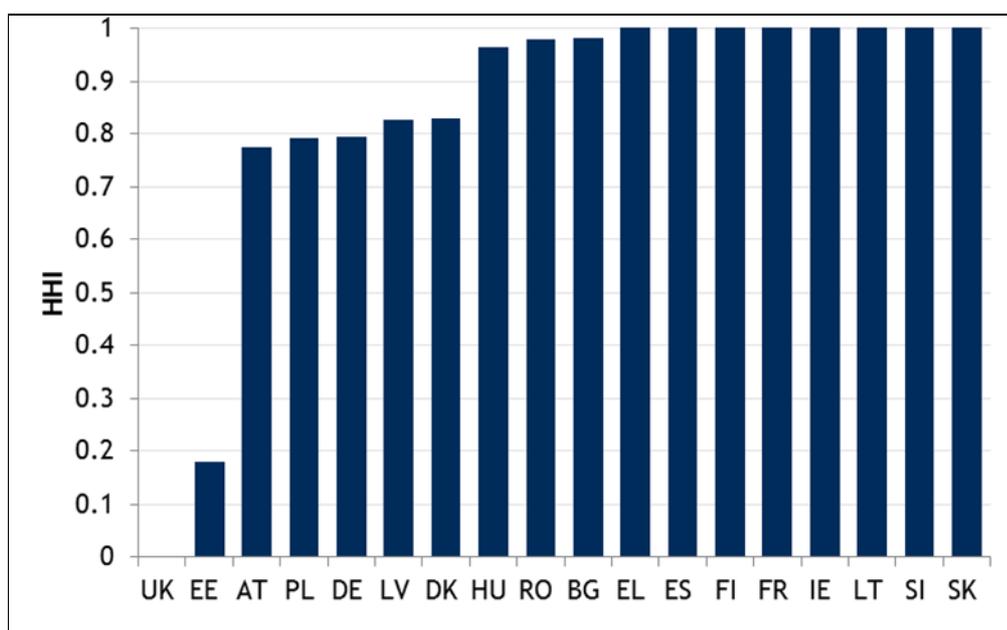
- 4.57 Note that the number of licences issued is not, on its own, a reliable measure of competition, since it will depend on, inter alia, the size and configuration of the national network and, in the case of passenger operations, the way in which national and regional transport authorities have packaged groups of services prior to PSC award. For example, in Great Britain, where there are 45 passenger licences, all services are provided by either competitive tenders or open access by new entrants. In Germany, in contrast, where there are 302 passenger licences, the vast majority of services are operated by the incumbent national operator.
- 4.58 Nonetheless, the number of licences issued does provide an indication of whether the regulatory institutions in place in the various Member States are experienced in responding to licence applications from multiple operators. It suggests that twelve licensing bodies had issued ten or more freight licences and only six had issued ten or more passenger licences by 2008, and that many had issued fewer

Problem definition

than four passenger licences. This raises the question of how well-equipped licensing authorities are to respond to the development of competition, and whether delays in the licensing process itself may delay or discourage new entry.

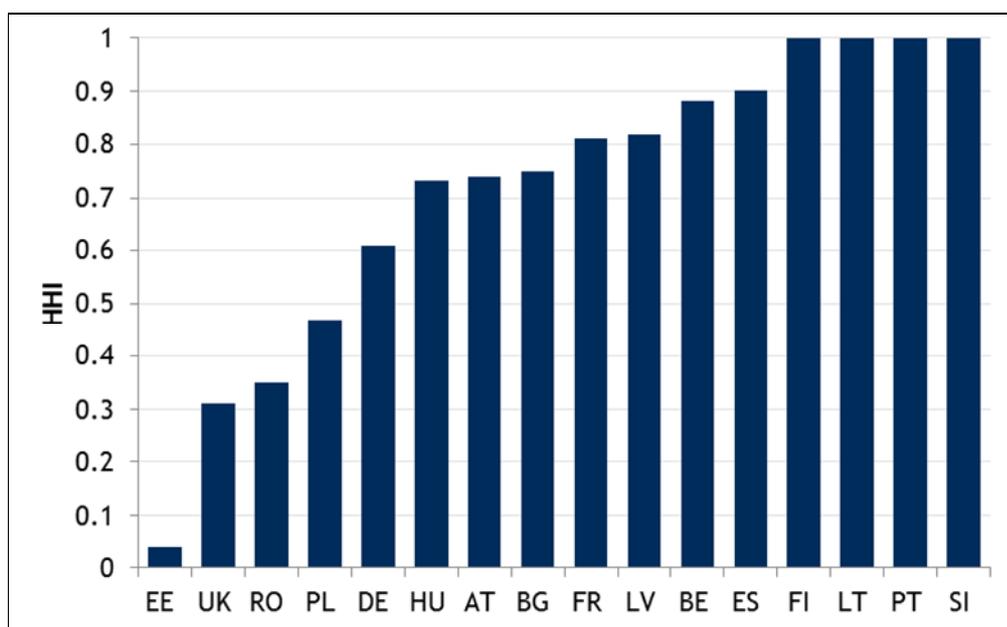
4.59 Figure 4.20 and Figure 4.21 show the square of the incumbent share of passenger and freight markets in most Member States, calculated by the Rail Market Monitoring Scheme (RMMS) as a proxy for the Hirschman Herfindahl Index (HHI).

FIGURE 4.20 SQUARE OF INCUMBENT SHARE: NATIONAL PASSENGER MARKETS



Source: Rail Market Monitoring Scheme (RMMS) 2009, no calculation for some Member States

FIGURE 4.21 SQUARE OF INCUMBENT SHARE: NATIONAL FREIGHT MARKETS



Source: Rail Market Monitoring Scheme (RMMS) 2009, no calculation for some Member States

4.60 The Hirschman Herfindahl Index (HHI) is an index of market concentration calculated as the sum of the squares of the market shares of participants. An index of 1 means that a single organisation has a complete monopoly⁴.

4.61 We also sought to determine the extent of domestic passenger open access operations across the EU and the market share of such operations in the various Member States in which open access services have been established.

Distortions and the sub-optimal structure of EU rail markets

4.62 We noted in paragraph 4.24 above that the poor quality and operational efficiency of many rail services across the EU can also be the result of market distortions arising from the protected position of some incumbent rail operators. As discussed further below, such protection may derive from the integration of infrastructure management and rail operations and/or legal barriers preventing entry to particular rail markets. In either case, it tends to strengthen the commercial and financial position of incumbent rail operators and increases their ability to acquire market power outside their home territory, in particular in the more liberalised markets introduced by some Member States. The result may be industry consolidation, whereby an established rail operator becomes dominant in a number of different national markets through acquisition, and limited competition of the kind observed in many Member States.

4.63 The theoretical underpinnings for the link between industry structure and consolidation are provided by Juranek (2011), who argues that a vertically-integrated railway in a single Member State has both the means and the incentive to reduce or eliminate competition in both its home market and markets in other countries. More specifically, a strong, vertically-integrated organisation faced with a number of smaller Railway Undertakings created through industry restructuring in neighbouring countries may buy them in order to prevent them from competing.

4.64 There is clear evidence that asymmetries in the structure of the industry in different Member States has already led to some consolidation. The development of DB's rail freight subsidiary, DB Schenker, which has been subject to extensive study and commentary, arguably offers compelling evidence of such consolidation. By its own account, DB Schenker now has the largest rail freight fleet in Europe, and it achieved its current scale of operations through a number of acquisitions:

- The national rail freight operators in Denmark and the Netherlands
- PCC Rail, an independent rail freight company operating in Poland
- EWS (formerly the English, Welsh & Scottish Railway Company), a train load freight company operating in Great Britain

4.65 The acquisitions in Denmark and the Netherlands were facilitated by the fact that neither operator benefitted from the same economies of scale as DB Schenker and therefore neither was able to compete as effectively. The purchase of established national incumbent operators meant that it was able to monopolise freight markets in Denmark and the Netherlands and gain strategic access to key North

⁴ The HHI is calculated as the sum of the squares of the market shares of participant. However, the values calculated by the Rail Market Monitoring Scheme (RMMS) 2009 are the square of the share of the main train operator only, understating the index.

Problem definition

Sea ports. In 2005 it had some 78% of the market in the Netherlands, comparable with, albeit lower than, its 87% share of its home market.

- 4.66 In principle, rail passenger markets may be subject to similar consolidation, with national operators leveraging their commercial and financial strength in order to bid successfully for PSCs across Europe. Both DB and SNCF own subsidiaries that have been actively engaged in competitive tendering for such contracts in a number of countries, although in both cases the companies concerned operate at arm's length from the owning group.
- 4.67 In addition, the structure of passenger markets in many Member States is suboptimal as a direct result of different policies applied to both open access and the award of PSCs. In particular, the legal constraints to access to domestic passenger markets in some Member States limit the scope for new entry and effectively protect incumbent operators from any form of competitive discipline, except where they face material competition from other transport modes. As discussed below (in paragraph 4.80), such constraints may derive as much from licence requirements relating to, inter alia, the Member State in which an operator is established as from formal rules concerning competitive tendering and open access.

Inefficient use of public funds

- 4.68 Given the level of public funding of railways across the EU, it is essential that funds allocated are used as efficiently as possible. This is particularly the case at a time when the availability of public funding is seriously constrained, leading to service reductions and under-investment in infrastructure in many Member States.
- 4.69 In economic terms, there are two possible dimensions to inefficient use of available funding:
- Funds may be misallocated, for example where they are used to support services or investment that does not align with market needs or public sector objectives (inefficiency in allocation).
 - The level of resources used to deliver a given level and quality of rail service may be excessive (inefficiency in production).
- 4.70 However, in practice it is difficult to demonstrate inefficient use of public funds from an analysis of available data on subsidies made available to European railways. This is because the level and form of subsidy depends on a wide range of factors, including but not limited to:
- The fares policy in place in a given Member State and its implications for the balance between funding of the railway by fare payers and by taxpayers.
 - Policy in relation to track access charges, notably whether train operators are expected to make a contribution to fixed, in addition to variable, infrastructure costs, and the implications for direct funding of infrastructure investment.
 - The programme of investment in a Member State, including renewals, enhancements to existing infrastructure and construction of new high speed and other lines. A particular difficulty is that an intermittent pattern of large investment programmes may mean that no individual year, or short period, can be considered "typical".

- The geographical and demographic characteristics of the Member State and the overall transport policy and any broader sustainability objectives (for example, relating to modal shift).

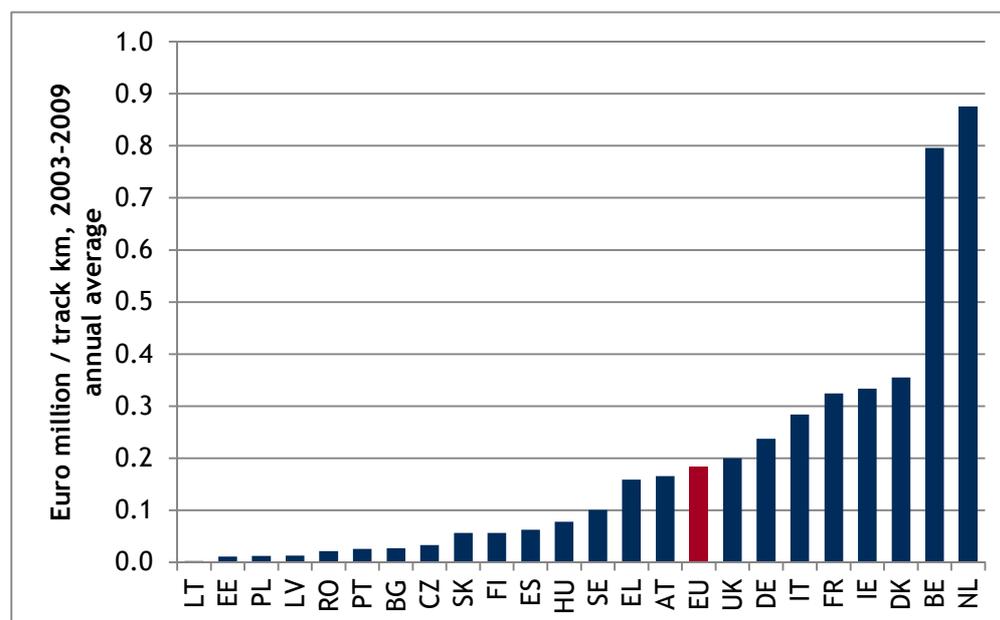
4.71 Further, having reviewed the information on rail sector subsidies available to the Commission, which is reported by reference to the various legislative provisions with which subsidy payments are approved, we note the following issues:

- It is not possible to make a meaningful distinction between operating and capital subsidy payments where payments to operators are partly determined by the level of fixed track access charges (which make some contribution to the recovery of renewals or other investment costs).
- It is not possible to distinguish between support to passenger and freight operators where Infrastructure Managers (IMs) receive direct payments which, at least in principle, benefit a number of different types of network user.

4.72 Against this background, it is difficult to draw conclusions about relative levels of efficiency by means of a simple comparison of public sector funding across Member States.

4.73 Nonetheless, we examined average annual operating and capital subsidies over the period 2003 to 2009, normalised by reference to network size in track-kilometres in 2010, for the majority of Member States, and present the results in Figure 4.22. The wide range of funding per track-kilometre is a reflection of the various factors mentioned above. The effects of the investment programme pursued in each Member State is particularly visible: in the period 2003-2009 Belgium and the Netherlands were making extensive investments, including in high speed lines.

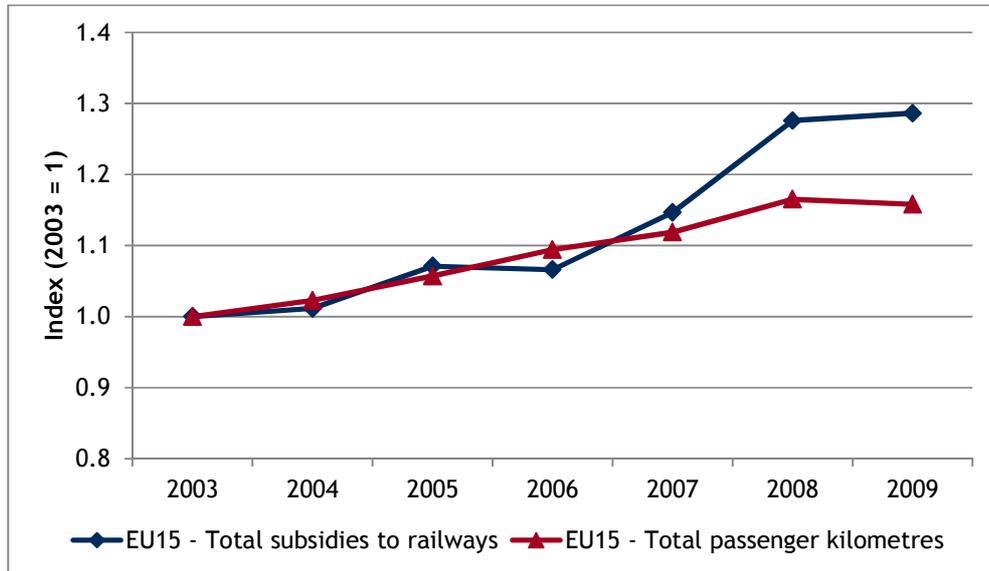
FIGURE 4.22 PUBLIC FUNDING OF EU RAILWAYS BY MEMBER STATE



Problem definition

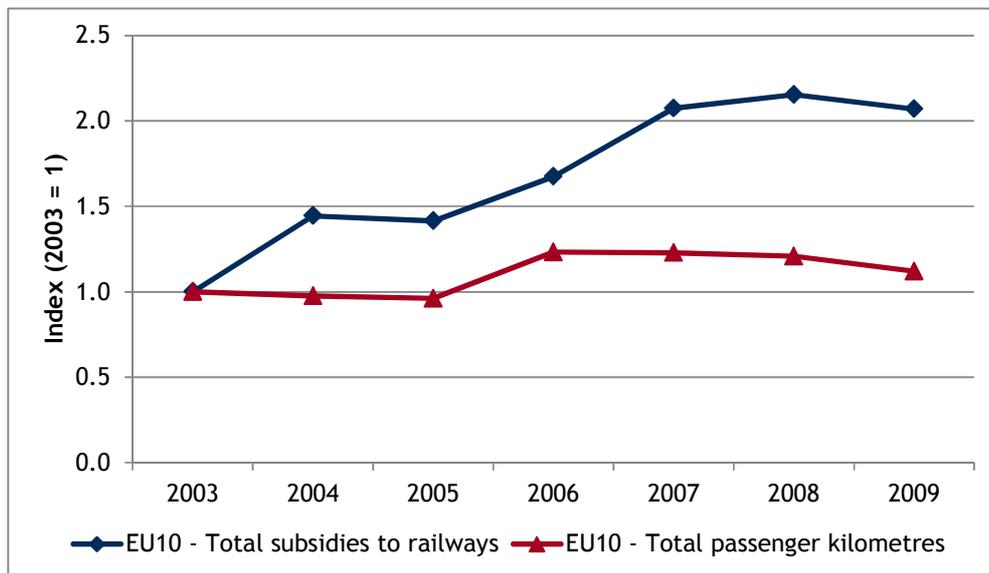
4.74 However, an investigation of trends in overall subsidy payments and rail traffic may give an indication of the effectiveness of public sector funding of the railways. Figure 4.23 and Figure 4.24 show the growth of total subsidy payments in real terms, together with changes in passenger-kilometres over the period 2003 to 2009 for the EU-15 and EU-10.

FIGURE 4.23 RAIL SUBSIDY PAYMENTS IN THE EU-15



Source: European Commission, Steer Davies Gleave analysis

FIGURE 4.24 RAIL SUBSIDY PAYMENTS IN THE EU-10



Source: European Commission, Steer Davies Gleave analysis

4.75 In both cases, subsidy payments have increased substantially, while the growth in passenger-kilometres has been more moderate in the EU-15 and relatively modest in the EU-10.

4.76 This demonstrates that substantial public sector investment, particularly in the EU-10 where subsidy payments more than doubled in six years⁵, has not in itself secured equivalent increases in rail demand. We also note that, on the evidence of Figure 4.12, such investment has also failed to improve the quality of rail infrastructure to a level commensurate with that of other modes.

Access barriers for new entrants

4.77 Access barriers can frustrate new entrants seeking to introduce new services that better meet the needs of passengers or freight customers, for example through improved service quality or lower prices. Where constraints effectively prevent or reduce the scale of new services, they reduce the efficiency with which existing infrastructure capacity is used and may undermine wider economic growth and development. This was a particular concern among a number of stakeholders responding to the survey.

4.78 Infrastructure constraints may arise for a variety of reasons, including physical limits on the capacity of intensively used networks, as noted above. However, they may also be the result of decisions by Infrastructure Managers to restrict access for other reasons, in particular where there is common ownership of an infrastructure management organisation and one or more Railway Undertakings. Such discriminatory behaviour may take a variety of forms:

- As a number of studies (such as OECD (2005) and Juranek (2011)) have pointed out, a vertically-integrated Infrastructure Manager has a strong incentive to discriminate on price for access to its network. There have been a number of instances of discriminatory rail infrastructure access charges over several years. For example, DB Netz was found by the Bundeskartellamt to be favouring DB Regio by providing volume discounts in its access charging system in 2001, effectively preventing new entrants from competing. The station charging system in Germany has also been subject to challenge on the grounds that the various charging components were not clearly related to underlying costs of usage and that competitors were subject to inflated charges.
- A vertically-integrated Infrastructure Manager may simply hinder access to the network, citing capacity and operational constraints as reasons for failing to provide entrants with the level of access that they require. In Switzerland, the national rail operator SBB has been accused of refusing access to certain lines and of preventing new entrant operators from shunting at its stations. Similarly RFI, the Infrastructure Manager in Italy, has been investigated for obstructing access for Arenaways to the benefit of Trenitalia, the national incumbent operator within the same owning group as RFI.
- The Infrastructure Manager may also hinder access to key rail-related services in order to discourage entry. DB Energie recently refused to allow third parties to have access to its energy network, notwithstanding a request from the Bundesnetzagentur (BNA), the German rail regulator. Following a court ruling the network will be made available during 2012, with charges approved by the BNA.

⁵ The increase in EU-10 rail subsidy payments between 2005 and 2006 reflects the inclusion of Bulgaria and Romania in the data from 2006.

Problem definition

- Krol (2009) argues that vertically-integrated Railway Undertakings do not take account of entrants when planning future capacity or undertaking network maintenance. These activities are not currently included within the essential functions of an Infrastructure Manager which, under EU legislation, must be performed by a body that is independent of an RU. Hence, they are arguably more likely to be subject to discriminatory behaviour designed to undermine competition.
- The OECD (2005) has also noted that integrated Railway Undertakings may use their negotiating power in respect of Infrastructure Manager activities to strengthen their position in rail markets, for example by offering to undertake infrastructure investment in return for the award of PSCs. In these circumstances it may be difficult to demonstrate that competition is being deliberately undermined, since the coordination of infrastructure works in order to minimise disruption to service delivery may be better achieved within a vertically-integrated organisation.

4.79 The underlying drivers of discriminatory behaviour are described below (4.82) and more detailed evidence of discrimination is presented in Appendix F (F2.4 to F2.38).

Different market access rules in Member States

4.80 We examined legal barriers to further market opening in each Member State, and the results are reported in Table 4.3 below. In addition to identifying the formal legal position in relation to open access and competitive tendering, the table also provides commentary on any licensing requirements that could affect the extent of new entry. It shows that open access operations have begun in only seven Member States and that competitive tendering for at least some services occurs in only ten.

4.81 We also note that in the majority of Member States, while open access may be permitted in law, in practice the need to obtain a domestic licence before commencing operations and/or the application of reciprocity arrangements in the relevant legislation may effectively prevent or delay new entry. The drivers of various legal barriers identified are considered further in paragraphs 4.93 to 4.98 and the associated evidence is again presented in Appendix F (paragraphs F3.1 to F3.43).

TABLE 4.3 MEMBER STATES AND MARKET OPENING

Member State	Domestic open access (other than cabotage)		Competitive tendering for PSO services			PSO passenger-kilometres	Establishment requirements, based on analysis of national legislation “E” = Establishment requirement	Time to obtain licence, months	Time to establish subsidiary, days
	De jure	De facto	Long-distance	Regional	Suburban				
Austria	✓	✓	x	x	x	66%	E	3m	28d
Belgium	x	x	x	x	x	99%	E, national law refers to incumbent	3m	4d
Bulgaria	✓	x	o	w	w	85%	No requirement	3m	18d
Czech Republic	✓	✓	x	Mix	x	96%	E	2m	20d
Denmark	✓	✓	Mix	Mix	x	100%	No requirement	3m	6d
Estonia	✓	x	Mix	x	x	100%	E	1m	7d
Finland	u	x	x	x	x	36%	E (legislation is being modified)	3m	14d
France	x	x	o	x	x	31%	E, national law refers to incumbent	3m	7d
Germany	✓	x	o	Mix	Mix	60%	E, court has declared that all PSCs must be awarded through competitive tenders	3m	15d
Greece	x	x	x	x	x	100%	E, except for cabotage	3m	10d
Hungary	x	x	x	x	x	100%	E, discretionary restrictions	2m	4d
Ireland	x	x	x	x	x	100%	E, except for cabotage except small sections of international service	3m	13d
Italy	✓	✓	x	Mix	Mix	53%	E, subject to reciprocity clause, open access can be restricted if it affects the economic equilibrium of PSCs	3m	6d
Latvia	✓	x	w	w	w	100%	No requirement	N/A	16d
Lithuania	✓	x	w	w	w	100%	External Railway Undertakings may offer services including cabotage	1m	22d
Luxembourg	x	x	x	x	x	98%	E, subject to reciprocity clause, national law refers to incumbent	3m	19d
Netherlands	x	x	c	Mix	x	100%	E, discretionary restrictions	3m	8d
Poland	✓	x	x	Mix	x	76%	E	3m	32d
Portugal	u	x	o	x	Mix	59%	E, national law refers to incumbent	3m	5d

Problem definition

Member State	Domestic open access (other than cabotage)		Competitive tendering for PSO services			PSO passenger-kilometres	Establishment requirements, based on analysis of national legislation “E” = Establishment requirement	Time to obtain licence, months	Time to establish subsidiary, days
	De jure	De facto	Long-distance	Regional	Suburban				
Romania	✓	x	x	x	x	100%	E	1m	14d
Slovakia	✓	x	w	w	w	100%	No requirement	3m	18d
Slovenia	✓	x	x	x	x	85%	E, national law refers to incumbent	1m	6d
Spain	x	x	o	x	x	52%	National law refers to incumbent (legislation is being modified)	3m	28d
Sweden	✓	✓	✓	✓	✓	49%	No requirement	3m	15d
Great Britain	✓	✓	✓	✓	✓	99%	No requirement, subject to regulatory approval	3m	13d
Total	15	6	4	7	6	66%			

Notes: de facto open access means that there has been entry into the market

c = concession until 2015, o = no PSC applies to long distance services, u = unclear,

w = unsuccessful competitive tendering, government had to make direct award

Sources: Steer Davies Gleave (2012), CER Public Service Rail Transport in the EU, EVERIS

(2010), RMMS (2012), World Bank (starting a business statistics)

time to obtain licence from IBM Rail Liberalisation Index 2011

time to establish subsidiary from World Bank (2012) “Time required to start a business”

(<http://data.worldbank.org/indicator/IC.REG.DURS>)

Outline of problem drivers

4.82 The root causes of the problem defined in the problem tree, as described above, are in turn underpinned by a number of interrelated problem drivers. These can be categorised as:

- Network barriers and bottlenecks, principally resulting from the relationship between Infrastructure Managers and Railway Undertakings, in particular the degree of independence between the two.
- Legal barriers of various kinds restricting access to domestic passenger markets.

4.83 We describe the problem drivers in more detail below before assessing their impact in the final section of this chapter. The detailed evidence for the drivers is presented in Appendix F.

Network barriers and bottlenecks

4.84 We have already noted that new entrants may be frustrated in their attempts to gain access to infrastructure as a result of discriminatory behaviour on the part of vertically integrated Infrastructure Managers. Such discrimination arises due to **conflicts of interest**, with the Infrastructure Manager incentivised to favour the

Railway Undertaking within the same owning group rather than to allocate infrastructure capacity on an impartial basis.

4.85 Conflicts may, in turn, be the result of any of the following:

- **Incomplete implementation of legislation:** existing provisions in the First Package of EU railway legislation require that capacity allocation and infrastructure access charges, defined as essential functions, are determined by a body that is independent of any RU. This is intended to ensure decision-making independence and remove any conflict of interest in allocating capacity and setting access charges. In practice a number of Member States, specifically Austria, Germany, Italy and Poland, have adopted a structure in which the Infrastructure Manager responsible for these “essential functions” is within the same holding group as the main national railway service provider. The European Court of Justice is currently considering whether such an arrangement complies with the relevant legal requirements, although there is no guarantee that its decision will remove the uncertainty surrounding the legality of the holding group structure. The Commission is concerned that if arrangements of this kind are permitted, Infrastructure Managers within holding groups will continue to restrict access to networks in a way that supports the commercial interests of the group as a whole (See Appendix F paragraphs F2.4 to F2.13).
- **Integrated structures:** more generally, wherever an Infrastructure Manager and Railway Undertaking form part of an integrated structure there is the potential for conflicts of interest to arise in relation to a number of activities extending beyond the essential functions identified by existing legislation. For example, an Infrastructure Manager may discriminate against new entrant operators in undertaking capacity planning and closure of parts of the network, the planning and management of engineering works and real time train control (see Appendix F, paragraphs F2.14 to F2.25). Behaviour of this kind will not be addressed through more effective implementation of existing legislation, and tends to support the case for unbundling of additional Infrastructure Manager functions to ensure that they are performed independently of incumbent Railway Undertakings.
- In addition, any integrated structure in which an Infrastructure Manager and Railway Undertaking remain within the same holding group, or in which a train operator retains responsibility for certain Infrastructure Manager functions, can result in a **lack of financial transparency and the potential for cross-subsidisation**. A study by RGL Frontier and AECOM (2009), which highlighted that reported costs and profits within railway accounts are often not linked to specific activities, confirmed that lack of transparency is a general problem rather than being confined to a few Member States. Further, there have been a number of reports of difficulty in tracking financial flows within integrated railway organisations, as reported in Appendix F (paragraphs F2.33 to F2.38), and there is evidence that funds provided to support subsidised rail services have been misapplied. Such issues continue to arise in integrated structures, despite the provisions relating to financial transparency in the First Package, which requires separate accounting for Infrastructure Managers and Railway Undertakings.

Problem definition

- 4.86 The problem tree also highlights the potential for network barriers to arise as a result of **problems of co-ordination between train operators and Infrastructure Managers**.
- 4.87 Our interviews with stakeholders and research undertaken for the preparation for the country fiches suggest that this is a particular concern in France because of the relationship between RFF, the IM, and SNCF, the national train service operator. At present, RFF has overall responsibility for the full range of infrastructure management functions, including long term capacity planning and the maintenance and renewal of the network as well as capacity allocation and the determination of access charges.
- 4.88 However, maintenance and renewal activity as well as management of day-to-day network operations is contracted to a number of functionally independent divisions of SNCF, which acts as a delegated IM.
- 4.89 We understand that RFF considers this arrangement to be an **inefficient allocation of functions**, giving rise to a number of co-ordination problems as well as creating potential conflicts of interest of the kind already discussed. In particular:
- RFF has developed processes in order to carry out essential functions, notably capacity allocation which, in practice, have duplicated activities undertaken within SNCF.
 - At the same time, there is insufficient transparency of maintenance and renewals costs to allow RFF to set cost-reflective access charges, and SNCF currently passes costs on expecting full remuneration and therefore has little incentive to improve efficiency.
 - RFF, while providing overall guidance on the direction and planning of network maintenance, has no role in the management of engineering works and cannot guarantee that contracted capacity remains available during works, that the works are necessary, that they are carried out efficiently, or that the process is non-discriminatory.
- 4.90 Similar structures exist in Hungary, Lithuania and Luxembourg, and similar concerns have been raised in the Netherlands, where NS has a presence in the Operational Control Centre Rail, and in Slovenia, where the incumbent operator is responsible for maintenance. The evidence is discussed further in Appendix F (paragraphs F2.26 to F2.32).

The costs and benefits of unbundling

- 4.91 The evidence on the impact of vertical integration on the efficient use of infrastructure therefore suggests that there is a need for further unbundling of rail industry functions across the EU in order to remove conflicts of interest, allocate infrastructure management functions more efficiently and increase financial transparency. However, the case for unbundling must be considered in the light of a wider consideration of its advantages and disadvantages. These are discussed in more detail in Appendix G, which provides a review of the relevant academic evidence assembled to date on the costs and benefits of different industry structures. Here, we note that the results of the various academic studies reviewed are mixed, but taken together they suggest that:

- Unbundling in the form of vertical separation of Infrastructure Manager and Railway Undertaking functions, in itself, does not have a material effect on efficiency, which is anyway determined by a wide range of factors including technical progress and the degree of managerial autonomy. However, unbundling can facilitate competition, leading to significant improvements in efficiency.
- Under-investment, for example of the kind experienced in Great Britain in the years immediately following industry restructuring and privatisation, has been the result of a poorly designed regulatory, incentive and funding framework rather than unbundling.
- Vertical separation can lead to some, primarily one-off, transactions costs, but further unbundling of Infrastructure Manager and Railway Undertaking functions is unlikely to lead to substantial costs beyond those already incurred. Transactions costs may, however, increase with the degree of horizontal separation and competition.
- Vertical separation does not, in itself, lead to a deterioration in the safety and performance of a rail network, as some commentators have suggested. Delivery of safe, reliable rail services depends on the implementation of robust, well-understood procedures, regardless of the industry structure in place.

4.92 Against this background, we conclude that further unbundling of infrastructure management functions in order to secure greater independence of decision-making is unlikely to reduce efficiency or raise costs significantly. The case for unbundling in the form of an extension of the definition of essential functions and/or full institutional separation should therefore be considered in terms of the impact of existing industry structures on the competitiveness and mode share of the EU rail sector.

Legal barriers

4.93 Our review of the extent of market opening across the EU, the results of which are summarised in Table 4.3, suggests that access to domestic passenger markets is relatively limited in the majority of Member States. More specifically, there is:

- An **absence of open access rights** in all but seven Member States, notwithstanding that open access is permitted in principle in the majority of Member States.
- A **complete absence of competition** for PSCs in 15 Member States, with competition in the remainder typically restricted to particular types of rail service.

4.94 The table also highlights the importance of licensing requirements in determining the ease and speed with which a new operator can establish services in a Member State. In the majority of Member States, an operator must apply for a licence from the domestic licensing authority before it can provide domestic passenger services. This could add up to three months to the overall timescale for commencing operations, with additional time required where the operator must first establish a subsidiary in the Member State concerned.

4.95 At the same time, we note that even in Member States where open access operations are already established, they invariably account for less than one per cent of the overall market, as highlighted in Table 4.1 above. In practice, open

Problem definition

access operators have focused on specific markets where commercial returns are attractive, and typically rely on a favourable access charging regime whereby they are required to pay charges reflecting only variable costs. The extent of open access operations may also be constrained by regulations protecting the economic equilibrium of services provided under a PSC. The impact of legal constraints, as distinct from commercial, regulatory and other factors acting to limit the scale of open access operations, is considered further in Appendix F (paragraphs F3.6 to F3.10).

- 4.96 In some Member States, the lack of competition for PSCs can be explained by a preference for direct (non-competitive) award of such contracts. It is also clear that some Member States have no criteria for deciding on the necessity of PSOs. The evidence relating to these issues is discussed in Appendix F (paragraphs F3.11 to F3.23).
- 4.97 As indicated in the problem tree, our review of the evidence relating to legal barriers has also highlighted a number of discriminatory framework conditions that have the effect of limiting access for new entrants to key railway services and assets. The following issues are of particular concern to new entrants and other stakeholders wishing to promote competition:
- **Vague rules on access to rail-related services**, for example ticketing systems and stations, have encouraged discriminatory behaviour, preventing new entrants from establishing services or increasing the costs of new entry materially. Specific examples are provided in Appendix F (paragraphs F3.24 to F3.32). This evidence suggests that although existing legislation is intended to ensure access to these services, in practice the relevant legal provisions (in particular Annex II of Directive 2001/14/EC) are ineffective.
 - New entrants seeking to establish domestic rail services are frequently hindered by a **lack of access to rolling stock**. The evidence suggests that incumbent operators typically have a monopoly of existing rolling stock most suited for many domestic services, and that the procurement of new rolling stock tends to be discouraged because of the length of track access contracts and/or PSCs. The evidence is set out in Appendix F (paragraphs F3.33 to F3.43).
- 4.98 The impact of discriminatory framework conditions of this kind supports a case for further measures to increase new entrants' access to a range of key assets and services. In principle, it can be argued that any asset or service that is most efficiently provided centrally, for example a national ticketing and revenue allocation system, should be provided by a body that is independent of any single RU. In addition, consideration should be given to how best to ensure that assets and services capable of being provided by competitive markets, such as rolling stock and traction power, are not monopolised in practice.

Impact of problem drivers

Overview of analysis

- 4.99 We assessed the extent to which the problem drivers described above contribute to the problems and root causes identified in Figure 4.7. In particular, we sought to identify whether there is any relationship between the separation of the

functions of infrastructure management and railway operations, the degree of market opening experienced to date in different Member States and the following:

- Competition and market structure
- Operational efficiency
- Service quality
- Market growth and mode share

4.100 We note, however, that identifying evidence of a correlation or relationship between the problem drivers and the problems highlighted is insufficient to demonstrate an unequivocal causal link. We also note that modal share and service quality will be influenced by a range of factors, not least the quality of railway infrastructure, the impact of which we sought to take into account in the analysis. We nevertheless consider that the evidence presented here, together with that set out in Appendices E and F, supports the case for further policy intervention and for assessment of the options identified in Chapter 6. It has also helped to inform the detailed analysis underpinning the Impact Assessment reported in Chapter 7.

4.101 The analysis relating to passenger rail reported in the remainder of this Chapter is based on separating Member States into four groups according to the following criteria:

- **Separation:** whether they were reported as having a legally, organisationally and institutionally separate Infrastructure Manager undertaking capacity allocation in the Rail Market Monitoring Scheme (RMMS) 2006 (the 2009 issue in the case of Bulgaria, Romania and Slovenia).
- **Liberalisation:** whether at least one new entrant had been awarded a PSC or had commenced open access operations between 2005 and 2010.

4.102 We defined the criteria according to a historic, rather than the most recent, position in each Member State in order to take account of the likely lag between industry restructuring and/or market opening and any observable market impact. We note that a number of Member States have undertaken significant rail industry reform in recent years, but would not expect this to have yet had an effect on, say, rail mode share in the Member State concerned.

4.103 Application of these criteria resulted in the grouping shown in Table 4.4.

TABLE 4.4 MEMBER STATES BY SEPARATION AND LIBERALISATION

	Liberalised	Non-liberalised
Separated	Denmark, Great Britain, Netherlands, Sweden	Finland, Portugal, Spain
Integrated	Austria, Germany, Italy	Belgium, Bulgaria, Czech Republic, Estonia, France, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Northern Ireland, Poland, Romania, Slovakia, Slovenia

Note: simplification, based on situation before recent restructuring and/or market opening, generally as at 2009. See paragraph 4.102 for rationale and further details.

Problem definition

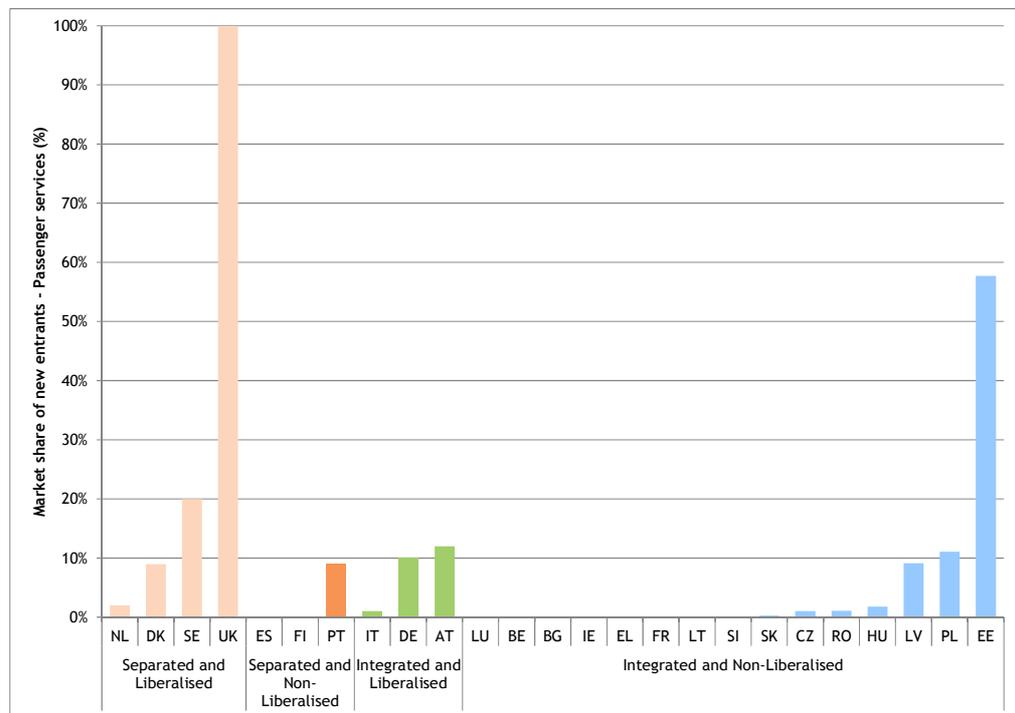
- 4.104 In the case of freight services the distinction between liberalised and non-liberalised Member States does not apply and the analysis is therefore based on consideration of the degree of separation only.
- 4.105 We recognise that any simple grouping of Member States will inevitably conceal more detailed differences in both:
- Their environment, approach and experience, notably in respect of the implementation of First Package requirements relating to essential functions. As noted in Appendix G, different Member States have taken a variety of different approaches and particular aspects of these are, in some cases, being examined by the European Court of Justice.
 - The timing of individual changes, and in particular that the effects of recent change may not yet be apparent.
- 4.106 However, the focus of our analysis has been to determine whether the full institutional separation implemented in countries such as Great Britain and Sweden has had any effect on their respective rail markets.

Competition and market structure

- 4.107 Figure 4.25 shows the data on passenger market share of new entrants by Member State in 2009, grouped according to the categories in Table 4.4 and, for consistency, also based on 2009 as a reference point before the most recent industry restructuring and/or market opening.
- 4.108 While the scale of entry by 2009 was arguably too limited to draw firm conclusions about the impact of separation on liberalisation, we note the following:
- The national incumbent rail operator accounted for 100% of operations in the majority of Member States with integrated, non-liberalised rail sectors. In the case of Member States apparently reporting a positive market share for non-incumbents, notwithstanding that their rail markets were not liberalised, this can be explained in terms of the privatisation of existing operations (as in Estonia, where they have been subsequently renationalised) or transport authorities taking a stake in some of the national incumbent's operations (as in Poland, where regional authorities acquired a share in PKP's regional services).
 - Separated and liberalised networks have experienced a greater level of new entry than networks that have liberalised but retained a more integrated industry structure, although we note that the former include Great Britain, where the previously national, vertically integrated incumbent was broken up at the time of privatisation.
- 4.109 In addition, while networks with vertically integrated structures that have liberalised passenger markets to some degree have experienced some new entry, further growth in the market share of non-incumbent operators appears to be constrained. In particular, we note that, according to the most recent Rail Market Monitoring Scheme (RMMS) for 2012, the market share of non-incumbent operators in Austria and Germany has fallen back since 2009, although this may be the result of challenging market conditions as well as access barriers.
- 4.110 Figure 4.26 presents equivalent data on new entry into freight markets. This indicates that the share taken by new entrants was generally greater in Member States adopting full institutional separation than in those with an integrated

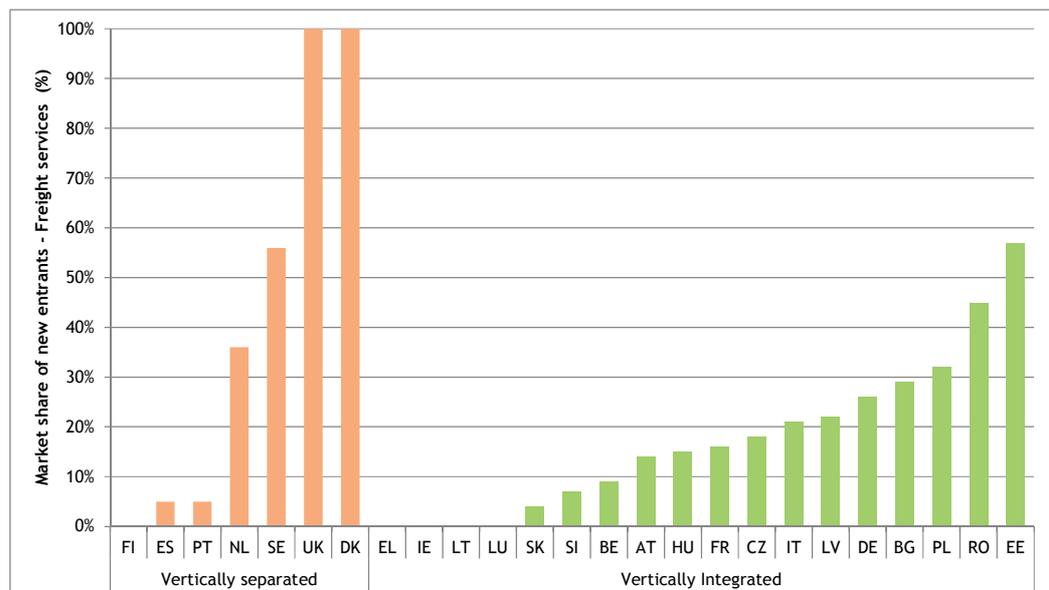
structure, although again the number of Member States in the former category is too small to be confident of a statistical relationship.

FIGURE 4.25 MARKET SHARE OF NON-INCUMBENT PASSENGER OPERATORS



Note: categories simplified as described in Table 4.4, some non-liberalised Member States have created or permitted additional operators but have not created a right of access
 Source: Rail Market Monitoring Scheme (RMMS) 2009

FIGURE 4.26 MARKET SHARE OF NON-INCUMBENT FREIGHT OPERATORS



Note: categories simplified as described in Table 4.4
 Source: Rail Market Monitoring Scheme (RMMS) 2009

4.111 Moreover, as noted above, the scope for growth in rail freight and hence for significant competitive entry is limited in some Member States by high levels of

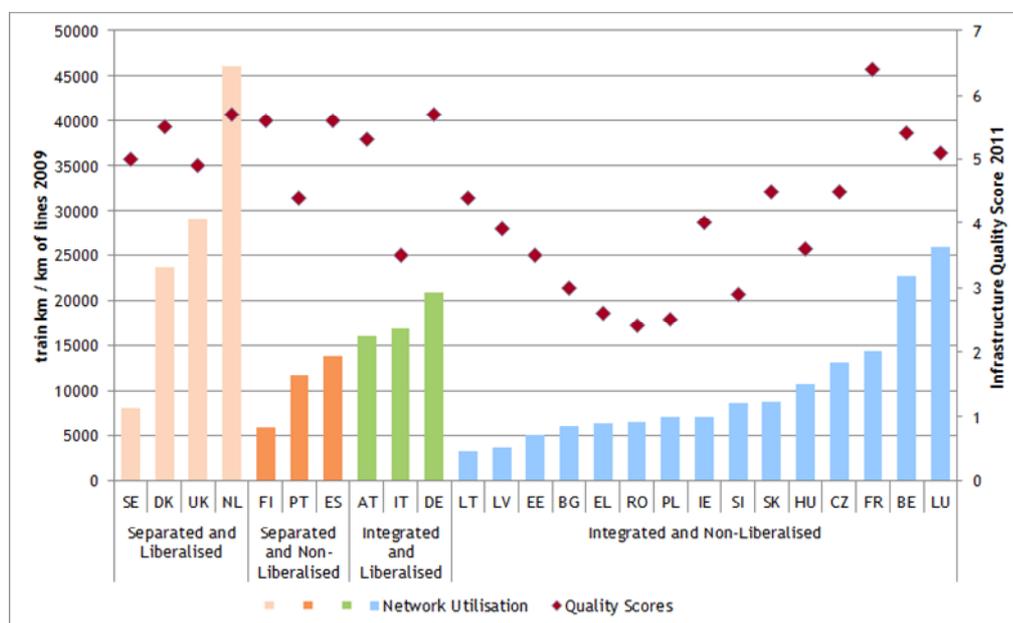
Problem definition

capacity utilisation by passenger services. We nevertheless conclude that this evidence is consistent with that presented in Appendix F, indicating that combining Infrastructure Manager and Railway Undertaking functions within a single organisation is likely to prevent or discourage new entry, notwithstanding legal and organisational separation introduced following the First Package.

Operational efficiency

- 4.112 We assessed the relationship between separation and liberalisation and operational efficiency by examining the intensity of use of infrastructure by passenger services in each Member State, as shown in Figure 4.27. We have already noted that high-level operational efficiency measures of this kind will be influenced by a range of factors, notably infrastructure quality, and have sought to take account of this by including the quality score reported by the World Economic Forum Global Competitiveness Report in the same figure.
- 4.113 Figure 4.27 demonstrates that rail infrastructure tends to be most intensively used in those Member States that have adopted institutional separation and liberalised their respective rail markets, although any conclusions must again be qualified by reference to the number of Member States in each grouping. Sweden is a notable exception, with the relatively low intensity of use reflecting geography and network configuration. We also note that there is no simple correlation between the intensity of infrastructure use and the quality of the infrastructure, while recognising that the more intensively used networks on the left and far right of the figure tend to have a higher quality score.

FIGURE 4.27 INTENSITY OF USE OF INFRASTRUCTURE



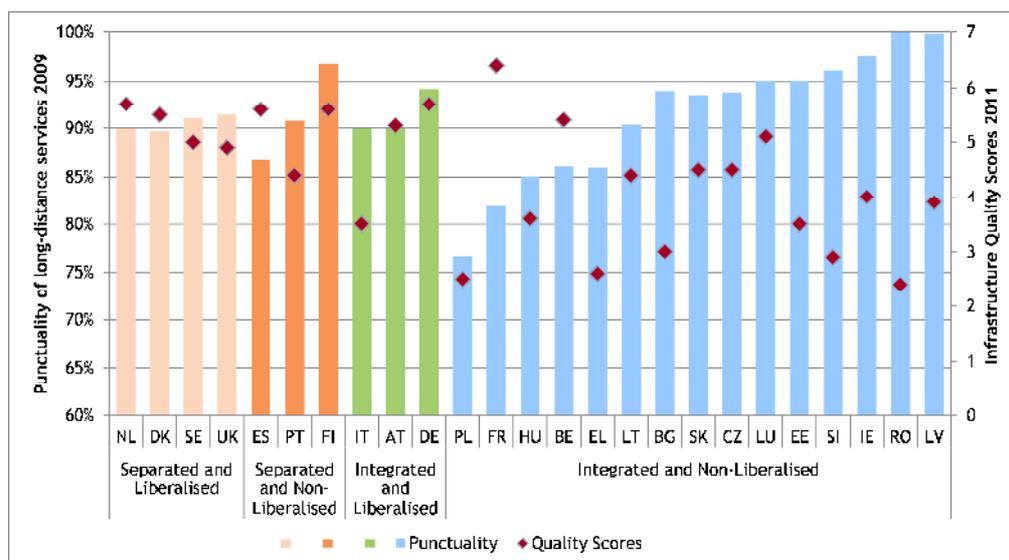
Note: categories simplified as described in Table 4.4

Source: Rail Market Monitoring Scheme (RMMS) 2009,

World Economic Forum Global Competitiveness Report 2011-2012

- 4.114 In view of the trade-off between capacity utilisation and operational performance discussed above (paragraph 4.47), we also carried out a similar analysis of the long-distance punctuality data presented above, as shown in Figure 4.28.

FIGURE 4.28 PUNCTUALITY: LONG DISTANCE SERVICES



Note: categories simplified as described in Table 4.4

Source: UIC 2009, World Economic Forum Global Competitiveness Report 2011-2012

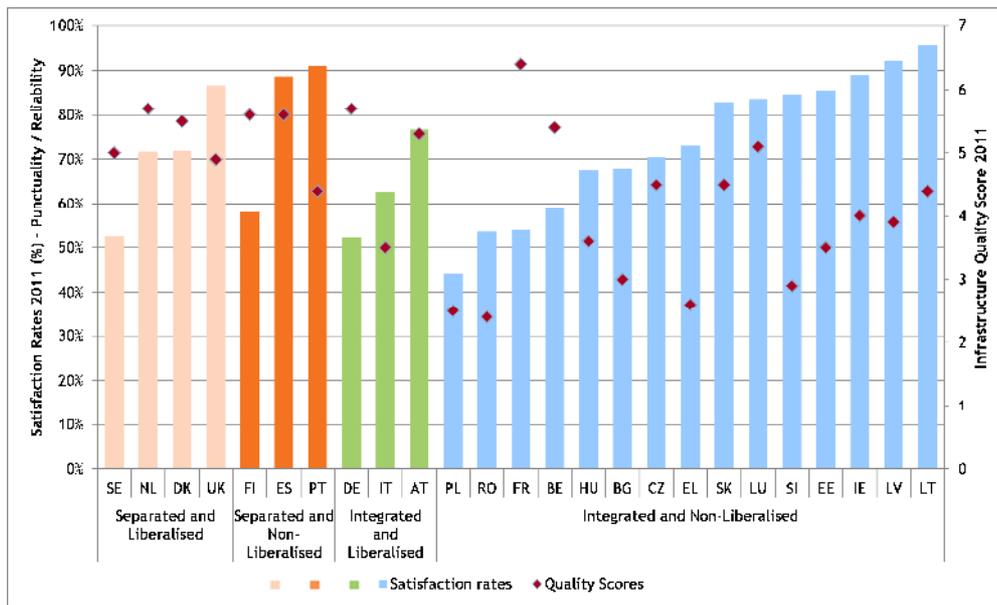
- 4.115 This shows that the Member States with a vertically separated industry structure and liberalised passenger markets achieve levels of punctuality that are comparable with the average achieved by Member States in other groups. It also indicates that some of the lowest levels of punctuality are experienced in Member States with vertically integrated industry structures that have not liberalised.
- 4.116 As suggested in paragraph 4.48, the higher levels of punctuality achieved in Member States towards the right of the figure is likely to reflect the relatively low frequency of many train services. Moreover, punctuality is not strongly correlated with the infrastructure quality score.

Service quality

- 4.117 The equivalent analysis of the overall service quality score reported by Eurobarometer is shown in Figure 4.29. In contrast to the previous figures, this suggests a correlation between the primary measure reported, passenger satisfaction, and the infrastructure quality score. This may reflect a similar approach to measurement, with both scores based on perceptions captured by a survey. There is, however, relatively little difference between the satisfaction rates for the majority of Member States included in Figure 4.29, although those in the separated and liberalised group exhibit less variation. This may be at least partly explained by the subjectivity of the measure and the likelihood that passenger expectations in different Member States are driven by current experience (with passengers used to higher quality services being generally more demanding).

Problem definition

FIGURE 4.29 PASSENGER SATISFACTION



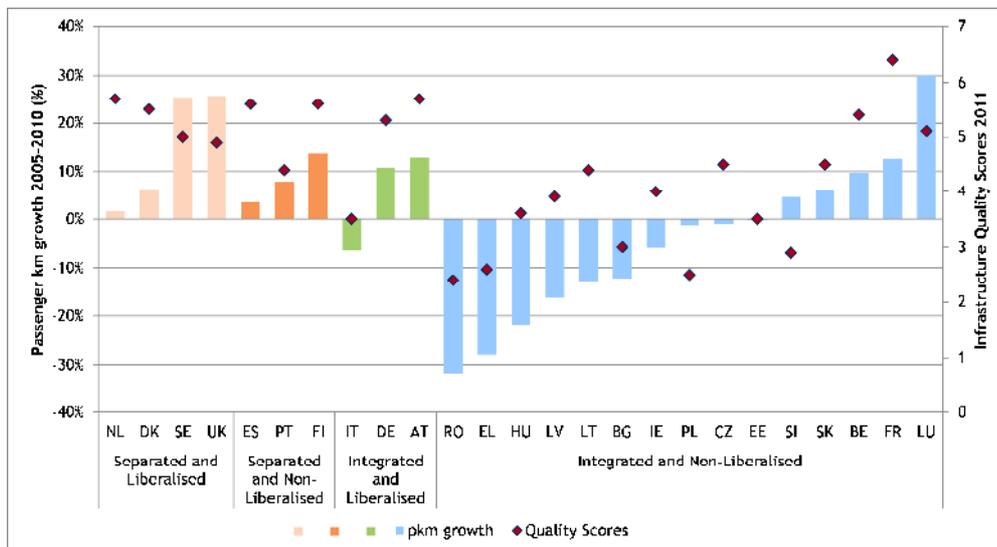
Note: categories simplified as described in Table 4.4

Source: Eurobarometer 2012, World Economic Forum Global Competitiveness Report 2011-2012

Market growth and mode share

4.118 The impact of separation and liberalisation on rail market growth and modal share is examined in Figure 4.30 to Figure 4.33. In passenger markets, the highest growth rates have generally been experienced in Member States that have implemented institutional separation and/or market liberalisation.

FIGURE 4.30 GROWTH IN PASSENGER VOLUMES BY MEMBER STATE

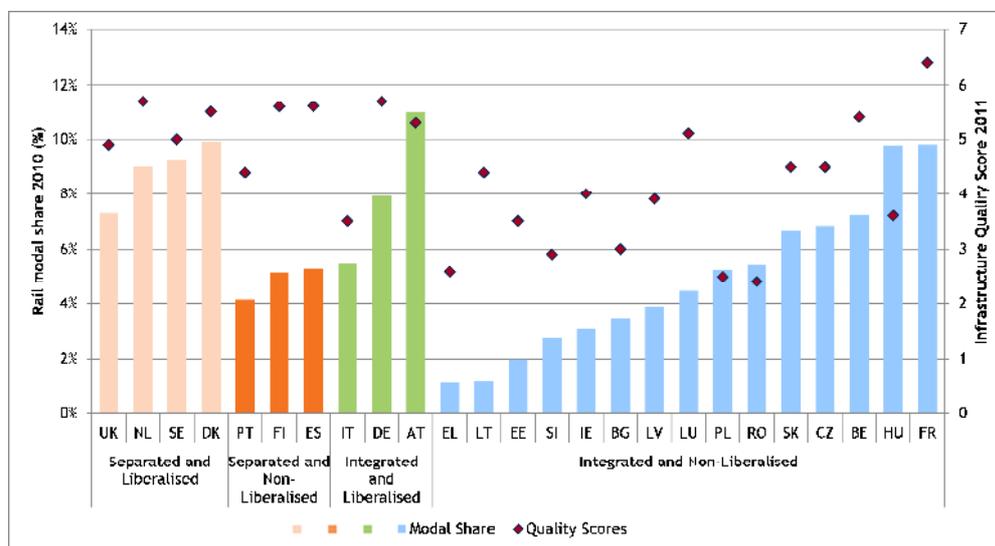


Note: categories simplified as described in Table 4.4

Source: Rail Market Monitoring Scheme (RMMS) 2009, World Economic Forum Global Competitiveness Report 2011-2012

- 4.119 As noted above, Sweden and Great Britain in the UK, the two networks in which industry reform has been most extensive, experienced significantly higher growth in passenger rail demand between 2005 and 2010 than almost all other networks.
- 4.120 The low growth in the Netherlands is an exception to the general pattern, but may reflect the fact that the Dutch network is intensively used, with limited capacity to accommodate further growth. In addition, while declining demand in some Member States has undoubtedly been driven by a range of factors, including increasing car ownership and the global economic downturn after 2007, Member States with integrated, non-liberalised rail sectors have generally achieved lower growth.
- 4.121 Figure 4.30 also indicates some correlation between market growth and the quality of infrastructure, with more developed, higher quality networks tending to experience higher rates of growth. In general, perceptions of a high or improving quality of infrastructure among passengers can be expected to encourage rail use, while efficient, reliable and well-funded networks are more likely to be able to accommodate growth in passenger demand.
- 4.122 Figure 4.31 shows that the Member States with separated and liberalised rail sectors have achieved higher mode shares than most other Member States. The relationship between separation and liberalisation and mode share is broadly similar, although there is significant variation across and within the different groups. In practice, the mode share of passenger rail services will depend heavily on the pricing policy adopted in each Member State as well as the geographical and demographic factors defining individual rail markets.

FIGURE 4.31 RAIL SHARE OF PASSENGER MARKETS BY MEMBER STATE



Note: categories simplified as described in Table 4.4
 Source: Rail Market Monitoring Scheme (RMMS) 2009,
 World Economic Forum Global Competitiveness Report 2011-2012

- 4.123 In the case of freight markets shown in Figure 4.32 and Figure 4.33, the messages are less clear. One interpretation is that many of the Member States suffering the greatest decline in traffic have integrated networks. There is no apparent correlation between traffic growth and infrastructure quality.

Problem definition

FIGURE 4.32 GROWTH IN FREIGHT VOLUMES BY MEMBER STATE

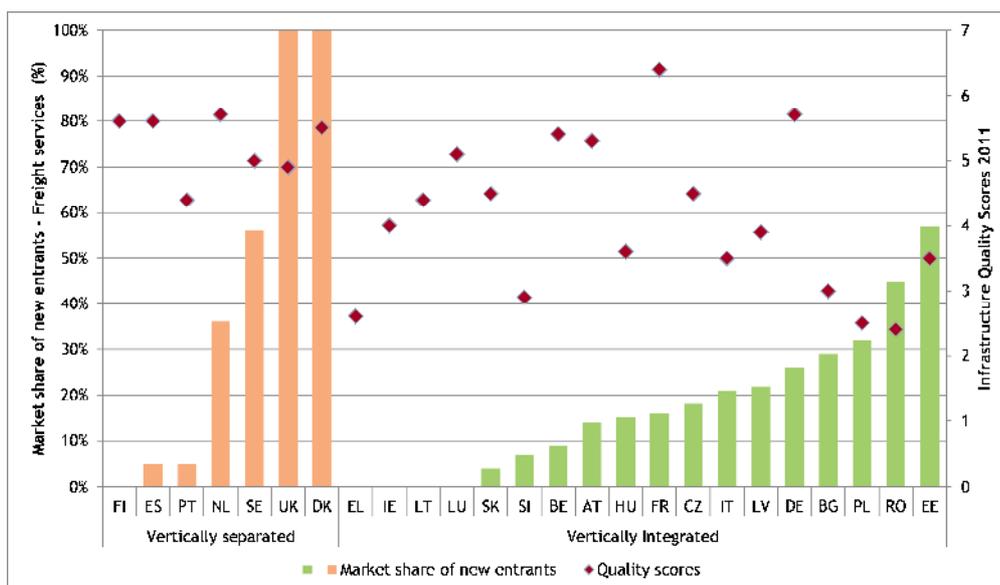


Note: categories simplified as described in Table 4.4

Source: Rail Market Monitoring Scheme (RMMS) 2009,

World Economic Forum Global Competitiveness Report 2011-2012

FIGURE 4.33 MARKET SHARE OF NEW ENTRANTS IN FREIGHT BY MEMBER STATE



Note: categories simplified as described in Table 4.4

Source: Rail Market Monitoring Scheme (RMMS) 2009,

World Economic Forum Global Competitiveness Report 2011-2012

Conclusions

- 4.124 In the light of the evidence presented in this Chapter and the supporting appendices, we consider that the problem to be addressed by further action regarding market opening and non-discriminatory access at the EU level can be summarised as follows.
- 4.125 Across the EU, the rail sector has a relatively low share of passenger and freight transport markets, notwithstanding strong growth in demand in some Member States. In general, rail operators have failed to capitalise on strong economic

growth, at least until 2008, and on growing congestion and periodic increases in road transport costs. Rail sector performance in the EU-10, where car ownership and road freight have grown substantially in recent years, has been particularly poor.

- 4.126 The lack of competitiveness within the rail sector has been driven in part by inadequate service quality in terms of journey times, reliability and the quality of the travelling environment. Despite some increase in passenger satisfaction over the last fifteen years, overall satisfaction remains below 60% in many Member States. Further evidence indicates that rail infrastructure across the EU is considered of lower quality than other types of transport infrastructure.
- 4.127 The efficiency with which rail sector assets are used, measured in terms of the intensity of use of infrastructure and average load per train, varies considerably between Member States. While these measures depend on a wide range of factors, they suggest that there is scope for making more effective use of rail networks in a number of Member States, although this is likely to be conditional on further investment in some cases, in particular among the EU-10.
- 4.128 There is clear evidence that competition in rail markets is developing only slowly, including in freight markets that have been subject to liberalisation since 2008. In only three Member States has the market share of new passenger operators exceeded 20% and in only seven has the share of new freight operators exceeded 30%. Markets in many Member States remain dominated by the national incumbent operator, and the number of new licences issued raises questions about the capacity of licensing authorities to support the development of a more competitive industry.
- 4.129 Markets are also distorted by the relative strength of incumbent operators in some Member States, particularly where they enjoy protection from competition due to access barriers faced by new entrants. There is evidence that the resulting commercial and financial asymmetries have encouraged some industry consolidation, with national operators acquiring operations or building strong positions through competitive tendering in neighbouring countries. In some cases this has suppressed competition in national markets that have been subject to market opening measures.
- 4.130 There is strong evidence that new entrants face substantial entry barriers in Member States where the Infrastructure Manager and Railway Undertaking remain integrated to some degree. Integration gives rise to conflicts of interest and various forms of discriminatory behaviour, in some cases reinforced by a lack of transparency of financial flows within an integrated national railway organisation. Discrimination continues to arise in respect of the essential functions defined in the First Package, and various instances of discriminatory charging and capacity allocation are reported in Appendix F. However, Appendix F also demonstrates that discrimination has extended to other functions, including capacity planning and the management of disruption due to engineering works.
- 4.131 Further unbundling in the form of vertical separation could be expected to address these concerns by eliminating conflicts of interest and improving financial transparency. In principle, unbundling may have disadvantages, for example the loss of economies of scope and an increase in transaction costs following the

Problem definition

creation of institutionally separate Infrastructure Manager and Railway Undertaking organisations. However, our review of the relevant academic literature and consideration of the separate impacts of vertical separation and introducing competition, as presented in Appendix G, suggests that any adverse effects of unbundling are likely to be limited. In particular, there is no clear evidence that unbundling will necessarily reduce efficiency or lead to a deterioration in performance or safety.

- 4.132 Access to passenger rail markets is also constrained by market access rules applied by individual Member States. Some Member States do not permit open access operations, while some have a preference for awarding PSCs directly to the national operator. Further, the effect of legal barriers of this kind can be exacerbated by domestic licensing requirements that increase the timescales and resources required to establish new domestic passenger services, and by asymmetries in the information and resources available to bidders for PSCs.
- 4.133 Our review of the evidence on experience of new entry presented in Appendix F also highlights the importance of obtaining access to rail-related services, including stations and ticketing systems. In principle, various rail-related services are already subject to legislation providing for non-discriminatory access. However, the instances of restricted access reported in Appendix F suggest that these provisions are insufficiently clear to ensure that new entrants are protected from discrimination.
- 4.134 Access to rolling stock is not covered by existing legislation and represents a major barrier to both open access operators and new entrants bidding for PSCs. In practice, passenger rolling stock tends to be owned by national incumbent operators, with little or no incentive to make it available to entrants on competitive terms, and as yet there is no developed European market in rolling stock providing an alternative source of supply. Investment in rolling stock with a 40-year life tends to be unattractive for new entrants bidding for time-limited infrastructure access rights and/or PSCs.
- 4.135 While recognising that there is no simple causal relationship between the overall problem described and the underlying problem drivers outlined above, we investigated whether those Member States implementing institutional separation of Infrastructure Manager and Railway Undertaking activities and domestic market opening measures have been more successful in developing a competitive rail sector. Our analysis suggests that, compared with Member States introducing more limited or no significant reform, these Member States have:
- Been more successful in encouraging competitive entry
 - Use their rail networks more intensively
 - Experienced higher rates of growth
 - Achieved comparable levels of passenger satisfaction and service punctuality

5 Objectives

Stakeholder views on objectives

5.1 Question 3.1 of the stakeholder survey (see also Appendix A) sought stakeholder views on the objectives for a number of policy initiatives as shown below:

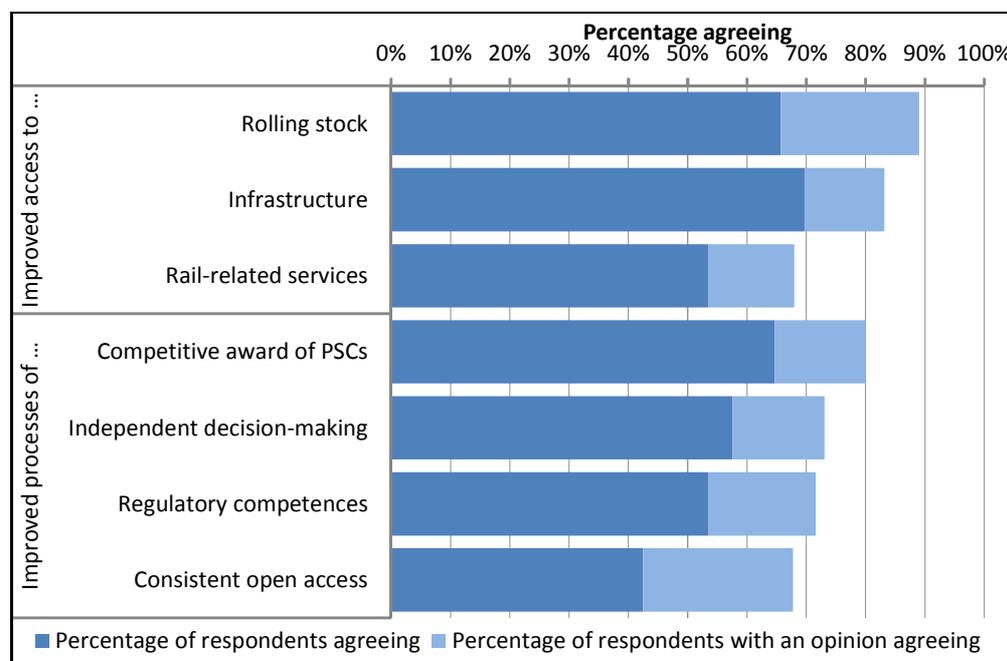
“Do you believe that the following objectives address the issues previously discussed?”

- Improve access to infrastructure at cost-reflective charges that appropriate incentives for new entrants
- Improve access to rolling stock on competitive terms for new entrants
- Ensure independent decision-making in relation to provision of, and charges for, infrastructure management functions
- Enhance regulatory competencies in relation to competitive award of public service contracts
- Improve access to rail-related services (station facilities and ticketing and information systems)
- Ensure competitive award of public service contracts
- Ensure a consistent open access approach to domestic rail passenger markets

Yes / No / No opinion

5.2 The proportion of respondents expressing agreement with these objectives is set out in Figure 5.1, reproduced from Appendix Figure A.11.

FIGURE 5.1 STAKEHOLDER VIEWS ON OBJECTIVES



5.3 The majority of those who responded agreed with the objectives, although less than half felt that there ought to be greater regulatory competences in relation to

Objectives

the award of public service contracts. There was greater agreement on objectives associated with improved access than with objectives associated with improved processes.

Our approach

- 5.4 The Task Specifications required us to devise operational objectives to address the problems. These objectives were to be easy to monitor through indicators of their level of achievement.
- 5.5 Our Inception Report discussed the rationale for an initial set of objectives based on the initial definition of the problem. We continued to refine our thinking taking into account evidence from:
- The country fiches described in Chapter 2
 - The stakeholder consultation described in Chapter 3
 - The evidence on problem definition set out in Chapter 4
- 5.6 The Problem Tree shown in Figure 4.7 shows the relationships between:
- The overarching problem, market share of domestic passenger rail transport
 - The root causes of this overarching problem
 - The drivers of these root causes
- 5.7 We developed operational objectives with the aim of satisfying the SMART (Specific, Measurable, Achievable, Realistic and Time-dependent) criteria set by the Commission’s Impact Assessment guidelines, taking into account:
- Their coherence with the general and specific objectives
 - The dependence of their achievement on the smooth functioning of the EU railway market rather than on other (external) causes
 - Their quantification and monitoring

General objective

- 5.8 The general objective was designed to address the overarching problem, the modest share of the transport market that is provided by passenger rail services.
- 5.9 This objective reflected the need to improve the competitiveness of rail transport in passenger and freight markets to encourage the growth of the sector as a whole and meet wider environmental and economic goals for the EU.
- 5.10 From the earlier work undertaken in this study, and in discussion with the Commission, our proposed general objective was:

“Improve the competitiveness of the rail sector vis-à-vis other modes by improving the quality of services and enhancing its operational efficiency through enhancing competition in railways, eliminating market distortions and improving the EU market structure for railways.”

- 5.11 The objective addressed the need to improve the competitiveness of the rail sector and also incorporated the following objectives which are common to any initiatives investigated in the course of this study. These were:

“Enhance competition in railways”

“Eliminate market distortions”
“Improve the structure of EU rail markets”

- 5.12 Following our review and validation of the project definition, we concluded that this general objective remained valid and did not propose further modification.

Specific objectives

- 5.13 We developed a set of specific objectives mapped to the problems identified in the problem tree, as set out in Table 5.1

TABLE 5.1 SPECIFIC OBJECTIVES: RATIONALE

Problem/ root cause	Specific objective	Rationale
Long and costly procedures	Reduce time and cost of administrative procedures necessary for Railway Undertaking’s operations	Facilitate introduction of new freight and passenger services by market entrants and encourage competition
Access barriers for new entrants	Ensure non-discriminatory access to infrastructure	Notwithstanding the Recast, there is a need to address ongoing concerns about the scope for discrimination resulting from deficiencies in infrastructure governance
Different market access rules in Member States	Allow for open access to domestic passenger market	Removal of a key legal barrier to the introduction of new domestic passenger services
	Improve access to rolling stock and rail-related services	Address remaining discriminative framework conditions resulting from shortcomings in the existing legal framework concerning rolling stock and rail-related services
Inefficient use of public funds	Ensure more efficient public services	Encourage greater efficiency in the delivery of public rail services in order to increase efficiency in the use of public funds more generally
Industry consolidation	Discourage industry consolidation through consistent and transparent unbundling	The differential approach to unbundling in Member States has created organisations with different financial and institutional power leading to consolidation across different markets

- 5.14 We include for context, shaded grey in the table, an objective proposed by the Commission relating to long and costly procedures surrounding interoperability and safety, although these are excluded from the scope of this study.
- 5.15 The addition of a root cause relating to industry consolidation required a corresponding specific objective. We designed this to reflect the effects of inconsistency in unbundling methods in the individual Member States. This had the effect that the purchasing power and influence of certain organisations is resulting in consolidation in some parts of the industry. The proposed new specific objective was:

Objectives

“Ensure that unbundling is applied in a consistent and transparent manner across Member States”

- 5.16 Table 5.2 maps the objectives proposed in the stakeholder questionnaire to our subsequent proposals, and indicates the proportion of stakeholders supporting each objective.

TABLE 5.2 SPECIFIC OBJECTIVES: STAKEHOLDER VIEWS

Problem/ route cause	Specific objective proposed	Specific objective in stakeholder survey	Support
Access barriers for new entrants	Ensure non- discriminatory access to infrastructure	Improved access to infrastructure at cost-reflective charges that create appropriate incentives for new entrants	70%
		Ensure independent decision-making in relation to provision of, and charges for, infrastructure management functions	54%
Different market access rules in Member States	Allow for open access to domestic passenger markets	Ensure a consistent open access approach to domestic rail passenger markets	58%
	Improve access to rolling stock and related services	Improve access to rail-related services (station facilities, ticketing and information)	65%
		Improve access to rolling stock on competitive terms for new entrants	66%
Inefficient use of public funds	Ensure more efficient public service contracts	Ensure competitive award of public service contracts	54%
		Enhance regulatory competences in respect of award of public service contracts	48%
Industry consolidation	Discourage industry consolidation through consistent and transparent unbundling	Not covered in the stakeholder consultation	

- 5.17 This suggests that the objectives we proposed were appropriate for addressing the root causes identified and for providing direction to the policy options.

Operational objectives

- 5.18 The specific objectives described above provided an immediate link to the root causes identified in the problem tree. The next level of detail required was a set of operational objectives, developed after the stakeholder consultation, that provide indicators for monitoring the progress towards achieving the specific objectives.
- 5.19 Our Intermediate Report proposed a preliminary set of operational objectives which could be applied in conjunction with the policy options then under

consideration. However, following further discussion within the Commission, consideration of stakeholder responses, and further development of the options, these objectives were recast at a higher level.

5.20 In Table 5.3 we summarise these revised objectives and confirm how they relate to the issues identified in the problem tree in Figure 4.7.

TABLE 5.3 PROBLEMS AND OBJECTIVES

Problem		General objective	
The provision of rail passenger services is not performing, implying untapped potential for quality and efficiency improvement: <ul style="list-style-type: none"> The provision of rail passenger services is insufficiently efficient The quality of rail passengers services does not keep pace with other modes 		GO1	Improve the competitiveness of the rail sector vis-à-vis other modes by improving the quality of rail passenger services and enhancing its operational efficiency, and by developing further the Single European Rail Area.
Driver 1: low degree of competition		SO1	Facilitate entry of new operators into the market
1	No freedom to provide domestic passenger rail services	OO1	Open the domestic passenger market to competition
2	Absence of competition for public service contracts	OO2	Better value for money for public service obligations
	Direct award of public service contracts		
	Lack of criteria to decide on need and scope of public service obligations	OO3	Ensure common approach to define public service contracts
3	Variety of national approaches to rail passenger market opening	OO4	Facilitate operation of railway businesses throughout the EU
Driver 2: market distortions		SO2	Eliminate or minimise remaining market distortions
1	Problems of access to rolling stock	OO5	Ensure a level playing field for access to rolling stock
2	Ticketing	OO6	Ensure a level playing field for access to ticketing

Source: European Commission

5.21 The operational objectives set out in Table 5.3, while set at a relatively high level, can in principle at least be addressed as follows:

- OO1, by policies for market opening
- OO2, by policies for competitive tendering
- OO3, by policies for commonality of approaches to defining PSCs
- OO4, by policies facilitating the operation of railway businesses
- OO5, by policies ensuring that rolling stock is accessible to all operators
- OO6, by policies ensuring that ticketing arrangements treat all operators equally

Objectives

- 5.22 In the next Chapter we discuss various policy options put forward in these areas and how these have been progressed to Impact Assessment.

6 Policy Options

Introduction

6.1 This Chapter summarises policy options, developed over the course of this study, dealing in turn with:

- Options defined in the Task Specification
- Options presented in the Stakeholder Consultation
- Options in the intervention logic
- Options considered for Impact Assessment on the basis of further development
- Options and packages taken forward for Impact Assessment in Chapter 7

Options in the Task Specifications

6.2 The Task Specifications for this study set out a number of indicative options which we summarise in Table 6.1.

TABLE 6.1 OPTIONS IN THE TASK SPECIFICATIONS

Option	Characteristics
Baseline scenario	<p>Progressive implementation of Directive 2007/58/EC but no new legislation. PSCs may still be awarded directly. Impacts expected to be limited to where international services provide cabotage.</p> <p>First Railway Package Recast improves access to infrastructure and rail-related services and strengthens regulatory oversight.</p>
Open access for domestic lines	<p>Modification of Directive 2007/58/EC to include domestic services, with complete open access on all lines not covered by a PSC. Impact expected to be limited because of high proportion of PSC services.</p>
Open access and compulsory competitive tendering for PSCs	<p>As above, plus limited modification of EC Regulation 1370/2007, in particular Article 5.6 allowing direct award of heavy rail PSCs.</p>
Open access and compulsory competitive tendering for PSCs with modified “framework conditions”	<p>As above, plus adaptation of “framework conditions” on:</p> <ul style="list-style-type: none"> • Independence of Infrastructure Managers (unbundling) • Infrastructure charging based on direct costs principles • Improved access to facilities and stations • Requirements on inter-availability of standard tickets • Facilitation of access to rolling stock for new entrants • Revised competence of regulatory bodies • More precise rules on the transfer of staff • Clarification of the need for PSCs to avoid market failure

Policy Options

Options in the Stakeholder Consultation

6.3 The stakeholder consultation described in Chapter 3 and Appendices A to D was based on a more developed list of options summarised below, with relevant questions highlighted in the shaded boxes. We discuss in turn below:

- Unbundling
- Framework conditions on rolling stock
- Framework conditions on ticketing
- Criteria for defining Public Service Contracts
- Compulsory competitive tendering
- Open access

Unbundling

6.4 Stakeholders were presented with options on the portfolio of the IM's functions.

For which of the following functions do you consider that independence of decision-making must be reinforced to ensure non-discrimination?

- Capacity allocation (including traffic management)
- Infrastructure maintenance activities
- Infrastructure charging
- Infrastructure planning and financing
- Other

Yes / No / No opinion

6.5 Stakeholders were presented with options on independence of decision-making.

“Please rank (for 1 to 5) the following options from the one you think is most appropriate to meet the objectives to the one which is least appropriate?”

- Existing separation requirements (legal, organisational and decision-making)
- Existing separation requirements (legal, organisational and decision-making) but also applying to additional functions of the Infrastructure Manager
- Institutional separation applying only to the body in charge of the essential functions
- Institutional separation applying to all functions of the Infrastructure Manager
- Other

1 / 2 / 3 / 4 / 5

6.6 Stakeholder responses (Appendix A12.4) showed:

- Views polarised between existing separation arrangements and institutional separation applied to all the functions of the IM.
- 40% support for independence of Infrastructure Manager decision-making for infrastructure maintenance activities.

6.7 Stakeholder comments (Appendix D6) on institutional separation included:

- Almost all respondents said that institutional separation ensures financial transparency, non-discriminatory practice and a clear role division.

- Incumbent operators, associations of Railway Undertakings and the public sector, in particular, said that there were disadvantages of institutional separation, and no empirical evidence of its benefit, and that rail systems in which institutional separation was applied are most costly for the government, mainly due to higher transaction costs and a loss of efficiency and coordination.
- One respondent suggested that an open and competitive framework is guaranteed through non-discriminatory access to infrastructure and strong and independent regulatory oversight rather than through institutional separation in itself.

6.8 In summary, stakeholders held a range of views on different issues and there were few areas of consistency or consensus.

Framework conditions on rolling stock

6.9 Stakeholders were presented with options on rolling stock.

“What is your view of the organisation of each of the following framework conditions? - Improved access to rolling stock”

- Compulsory transfer of rolling stock to new operator
- Creation of rolling stock leasing companies that are to provide trains for public service contracts
- Rolling stock to be provided by the Competent Authority
- Other

Very positive / Positive / No effect / Negative / Very negative / No opinion

6.10 Selected stakeholders were also asked what approach should be taken.

“In what ways do you think that availability of rolling stock for new operators should be addressed? Please tick as many as you wish”

- Full access to all technical information (infrastructure characteristics determining the rolling stock specification) to be provided by the Infrastructure Manager and incumbent operator
- Automatic transfer of rolling stock from one operator to another at the start of a new public service contract
- Introduce measures so that rolling stock is owned by Competent Authorities and operators bid to use it as part of the public service contract tendering process
- Introduce measures so that rolling stock is owned by third parties (Rolling stock leasing companies) and operators bid to use it
- Other measures that you believe could be appropriate

Yes / Possibly / No / No opinion

6.11 Stakeholder comments (Appendix Figure A.14) included:

- 65% of respondents, and 90% of those with a view, supported an objective of improving access to rolling stock.
- 60% of respondents considered rolling stock availability an access barrier to Railway Undertakings.

Policy Options

- However, only 20% thought that there should be “automatic” transfer of rolling stock from one operator to another at the start of a new PSC, and there was only 5% net support for “compulsory” transfer or rolling stock.
- Several Railway Undertakings and authorities considered that either compulsory transfer, or provision of rolling stock provided by the authorities, would remove a key element from the competitive tendering process.

Framework conditions on ticketing

6.12 Stakeholders were presented with options on ticketing.

“What is your view of the organisation of each of the following framework conditions? - Improved access to rail-related services, in particular ticketing”

- Reinforced access rules for ticketing facilities
- Compulsory through-ticketing
- Inter-availability of tickets
- Other

Very positive / Positive / No effect / Negative / Very negative / No opinion

6.13 Selected stakeholders were also asked about whether arrangements for ticketing “integration” should be voluntary or compulsory.

“If further ticketing integration was required, how should this integration be achieved?”

- Voluntary agreements
- Compulsory regulatory measures at Member State level
- Compulsory regulatory measures at EU level

Yes / No

6.14 Stakeholders (Appendix Figure A.6 and Appendix Figure A.7) consistently ranked intramodal integration (implicitly including ticket integration) low as a factor in the competitiveness of the rail sector, although they may not have been aware of all the practical issues of cooperation and/or competition between multiple operators. There was 45% net support for inter-available ticketing (A7.34) and less for reinforced rules for ticketing facilities or for compulsory through ticketing.

6.15 However:

- Public sector respondents emphasised the need to be able to buy a ticket from one operator valid for the whole journey, including the services of other operators.
- Passenger associations said that lack of inter-available ticketing worsens the quality and competitiveness of rail, that inter-available ticketing and retail information should be guaranteed, and that there should be a separation of ticket distribution and transport operations.
- One stakeholder said that the effect of market opening would only be neutral if a legal framework or a service contract forces Railway Undertakings to cooperate with each other in terms of through-ticketing and integrated ticketing.

- Conversely, many incumbent Railway Undertakings said that the distribution of tickets is one of the core businesses of rail and a means of competitive differentiation.

Criteria for defining Public Service Contracts

6.16 Stakeholders were presented with options on criteria for defining PSCs.

“To avoid market foreclosure through excessively broadly defined public service obligations, would you agree that existing EU rules should be made more precise on the following issues?”

- Necessity and proportionality to meet public mobility policy objectives
- The scope of the contract (i.e. volume, geographical coverage)
- The impact on public sector funding
- Improving the quality of the train service
- Other

Yes / No / No opinion

6.17 Stakeholders’ responses were divided on whether Public Transport Authorities should be subject to defined compliance criteria (Appendix Figure A.18), with at most 40% supporting more precise rules on any issue (Appendix Figure A.19).

6.18 Selected stakeholders were also asked about consultation on any criteria.

“Should the relevant stakeholders be consulted on the above mentioned criteria before they are enacted?”

Yes / No / No opinion

6.19 An overwhelming majority of 95% agreed that consultation would be needed on any such criteria (Appendix Figure A.20).

Compulsory competitive tendering

6.20 Stakeholders were presented with options on compulsory competitive tendering.

“Please rank the following options for which you believe there will be a positive or very positive effect in relation to the degree to which they meet the objectives presented in Section D”

- Retention of the existing legal framework in which Competent Authorities can determine whether to award public service contracts directly or through a competitive tendering process
- Competitive tendering introduced for public service contracts where a financial or operational threshold is exceeded (e.g. contract value, volume of traffic)
- A specification of negotiation elements allowed under a competitive tendering procedure along the lines of the relevant provisions in public procurement law
- Competitive tendering for all public service contracts
- Other

1 / 2 / 3 / 4 / 5

6.21 All the options proposed were given similar average rank (Appendix Figure A.31), and there were preferences for any of:

Policy Options

- Retention of the existing legal framework
- “A specification of negotiation elements ...” (although a number of respondents commented that they did not know what this meant)
- Competitive tendering for all public service contracts

6.22 Stakeholder comments were varied:

- A new entrant underlined the importance of competitive tendering for the quality of rail services.
- Associations of Railway Undertakings suggested that compulsory competitive tendering would bring benefits such as increased efficiency and quality, as new entrants would develop different solutions and new ideas. One association of Railway Undertakings provided statistics from various Member States linking competitive tendering with increased rail travel.
- Incumbent Railway Undertakings commented that effective compulsory competitive tendering for PSCs would depend principally on the availability of state funding and that there would be no new entry if this was inadequate. Most expected little change as a result of competitive tendering.
- Railway Undertakings and associations of Railway Undertakings also said that Member States should be free to decide whether to award PSCs directly or by competitive tendering and that different circumstances in different Member States must be taken into account.

Open access

6.23 Stakeholders were presented with options on open access.

“Please rank the following options for which you believe there will be a positive or very positive effect from the one which you think is most appropriate to meet the objectives presented in Section D to the one which is the least appropriate”

- A continuation of the existing arrangements in Member States in relation to the provision of open access arrangements
- Open access on routes not covered by public service contracts
- Open access as above, but also permitted on routes covered by public service contracts, though Member States could limit access if the economic viability of a public service contract is affected
- Open access unrestricted on certain types of services (such as long-distance, high-speed or premium airport services)
- Open access unrestricted on all routes (maintaining the possibility of public funding for unprofitable services)
- Other

1 / 2 / 3 / 4 / 5

6.24 Stakeholders generally preferred open access “permitted on routes covered by public service contracts, though Member States could limit access if the economic viability of a public service contract is affected”. Stakeholder comments were varied, but the most common themes were that:

- The issues were different in each Member State.
- Open access could lead to cherry-picking and worsen the industry’s finances.

- Framework conditions would be needed to protect wages and working conditions and to ensure that long term investments, such as in rolling stock, could still be made.

6.25 In addition:

- An association of Railway Undertakings suggested that open access services would emerge where there was customer demand and would be customer-focused, but that customers do not usually want a choice of operator.
- Incumbent Railway Undertakings suggested that price competition between incumbents and open access operators might not be sustainable.
- Stakeholders from the public sector provided evidence from Sweden and Lithuania where there are no or few new entrants, despite full market opening to open access operators. Ministries were also pessimistic.
- Many incumbent Railway Undertakings said that unrestricted open access competition on all routes will be the most costly solution for taxpayers, and may therefore not be welcome in times of austerity.

Options in the intervention logic

6.26 After reviewing stakeholders' views and the emerging evidence base we discussed a range of possible options with the Commission, as set out in the "intervention logic" described in detail in Appendix H. Appendix Table H.18 sets out our preliminary conclusions that the package most likely to be effective would include:

- Mandatory full unbundling, with institutional separation for all the functions of the Infrastructure Manager, competitive tendering for all services covered by a PSC, ideally including a negotiation procedure, and rights of open access subject to a test on the effects of the economic viability of PSCs
- No new legislation, or at most flexible arrangements or guidelines, on inter-available ticketing, rolling stock, staff transfers and criteria for setting PSOs
- No new legislation on infrastructure charging rules or the competences of the regulatory bodies

6.27 However, the aim of the analysis in Appendix H was to identify a number of well-defined and internally consistent options for further discussion and analysis. Further discussion with the Commission resulted in an updated long list of options which formed the basis of our Final Report on 28 September 2012.

Options considered for Impact Assessment

Definition of clusters

6.28 We set out in Appendix G1.2 the current degree of institutional separation in the Member States and in Table 4.3 the degree of market opening in the various Member States.

6.29 To help present our analysis of options and the Impact Assessment, and in discussion with the Commission, we replaced the retrospective classification of Member States by their state of separation and liberalisation in 2009 (Table 4.4) with a forward-looking classification based on their future expected level of market opening. This led to the "clusters" set out in Table 6.2.

Policy Options

6.30 In developing these clusters we:

- Identified the expected changes in each Member State before 2019, the first year in which Fourth Package legislation could come into effect
- Added a category of “partially liberalised” to reflect networks with some, but incomplete, liberalisation, including:
 - The Netherlands and Germany, where there is only competition on regional services
 - The Czech Republic and Austria, where open access competition has now emerged, at least on the main interurban lines

TABLE 6.2 OPTIONS: DEFINITION OF “CLUSTERS”

Separation	Vertically integrated		Vertically separated		
	Partially liberalised	Not liberalised	Liberalised	Partially liberalised	Not liberalised
Group	A	B	C	D	E
Member States	Austria Germany Italy	Belgium Estonia France Hungary Ireland Latvia Lithuania Luxembourg Poland Slovenia	Great Britain Sweden	Czech Republic Denmark Netherlands	Bulgaria Finland Greece Portugal Romania Slovakia Spain
Baseline share of 2009 EU-27 train-kilometres	34%	25%	18%	10%	13%

Note: for the purposes of clustering Estonia is in Cluster B as in the March 2012 Report from the European Commission to the European Parliament on Development of the Rail Market

Definition of options

6.31 The long list of options agreed with the Commission included two or more options in each of the areas listed as a row in Table 6.3. All these options, described in the following pages, could in principle address one or more of the objectives set out in Chapter 5.

TABLE 6.3 OPTIONS CONSIDERED FOR IMPACT ASSESSMENT

Categories	Types of option	Code	Detailed description
Unbundling	Extent of IM independence	U	Table 6.4
	Proposals for a coordination body		Figure 6.4
Framework conditions for market opening	Rolling stock	RS	Table 6.16
	Ticketing	T	Table 6.17
Market opening	Competitive tendering of PSCs	B	Table 6.18
	Open access	A	Table 6.19

6.32 For each of the options we deal in turn with:

- The definition of the option, to the extent that details have been developed
- The extent of qualitative evidence supporting the consideration of the option
- Stakeholder Consultation, if the option was included in the consultation process, and stakeholder views, where relevant to the option as now defined
- Practical issues identified in our analysis, particularly with reference to the scope to evade the policy objectives which the option would address
- If relevant, the availability of evidence to support a quantitative assessment

6.33 From a consideration of these factors we reduced the long list into single options and packages of options to be analysed in the course of the Impact Assessment.

Options: unbundling

Definition of options

6.34 Following discussions with the Commission, we restricted our assessment of unbundling to two options, each involving a change in the nature and extent of unbundling relative to the current position:

- Option U1, which would clarify that the existing legal, organisational and decision-making independence requirements needed to establish the safeguards in Annex V of COM(2006) 189 for the existing essential functions should cover maintenance planning and investments
- Option U2, which would involve institutional separation of the Infrastructure Manager from any Railway Undertaking, thereby ensuring independence in respect of essential functions, maintenance planning and investments

6.35 Both options would require more detailed definition for the purposes of specifying and implementing legislation, in particular to provide for greater clarity in determining the scope of broad areas of activity such as maintenance planning and investments. Additionally, in option U2, it might be necessary to define under what circumstances, and to what extent, the institutionally separated Infrastructure Manager would be permitted to subcontract any or all of these activities, particularly to a Railway Undertaking, or a body under the control or influence of a Railway Undertaking or with a shared ownership or commercial interest with a Railway Undertaking.

TABLE 6.4 OPTIONS: UNBUNDLING

Option	U0	U1	U2
Definition	Baseline: legal, organisational decision-making independence for the essential functions only	IM responsible for current essential functions, maintenance planning and investments Decision-making and organisational independence implemented with the safeguards of Annex V of Communication COM(2006) 189 final	IM responsible for current essential functions, maintenance planning and investments Institutional separation for these functions
Evidence supporting this particular option		Does not impose costs of institutional separation	G1.6, D6.2 Decision-making and organisational independence alone does not remove incentives to favour companies in the group or prevent risks of cross-subsidisation
Stakeholder Consultation and views		*	*
	Figure A.12 First ranking, generally preferred by “producer” stakeholders	A7.14 50% favour independent decision-making for infrastructure planning and financing A7.15 40% favour independent decision-making for maintenance	
Practical issues if introduced		G8.1 Potential effects are transaction costs, inefficiency and under-investment	G8.1 Potential effects are transaction costs, inefficiency and under-investment
Assessment evidence and data		Limited evidence to quantify outcome or effects Increasing separation likely have greater effect	
Conclusion	IA baseline	Take to IA	Take to IA

6.36 We also note that neither option addresses a number of issues relating to decision-making independence highlighted elsewhere in this report, including:

- Responsibility for, and control of access to, railway infrastructure assets such as passenger stations and freight terminals (See Appendix F3.24-3.32), as this was addressed by Directive 2012/34/EU.
- A dominant Railway Undertaking controlling and discriminating in the provision of functions not treated as railway infrastructure, such as reservations, fares and ticketing systems and sales channels, as we discuss in Appendix H6.

Stakeholder views

- 6.37 Stakeholder views on unbundling were largely polarised (see Figure A.12).
- 6.38 Holding companies and groups and workers representatives generally favoured the current position, with decision-making separation only for the essential functions. In contrast transport ministries, national authorities and independent passenger and freight Railway Undertakings, independent infrastructure managers and passenger organisations generally favoured institutional separation. Decision-making separation with safeguards as envisaged in option U1 received least support, with only 50% of respondents supporting decision-making independence for infrastructure planning and financing and 40% supporting decision-making independence for maintenance.
- 6.39 Respondents tended to emphasise particular impacts of further unbundling in order to justify their position. Those supporting the current situation highlighted the potential increase in transaction costs arising from a more disaggregated industry structure, noting the results of a study by Merkert (2010), which concluded that such costs are substantially higher in Great Britain than in Germany. Advocates of further unbundling stressed the potential benefits in terms of the elimination of discriminatory behaviour and greater financial transparency. Both sides cited the “McNulty” Rail Value for Money Study from Great Britain as supporting their case, demonstrating the difficulty of identifying published evidence that can be used to validate particular arguments unequivocally.

Preliminary assessment

- 6.40 We considered both the costs and benefits of moving from the current situation to options U1 and U2. We noted that confirmation of the non-binding opinion of the European Court of Justice Advocate General, that a holding group structure was consistent with legislation (see 7.188), could prompt countries that have already implemented institutional separation (clusters C, D and E in Table 6.2) to move to a holding arrangement. Such a move is in prospect in France (see 7.189) and must therefore be considered a potential part of the baseline for any unbundling option.
- 6.41 The key difference between the options is summarised below.

Option U1

- 6.42 **The legal, organisational and decision-making independence** within a holding group structure could continue in the Member States in clusters A and B in Table 6.2. However, the Member States would need not only to comply with the specific arrangements set out in Annex V of COM(2006) 189 but also to ensure that this extended to both essential functions, as at present, and to maintenance planning and investments.
- 6.43 **Set-up costs** would be related to any costs of internal reorganisation necessary to set up the specific arrangements set out in Annex V of COM(2006) 189 but also to ensure that these arrangements apply to maintenance planning and investments.
- 6.44 **Recurring costs** would relate to the functioning of the arrangements set out in Annex V of COM(2006) 189 and would remain limited.

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Option U2

- 6.45 **Institutional separation** would be required in the Member States in clusters A and B in Table 6.2, as is already in place in clusters C, D and E. They would need to modify the formal contractual arrangements between the Infrastructure Manager and the incumbent Railway Undertaking recognising such separation.
- 6.46 **Set-up costs** would arise from the change of ownership among the legal entities currently part of a vertically-integrated group and the associated adaptation of contractual relationships.
- 6.47 **Recurring costs** would relate to any additional monitoring and enforcement of contractual rights in the event of disputes.

Additional costs

- 6.48 In either option U1 or option U2 the additional costs of unbundling are likely to be limited, given the substantial organisational and decision-making separation adopted by Member States in response to existing legislation.
- 6.49 Evidence on which to quantify the impacts of different governance arrangements is limited and, as the Stakeholder Consultation illustrates, has been interpreted in different ways by different parties. Fundamental difficulties include that:
- In larger railway organisations, the incremental costs will depend on the exact management configuration immediately beforehand: integrated railways may be organised by engineering function, or by region or route, or by business market, and with different degrees of subcontracting of functions and activities to external suppliers. The cost of separating additional functions will depend on whether and how they were integrated under the former structure.
 - No Member State has unbundled exactly as envisaged in option U1 or option U2 without simultaneously making other changes.
 - The costs of unbundling may be borne by a number of bodies, over several years, and are not collated or reported in sufficient detail to determine the difference between distinct approaches, such as comparing the narrowly-defined costs of decision-making independence and institutional separation.
 - The benefits, such as reduction in or elimination of discriminatory behaviour, or greater financial transparency, cannot be estimated easily due to the impact of other factors and the operation of lagged effects on observed outcomes.
- 6.50 Nonetheless, in addition to examining specific options for unbundling, the Task Specifications required us to examine:
- **One-off costs** of the unbundling process itself as well as the recurring costs of **enforcement** of the arrangements required by the option in question.
 - **Transaction cost differences** of the contractualisation process within a holding group and with outside applicants.
 - **A specific body** to improve the governance of the Infrastructure Manager, including, in a non-discriminatory manner, representatives from all infrastructure users and ensuring that their interests are duly taken into consideration.
- 6.51 We discuss each of these issues in turn below.

Options: unbundling: one-off costs of the process

Evidence from the rail industry

- 6.52 Some of the costs of restructuring the rail industry were identified and reported in Great Britain, which went well beyond the changes envisaged in options U1 and U2, but they illustrate the difficulties in estimating the costs of a specific additional element of unbundling. The restructuring costs reported by both British Rail and Railtrack (the initial Infrastructure Manager, subsequently replaced by Network Rail) in 1993-94 and 1994-95 are shown in Table 6.5.

TABLE 6.5 ONE-OFF RESTRUCTURING/PRIVATISATION COSTS, BRITISH RAIL

£ million (current prices)	1993-94	1994-95
British Rail	92	85
Railtrack		46
Total	92	131
As percentage of total industry costs	2.6%	3.5%

Source: Hansard, 26 November 1996, volume 286, British Rail Annual Report 1993-94

- 6.53 The period covered by the table excluded initial feasibility studies but included all of the restructuring activity incurred within those organisations (but not others, such as the Department of Transport which specified and oversaw the process). These include the creation of Railtrack as a separate legal entity, and part of the subsequent work in support of privatisation.
- 6.54 However, it is unclear how much of the reported cost relates to institutional separation which would be required by option U2, not least because:
- A proportion reflects activity associated with bringing Railtrack to market, and would therefore not have been incurred had the objective been institutional separation alone.
 - Much of the restructuring costs incurred in 1993-94 were the result of a radical restructuring of British Rail, which included the creation of 25 train operating subsidiaries (subsequently franchised) and a number of rolling stock leasing, renewals, maintenance and other companies, as well as a separate Infrastructure Manager.
 - The activity undertaken involved reform of an industry structure in place prior to, and therefore not complying with, the requirements of the First Package.
 - The costs generated by the creation of a separate legal entity which is independent from Railway Undertakings in organisational and decision-making terms do not relate to institutional separation but to EU requirements already in force.
- 6.55 This cost information is nevertheless useful in illustrating that restructuring costs are likely to be limited when compared with total industry costs in any given year. Even in Great Britain, where restructuring and privatisation went further than in any other Member State, total set-up costs in any year only amounted to no more than 3.5% of total annual industry costs. The costs of implementing option U2 in isolation would have been considerably lower although, as we note above (6.49),

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these costs might still have been highly dependent on the exact internal management organisation within British Rail immediately beforehand. If the creation of a separate infrastructure manager in 1993-94⁶ resulted in British Rail incurring one third of the restructuring costs actually reported for that year, the total would have amounted to no more than 0.9% of overall annual industry costs.

- 6.56 Given that the data reported for Great Britain overstate the costs of unbundling, we also investigated the costs of restructuring in other Member States that have implemented institutional separation of rail operations and infrastructure management. We were not able to identify comprehensive data covering a number of Member States, since unbundling costs, however defined, are generally not identified in the relevant company or public sector accounts. Any distinct costs highlighted would anyway tend to understate the overall cost of the activity in question, since the design and implementation of organisational change often involves management staff with a range of responsibilities who typically do not identify the relevant time spent separately.
- 6.57 We identified some evidence of the overall costs of the setting up of ADIF. The ADIF accounts report total set-up costs of €6.8 million over the three-year period 2004 to 2006, although it is not clear what activities these covered. This figure was equivalent to 0.2% of the reported operating costs of RENFE, the incumbent national rail service provider, in 2004, the last year in which RENFE operated as a vertically integrated entity. This indicates that one-off costs of organisational separation, which will exceed those of the last step towards institutional separation under options U1 and U2, are relatively small in relation to overall industry costs.
- 6.58 We also identified some evidence from the Czech Republic, which in 2000 specified a project entitled “Preparation of conditions for the application of the EU Directives in the transformation of Czech Railways (ČD)”. The project anticipated much of the work needed to separate institutionally a still fully-integrated structure as implemented in 2003 and was expected to cost €2 million, around 0.1% of ČD’s annual operating costs at the time. This tends to support the view that the costs of implementing more focused unbundling on a simpler rail network than in Great Britain are likely to be substantially less than those reported in Table 6.5. However, the evidence from the Czech Republic must also be substantially qualified since:
- We did not identify any information confirming that the outturn costs of the project were comparable to the estimate of costs in the project specification
 - The project included a number of elements, such as harmonising infrastructure charges and financial revitalisation, required for implementation of the First Package but which would not be required in order to implement either option U1 or option U2
 - It is not clear from the project specification whether it included not only the design of the new organisation but also its full implementation

⁶ It is likely that only costs incurred in 1994-95 are relevant to the calculation, since those in 1995-96 were heavily driven by the legal and financial activity underpinning flotation of Railtrack and procurement of the various train operating franchises.

- 6.59 Hence, while this evidence tends to support the view that the one-off costs of further unbundling would be less than the typical year-to-year variation in rail industry operating costs, it does not provide a precise estimate of the likely cost of implementing either of the options under consideration.

Evidence from the electricity industry

- 6.60 We also investigated the evidence available on the costs of unbundling in the electricity industry. This is broadly comparable to the rail industry in that it is network-based and has been subject to restructuring, including the creation of institutionally separate entities responsible for activities such as generation, transmission and distribution, in a number of countries within and outside Europe. Table 6.6 summarises the evidence we found on the one-off costs of unbundling.

TABLE 6.6 ONE-OFF COSTS OF UNBUNDLING, ELECTRICITY DISTRIBUTION

Unbundling example	Estimated costs	Scale factor	Comment	Source
Creation of Distribution Network Operators in New Zealand	NZ\$30 million	3.5% of annual revenues	Represents the cost of creating separate operating entities from a fully integrated structure	PWC (2006)
Creation of distribution Network Operators in the Netherlands	€70-100 million	0.7-1% of annual operating costs	Costs attributed to modification of IT systems, transfer, re-contracting and re-administration of staff and legal activity underpinning ownership unbundling	Deloitte (2005)
Further unbundling of Distribution Network Operators in the Netherlands	€20 million	0.2% of annual operating costs	Estimate of moving to unbundling of ownership after functional unbundling has been completed	De Nooij and Baarsma (2008)
Further unbundling of Transmission System Operators in Germany	€100 million	0.2% of annual operating costs	Explicitly based on estimates made by De Nooij and Baarsma (2008)	Brunekreeft (2008)

Source: Brunekreeft (2008)

- 6.61 This evidence is consistent with our earlier conclusion that the costs of radical restructuring of a fully-integrated industry of the kind undertaken in Great Britain will substantially exceed those of the simpler institutional unbundling of structures which are already separated in legal, organisational and decision-making terms, as envisaged under options U1 and U2. More specifically, it suggests that changes in staff allocation and administration, and supporting IT systems changes, can be expected to be significantly below 1% of annual operating costs, and that the costs of establishing separate ownership, assuming functional separation has already been achieved, might be only 0.2% of annual costs.

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6.62 To inform the Impact Assessment, we considered how this evidence relates to the specific requirements of options U1 and U2 (drawing, in particular, on Annex V of COM(2006) 189 in the case of option U1). Table 6.7 summarises the requirements and their implications in terms of potential cost impacts.

Conclusion

6.63 Based on this analysis and the estimates of one-off unbundling costs reported above, we estimate the costs of further unbundling under each option as follows.

Option U1

6.64 Some Member States in clusters A and B in Table 6.2 which are vertically-integrated would incur one-off costs of up to 0.8% of annual operating costs, calculated from Table 6.6 as:

- 1% indicated by Deloitte (2005), less
- 0.2% for institutional unbundling estimated by De Nooij and Baarsma (2008)

6.65 Other Member States in clusters A and B in Table 6.2, such as Belgium, which have already implemented measures to meet the requirements of Annex V, would incur costs of no more than 0.2% of annual operating costs. We also discuss further below the possibility of reintegration, into a holding structure, by Member States that currently have full institutional separation.

6.66 Assuming that, as a whole, these clusters would incur one-off costs equivalent to the mid-point average of these two extremes of 0.8% and 0.2%, or 0.5% of annual operating costs, this would imply expenditure of €0.17 billion.

Option U2

6.67 All of the Member States in clusters A and B would incur some additional cost as a result of the need to implement institutional separation. We therefore estimate the total potential one-off costs as equivalent to 0.7% of annual operating costs, calculated as the 0.5% mid-point estimate for implementing option U1 plus the 0.2% arising from institutional unbundling. This would imply expenditure of €0.24 billion.

6.68 These estimates are considered conservative in the light of the estimates of one-off costs for Spain and the Czech Republic reported above. We consider this approach to be appropriate given the uncertainty surrounding the level of activity covered by the publicly available cost estimates in the Spanish and Czech cases. We conclude that, overall, the one-off costs of unbundling under either option U1 or option U2 are unlikely to be material to an Impact Assessment.

TABLE 6.7 ONE-OFF COST IMPLICATIONS, UNBUNDLING OPTIONS

	Requirement	Cost implication
U1	Compliance to be monitored by independent authority or third party	Some additional costs - regulatory bodies already created under existing legislation but additional expertise and resources required
	Statutory/contractual independence of entity entrusted with essential functions, maintenance planning and investment from other entities in the same group	Adaptation of statutory or contractual provisions is an administrative change, the costs of which are likely to be negligible
	Members of the board of the entity entrusted with essential functions, maintenance planning and investment should not be on the board of any entity within the same group	Could require the recruitment of additional board members depending on how existing boards are currently comprised - one-off costs of recruitment likely to be negligible
	Members of the board of the entity entrusted with essential functions, maintenance planning and investment barred from serving on the board of any entity within the same group for a number of years (cooling off period)	No additional costs beyond those already identified above
	The management board of the entity entrusted with essential functions, maintenance planning and investment must be appointed under clear conditions and legal commitments to ensure the necessary degree of independence	This is an administrative change which would not result in material additional costs, although it could lead to further recruitment in circumstances where a new board had to be appointed in order to comply
	The entity entrusted with essential functions, maintenance planning and investment must have its own staff and be located in separate premises (or be subject to protected access) and access to its information systems must be protected	Could require changes in staff allocation and administration as well as modification of IT systems depending on the degree of functional separation already implemented
U2	All of the requirements of option U1 plus change in ownership needed to secure institutional separation of infrastructure management and train operations	Primarily the costs of legal activity required to establish separate ownership although there may also be costs arising from the reallocation of staff and functions from the vertically-integrated entity, depending on the extent of its previous functions

Reintegration

- 6.69 We noted above that legislation for option U1 might prompt some Member States to reintegrate institutionally separate Infrastructure Manager and Railway Undertakings into a holding structure. However, as we discuss further in Chapter 7 below (7.188-7.189), reintegration is a potential uncertainty in the baseline.

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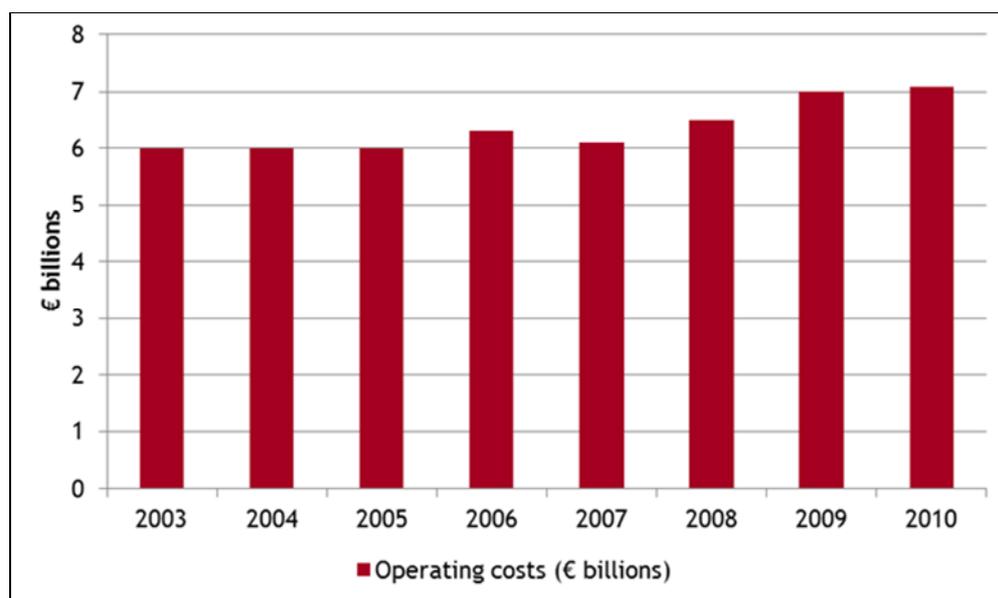
- 6.70 The vertically-integrated model may be permitted under existing legislation and, if it is, would be permitted in both the baseline and option U1. Nevertheless, we recognise that the legal clarity provided by legislating for option U1 might lead to some Member States choosing to move to a holding company model in the future.
- 6.71 In practice, we found no direct evidence of the costs of reintegration, either within the rail industry or in other sectors. However, as the associated activity is similar to that required for ownership unbundling, namely the legal and administrative work needed to introduce a change of ownership, we consider that the estimate of 0.2% of annual operating costs cited above provides a reasonable estimate of the costs of reintegration for any Member States that chose to do so. This effectively assumes that the cost of creating a vertically-integrated company is similar to the cost of winding-up such an entity.
- 6.72 On this assumption, there could be additional one-off costs of 0.2% of the operating costs of Member States in clusters C, D and E, or €0.03 billion, in either the baseline or in option U1. However, we suggest that reintegration would not be pursued in some Member States, particularly in Great Britain, where the associated political and legal barriers to such a policy would be considerable.

Options: unbundling: recurring enforcement costs

- 6.73 We also examined, for each option, the recurring enforcement costs of supporting the organisational and/or institutional changes reported in Table 6.7. These are separate from the transactions costs associated with the introduction of contractual and other arrangements, which we describe below.
- 6.74 We would expect that the enforcement costs would be related to the volumes of application, access and (as an indicator of the likelihood of disputes over resource allocation) congestion on the network. These drivers or enforcement costs may change considerably under future conditions of domestic market opening.
- 6.75 The literature review (see Appendix E) yielded very little evidence of the magnitude of recurring enforcement costs. Studies on the impact of unbundling tend to focus on overall cost impacts and do not distinguish between specific types of unbundling. We nevertheless identified some evidence based on the experience of unbundling in individual Member States.
- 6.76 Experience in Belgium, which has been subject to a detailed investigation by the National Bank of Belgium (see bibliography to Belgium country fiche), is particularly informative since it involved the creation of a holding structure that, at least in recent years, has been considered compliant with the requirements of Annex V. The restructuring of the incumbent rail organisation into a holding entity, SNCB-Holding, a Rail Undertaking, SNCB, and an Infrastructure Manager, Infrabel, took place in 2005. This structure was initially regarded as non-compliant with the requirements of the First Package, but in 2010 the Belgian government introduced byelaws whereby 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. We understand that the Commission now regards SNCB's structure as compliant and that Belgium was not among the thirteen Member States referred to the European Court of Justice for inadequate implementation of the First Package.

- 6.77 Figure 6.1 below shows the trend in SNCB Group's total operating costs over an eight-year period encompassing both the original restructuring and, at least in the final year shown, the introduction of restrictions on board membership with the holding group. This indicates that, at this level of aggregation, operating costs have been relatively stable, and that neither the restructuring nor the subsequent byelaws had a discernible impact on operating costs. We note, however, that it is not possible to draw firm conclusions from the data without controlling for other factors affecting year-to-year changes, such as increases in depreciation and maintenance of fixed infrastructure assets in 2009 and 2010.

FIGURE 6.1 OPERATING COST TOTALS FOR SNCB GROUP



Source: National Bank of Belgium Working Paper Document No 221 (2012)

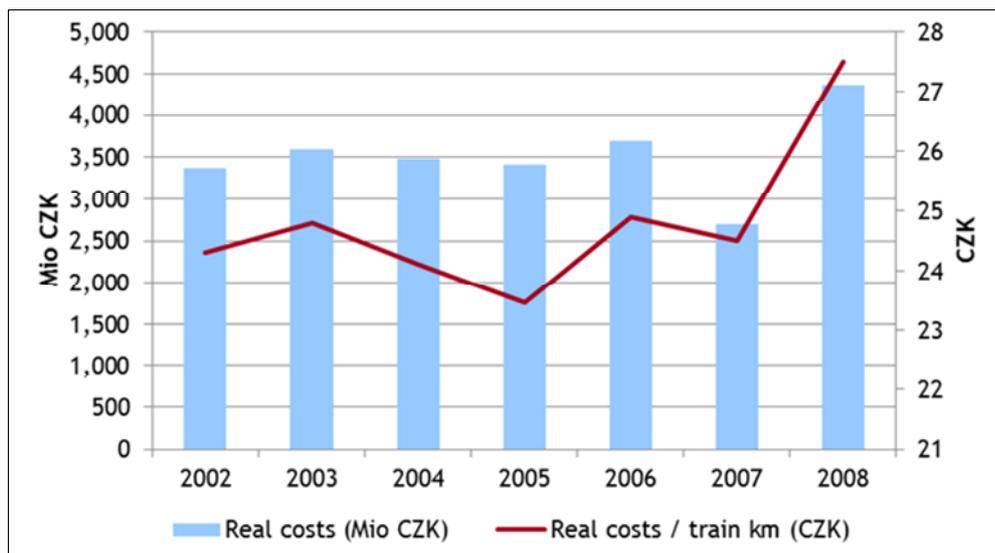
- 6.78 The authors of the report prepared for the National Bank of Belgium report some evidence of the impact of restructuring, in the form of a recent claim by the Chairman of SNCB-Holding that the restructuring had resulted in additional costs of €50-100 million per annum. These were attributed to the increased cost of IT services, communications and legal services, although the basis on which the estimate was derived is not clear. However, while costs of this magnitude, up to 1.4% of annual operating costs, could be considered significant, they apparently relate to the effects of the restructuring of SNCB in 2005 rather than the costs of ensuring compliance with the requirements of Annex V in isolation.
- 6.79 We also reviewed evidence of the impact of institutional separation of infrastructure management, drawing on evidence from the Czech Republic presented in Otáhal and Pospíšil (2009). Based on a comparison of costs in 2002 (the year in which the integrated Czech railway company was separated into České Dráhy, the national Railway Undertaking, and SZDC, the Infrastructure Manager) and 2007, the authors conclude that unbundling had the effect of increasing total operating costs by 26% and costs per train-kilometre by 15%. However, their argument rests on the contention that ČD is primarily focused on supporting the objectives of government employment policy rather than improving efficiency. They provide no evidence that operating costs increased as a direct result of unbundling in 2002. Rather, the trend in infrastructure operating costs that they

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report, shown in Figure 6.2 below, suggests that restructuring in 2002 had no material sustained impact.

- 6.80 In any event, the analysis is again of little value in estimating the recurring enforcement costs of options U1 and U2, since the restructuring of 2002 involved more fundamental unbundling in response to the requirements of the First Package. Subsequent organisational changes, for example the transfer of timetabling activity to SZDC in 2008, are similarly unrepresentative of the implementation of the specific requirements identified in Table 6.7 above.

FIGURE 6.2 OPERATING COSTS OF RAIL INFRASTRUCTURE IN CZECH REPUBLIC



Source: Otáhal and Pospíšil (2009)

- 6.81 In summary, we found no evidence that implementation of either option U1 or option U2 would result in material, recurring enforcement costs over and above any already incurred as a result of compliance with existing legislation.

Options: unbundling: recurring transaction costs

- 6.82 Recurring transaction costs can be more easily quantified on the basis of recent research. The study by Merkert et al. (2012) provides relatively robust estimates since it is based on bottom-up investigation of costs through interviews with individual rail organisations in Germany, Great Britain and Sweden. This allows a more precise identification of relevant cost categories than in other, more high level, studies. However, the resulting estimates do not align with the additional transactions costs likely to arise under either option U1 or option U2. We found no other study of transactions costs in the European rail sector at this level of detail⁷.
- 6.83 The key results, expressed in the form of transaction costs per train-kilometre and as a proportion of total operating costs, are shown in Table 6.8.

⁷ An earlier “top-down” study by Merkert (2010) suggests that associated staff costs may be between 4% and 10% of total system costs. However, these estimates, which were also made only for Germany, Great Britain and Sweden, relate to a much wider group of activities than those arising from the unbundling of infrastructure.

TABLE 6.8 TRANSACTION COSTS IN THE RAIL INDUSTRY

	Transaction costs per train-km (€, Purchasing Power Parity PPP)	Transaction costs as a share of operating costs (%)
Germany	€0.08	0.49%
Great Britain	€0.34	1.42%
Sweden	€0.22	1.27%

Source: Merkert et al. (2012)

TABLE 6.9 TRANSACTION COSTS AND FURTHER UNBUNDLING

Transaction cost category	Summary of likely impact
Franchise and transport contract bidding and making open access applications	Overall process should not differ materially from that already in place. These costs are driven primarily by the level of application, access and congestion rather than the level of unbundling.
Procuring and modifying assets	Possibly some additional transactions costs incurred under option U2 where new or modified assets affect the wheel-rail interface.
Setting up and amending access and performance regimes	No significant additional costs under either option U1 or option U2 - performance regime already required under existing legislation.
Allocating train paths, timetabling and train planning	Should not differ materially from existing processes under either option U1 or option U2, although any associated disputes may be more costly to resolve under option U2.
Day-to-day operations (including train operation/formation, maintenance and the provision of customer information)	Operational procedures already in place should continue to operate, although disputes over scheduling of engineering works may be more difficult to resolve under option U2.
Reporting, billing and application of performance regimes	Existing procedures should continue to apply, although disputes over responsibility for service disruption could be more difficult to resolve.
Safety, planning and enforcement processes	No material change under either option U1 or option U2. Planning in respect of issues relating to the wheel-rail interface might be affected.

6.84 The cost categories included in the study are set out in Table 6.9, with our summary of the extent of changes which would be incurred with further unbundling. In each case, we summarise the impact of further unbundling, drawing on a more comprehensive qualitative assessment of the likely effects of policy changes on transactions costs reported in Appendix Table G.4.

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- 6.85 Table 6.8 indicates that, on either measure, the German rail network has the lowest transactions costs and Great Britain has the highest. This is consistent with the view that a more disaggregated industry structure leads to higher transactions costs, although the authors qualify the comparison by noting that the German network may benefit from scale economies and that there is in any case considerable variation in the level of transactions costs between individual rail organisations in Germany.
- 6.86 Table 6.9 shows, however, that the study does not provide direct evidence of the transactions costs arising from either option U1 or option U2. This is because not all the costs considered in the study would be incurred as a result of further unbundling:
- Some costs are driven primarily by factors other than the degree of institutional separation in place
 - Other costs arise, at least to some degree, from EU rail legislation that is already in place
- 6.87 On the basis of this assessment, we conclude that the majority of transactions costs covered by the study would not increase as a result of the implementation of either option U1 or option U2, and that the estimates derived by Merkert et al cannot be used for the purposes of the Impact Assessment without some adjustment. The adjustments, applied in order to derive appropriate assumptions for the quantification exercise, are discussed further below.
- 6.88 Recognising that the findings of the study by Merkert et al. are based on an investigation of transactions costs in only three Member States, and in the absence of similar detailed investigation of rail industry transactions costs in other EU countries, we sought to identify evidence of similar costs in other sectors. A number of the studies of the electricity sector cited above provide estimates not only of the one-off unbundling costs already reported but also of transactions costs. Again, we consider this evidence to be informative since some studies take account of the implications of different levels of unbundling. Key results are summarised in Table 6.10 below.
- 6.89 Note that these estimates cover all recurring costs. The studies cited do not distinguish between enforcement and transactions costs or between the explicit costs of supporting a given organisational structure and loss of synergy. However, costs are attributed to specific categories of activity including general management, human resources, IT, finance and general support.
- 6.90 This evidence suggests a range of possible outcomes but supports the view that the costs of further unbundling after functional separation has already been implemented amount to no more than 0.5% of annual operating costs.

TABLE 6.10 RECURRING COSTS IN THE ELECTRICITY INDUSTRY

Unbundling example	Estimated cost	Scale factor	Comment	Source
Creation of distribution Network Operators in the Netherlands	€350-450 million per annum	3.5-4.5% of annual operating costs	Full costs of organisational unbundling	Deloitte (2005)
Further unbundling of Distribution Network Operators in the Netherlands	€20 million	0.2% of annual operating costs	Estimate of moving to unbundling of ownership after functional unbundling has been completed	De Nooij and Baarsma (2008)
Further unbundling of Transmission System Operators in Germany	€50 million	0.1% of annual operating costs	Base case estimate - explicitly based on estimates made by De Nooij and Baarsma (2008)	Brunekreeft (2008)
Further unbundling of Transmission System Operators in Germany	€250 million	0.5% of annual operating costs	High case estimate based on top-down analysis	Brunekreeft (2008)

Source: Brunekreeft (2008)

Options: unbundling: recurring costs summary

Option U2

6.91 We applied the evidence reported above to derive a range for the assumed level of recurring costs, including both enforcement and transactions costs, as a result of implementing option U2. The key evidence can be summarised as follows:

- The costs of functional unbundling could be significant, and in the electricity sector have been estimated at up to 3.5% of annual operating costs (Table 6.6). We found no evidence that the costs of unbundling in the rail sector to date are of this magnitude. Evidence from Belgium suggests that they are no more than 1.4% of operating costs (6.78). In any event, the costs of functional separation can be expected to exceed substantially the costs of the ownership unbundling envisaged under option U2.
- Evidence from the rail sector indicates that additional transactions costs in Sweden, which has implemented institutional separation, account for a higher proportion of annual operating costs than in Germany under a holding company model. However, the difference, equivalent to 0.78% of operating costs (Table 6.8), undoubtedly overstates the impact of ownership unbundling in isolation since it includes costs that are driven primarily by the level of competition. The difference in transactions costs between Germany and Great Britain, equivalent to 0.93% of operating costs (Table 6.8), further overstates the impact since it reflects the complex nature of the contractual structure put in place following the restructuring and privatisation of British Rail.

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- Further evidence from the electricity sector indicates that the cost of ownership unbundling implemented following functional separation of transmission and distribution has resulted in recurring costs of between 0.2% and 0.5% of annual operating costs (Table 6.6).

6.92 For the purposes of the quantified Impact Assessment reported in Chapter 7, we based our estimate on the difference in normalised transactions costs between Germany and Sweden derived from the study by Merkert et al., equivalent to 0.78% of operating costs (Table 6.8). Given the lack of precision in the available cost estimates, however, we calculated a relatively wide range of recurring costs, informed by the following considerations:

- The study by Merkert et al., while it is the most detailed available and the most relevant for the purposes of the assessing the costs of the options under consideration, covers only three Member States, and it is therefore necessary to estimate a relatively wide range of outcomes to ensure that potential cost impacts in other Member States are represented.
- Our assessment of the likely impact of option U2 on the various cost elements included in the study nevertheless suggests that any increase in transactions costs will be limited. Our review of the evidence on enforcement costs also suggests no discernible impact on annual operating costs. Our proposed range is therefore based on a significant adjustment of the transaction cost differences reported by Merkert et al.
- The proposed range is consistent with a similar range estimated for ownership unbundling in the electricity sector (of between 0.2% and 0.5%), as reported by Brunekreeft (2008) (Table 6.6).

Conclusion

6.93 On this basis we adjusted the figure of 0.78% as follows:

- As a lower bound, we took 20% of the figure, or 0.16% of operating costs
- As an upper bound, we took 60% of the figure, or 0.47% of operating costs

6.94 Applying this range to the annual rail sector operating costs of Member States in clusters A and B gives a recurring cost impact of option U2 of between €0.05-0.16 billion per annum. These costs are included in the quantitative Impact Assessment reported in Chapter 7.

Option U1

6.95 We did not find any evidence relating specifically to the costs of implementing arrangements designed to reinforce organisational separation analogous to the requirements of Annex V. Many organisations implement so-called Chinese walls in order to preserve confidentiality or decision-making independence, but do not seek to estimate or report the associated costs.

6.96 However, the costs of implementing option U1 will be restricted to those of introducing decision-making independence in maintenance planning and investments. In our view option U1 could be expected to have broadly similar cost impacts to option U2, since it would require the incumbent Rail Undertaking and Infrastructure Manager to operate as if they were institutionally independent even

though they remained in the same holding group. We therefore consider the range of cost impacts estimated for option U2 to be broadly equivalent to those for option U1. We note that option U1 transactions costs could be somewhat lower to the extent that the lack of institutional separation enabled disputes over train planning, the cause of service disruption or the scheduling of engineering works to be resolved more easily. We would not expect any associated cost savings as compared with option U2 to have material effect for the purposes of the Impact Assessment.

Conclusion

6.97 Option U1 could be expected to have broadly similar recurring enforcement and transaction cost impacts to those of option U2:

- As a lower bound, 0.16% of operating costs
- As an upper bound, 0.47% of operating costs

6.98 We also note that we would not expect that any Member States that chose to reintegrate under a holding model following the implementation of option U1 would secure any material reductions in transactions costs.

Options: unbundling: recurring savings in regulatory cost

6.99 The evidence in Appendices F and G suggests that further unbundling is likely to:

- Address a number of the issues highlighted by the problem tree in Figure 4.7
- Help to meet a number of the objectives listed in Table 5.3
- Give rise to a number of benefits for the European rail industry

6.100 Option U2, in particular, could be expected to:

- Reduce or even eliminate the scope for discriminatory behaviour of the kind reported in Appendix F (F2.4 to F2.38), and provide for the more effective development of competition for, and in, the market, relative to a scenario in which market opening measures were implemented in isolation.
- Improve the allocation of public funds to, and within, the rail sector by providing decision-makers within the relevant Competent Authorities with more transparent financial information. As we discuss further from paragraph 7.65, there could be greater transparency in the costs associated with infrastructure and with railway operations.
- Reduce the costs of regulatory enforcement of market opening, both by eliminating the incentive for discriminatory behaviour and improving the financial information available to regulators.

6.101 The benefits of improving the impact of market opening can be demonstrated by comparing the estimated outcomes of a specific form of market opening with and without unbundling, which we consider in the quantitative Impact Assessment in Chapter 7.

6.102 We consider that the institutional separation envisaged under option U2 is an important precursor to the delivery of the full benefits of market opening, and that without it effective competition is likely to develop more slowly.

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- 6.103 We also considered the scope for reductions in the recurring costs of regulatory enforcement, which can be estimated from the study by Merkert et al. (2012).
- 6.104 The study included regulatory costs in the calculation of overall transactions costs shown in Table 6.8, but reported them separately, as shown in Table 6.11. While the authors note that they cannot be certain of whether all of the associated staff within the various regulatory organisations are involved in transactions relevant to the study, they consider that the costs shown provide a reasonable basis for comparing between Member States.

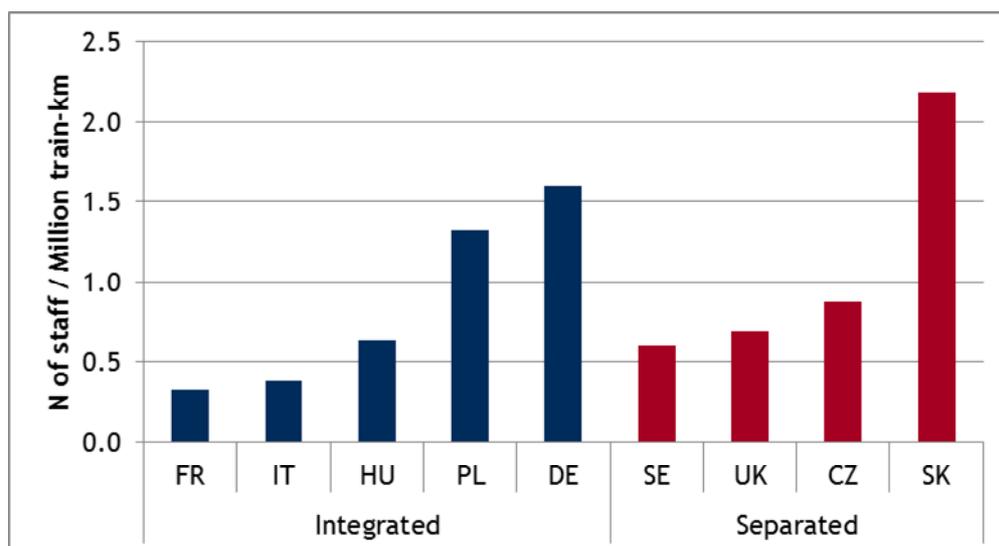
TABLE 6.11 RECURRING ENFORCEMENT COSTS IN THE RAIL INDUSTRY

	Total transaction costs per train-km (€, Purchasing Power Parity PPP)	Regulatory enforcement costs per train-km (€, Purchasing Power Parity PPP)
Germany	€0.08	€0.08
Great Britain	€0.34	€0.08
Sweden	€0.22	€0.02

Source: Merkert et al. (2012), total transaction costs are repeated from Table 6.8

- 6.105 Again, the results must be interpreted with particular caution in the context of the Impact Assessment, since the Member States do not align with either the existing requirements or the unbundling options under consideration. In addition, given the qualification offered by the authors of the study and for other reasons, the findings may understate or overstate true regulatory costs within each Member State. For example, we note that:
- The costs reported for Germany relate only to rail-specific organisations, the Federal Network Agency (BNetzA) and the Federal Railway Authority (EBA), and do not include the cost of court action in response to discriminatory behaviour (an important channel of enforcement in the absence of institutional separation according to the study by Merkert et al. (2008) (see Appendix E5)).
 - The costs reported for Great Britain include the staff employed by the Rail Safety and Standards Board (who account for 37.5% of the cost per train-kilometre shown in the table) who would arguably undertake similar functions whether institutional separation had been implemented or not.
 - As noted above, the level of enforcement costs would be related to the volume of application, access and congestion on the network, which may change considerably under future conditions of domestic market opening.
- 6.106 Nevertheless, the difference in cost estimates for Germany and Sweden reported in Table 6.11 suggest that enforcement costs per train-kilometre could decline by up to 75% as a result of institutional separation. This is consistent with a lower incidence of discriminatory or other anti-competitive behaviour on the part of an Infrastructure Manager under option U2.
- 6.107 We sought to identify further evidence of a reduction in regulatory activity by comparing the number of regulatory staff, normalised by reference to train-kilometres, across a wider group of Member States. The results of this analysis are shown in Figure 6.3 below.

FIGURE 6.3 REGULATORY RESOURCES BY MEMBER STATE



Source: Steer Davies Gleave note for European Parliament on Typology and Structure of Regulatory Bodies in EU Rail Sector (2011)

- 6.108 This evidence offers no clear conclusions on the level of regulatory intervention in different Member States.
- 6.109 In practice, comparisons of this kind must be qualified for a number of reasons:
- It is not possible to identify the precise roles of individual regulatory staff, many of whom are engaged in activities other than the investigation of discriminatory and other types of anti-competitive behaviour.
 - The number of staff engaged in competition issues will be determined to some degree by the level of competitive activity (and hence application, access and congestion) in the Member State concerned, rather than the extent of unbundling.
 - Regulatory institutions in some Member States may be under- or over-resourced at any point in time, so that staff numbers do not provide any guide to the efficient level of regulatory activity for a given level of unbundling and competitive entry.
- 6.110 We nevertheless consider that institutional separation would reduce the need for regulatory intervention for any given level of competitive entry since it would remove the incentive for discriminatory behaviour. As discussed in the relevant country reports in Appendix J, competitive entry in Member States such as Austria, Germany and Italy has gone hand-in-hand with increasing complaints by new entrants concerning access to infrastructure and an increasing need for regulatory decisions. For example, since it introduced new intercity services in Austria, the new entrant WESTbahn has raised complaints about pathing priorities, the use of infrastructure to provide real time information on onward connections, promotion of services through on-station advertising and alleged cross-subsidisation of ÖBB services from a PSO contract awarded without competitive tender. In our view, the need for regulatory intervention would have been less had these Member States adopted the institutional separation of infrastructure management and rail operations required under option U2.

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- 6.111 In the absence of reliable data on the likely incidence of regulatory intervention, we made working assumptions about the costs of such intervention under the options to be examined in the quantitative Impact Assessment. Under market opening without unbundling, and based on observation of regulatory activity in Member States where increasing entry has occurred in recent years, we judged that one in ten instances of competitive entry, or 10%, triggers regulatory intervention.
- 6.112 We discuss next how we consider that this might change with options U1 and U2.

Regulatory enforcement costs in option U1

- 6.113 Under option U1, the vertically-integrated structures adopted by Member States in clusters A and B in Table 6.2 could be expected to remain, although we would expect some increase in financial transparency, which would assist regulatory bodies investigating complaints about discriminatory behaviour. In these circumstances the incentive to discriminate would continue to operate, although the opportunity to do so might be reduced by the organisational separation required by Annex V of COM(2006) 189. In addition, we note that some of the instances and allegations of discriminatory behaviour described in Appendix F relate to pricing and access to the network, which are already subject to independent decision-making, as well as to other aspects of infrastructure management. This suggests that extending requirements in respect of independent decision-making to maintenance planning and investments would not necessarily reduce allegations of discrimination relating to these functions.
- 6.114 In conclusion, and given these considerations, we would not expect the costs of regulatory enforcement under option U1 to be materially lower than those arising without it.

Regulatory intervention in option U2

- 6.115 From our observations of regulatory activity in the relevant Member States, we judged that option U2 might result in a halving of the need for regulatory intervention, from 10% under market opening without unbundling to 5%, or one in twenty instances of competitive intervention triggers an intervention, where market opening and institutional separation and are both introduced.

Options: unbundling: summary of one-off and recurring costs

- 6.116 Table 6.12 below summarises our conclusions on the likely scale of:
- The one-off costs of unbundling
 - The recurring enforcement and transaction costs
 - The potential saving of regulatory costs in relation to the workload (application, access and congestion) with market opening

TABLE 6.12 ONE-OFF AND RECURRING COSTS SUMMARY

Cost	See	Scaling factor	U1	U2
One-off	0	Annual operating costs	0.5%	0.7%
		Actual expenditure	€0.17bn	€0.24bn
Recurring enforcement /transaction	6.93	Annual operating costs	0.16%-0.47%	0.16%-0.47%
		Actual expenditure	€0.05-0.16bn	€0.05-0.16bn
Recurring regulatory	6.114 6.115	Reduction in proportion of entry requiring intervention (see 6.111)	0%	50%

Note: excludes costs of reintegration, see 6.72. For definitions of options see Table 6.4.

Options: unbundling: coordination body

- 6.117 Past research (Preston, 2002; European Commission, 2006) on unbundling and vertical separation (which we set out in Appendix G) states that one of its main shortcomings is the lack of coordination within an industry that follows after infrastructure has been separated from operations. The increased interfaces between the various parties in the industry can create coordination problems, for example in relation to settling disputes or agreeing a timetable in circumstances where several operators use the same infrastructure.
- 6.118 In order to address this shortcoming the Task Specifications for this study required that we assess “...the possibility to create a specific body including, in a non-discriminatory manner, representatives from all infrastructure users and ensuring that their interests are duly taken into consideration.”
- 6.119 The Task Specifications also note that “...such a measure could be envisaged as a way to mitigate the potential risks associated to separation, in particular the lack of coordination between infrastructure managers and transport operators”.
- 6.120 This section of our analysis examines the potential value of such a body and considers evidence of where there has been a lack of coordination, what has been done to address this, and where a body as envisaged above may mitigate risks associated with a lack of coordination between infrastructure managers and transport operators.

Stakeholder consultation

- 6.121 The stakeholder consultation asked (Question 5.7, see Appendices A and B) “Would you support the creation of a specific body including, in a non-discriminatory manner, representatives from all infrastructure users to ensure that their interests are duly taken into account?” We noted in Appendix A (A7.16 to A7.17) that 88% of respondents answered this question: 65% said “Yes” and 35% said “No”.
- 6.122 Stakeholders also made a number of comments in response to Question 5.7, which we summarise in Table 6.13 below.

TABLE 6.13 STAKEHOLDER COMMENTS ON COORDINATION BODY

Comments (in some cases abbreviated)

Comments (in some cases abbreviated)

1. Against, on grounds that Regulatory Bodies already ensure non-discrimination

The Regulatory Bodies in the Member State already ensure a fair and non-discriminatory access to the rail network and services.

This task is already covered by the Regulatory Body.

An independent regulator ensures that there is no discrimination.

2. Against, on grounds that this would be additional bureaucracy and/or costly

Actors already cooperate in a consensus-based manner and there is no evidence of discrimination. Therefore, such a body would only create more bureaucracy where it is not needed. It will also increase costs for the taxpayer and create more inefficiency in the whole system.

This may be of benefit but it should aim to avoid the creation of a bureaucratic institution which will obstruct rather than promote an efficient railway sector.

Infrastructure managers need to be directly accountable to their customers and responsive to their needs.

The existing structure ensures non-discrimination so there is no need for a new body. To enable this will require additional funding at a time of severe fiscal constraint.

Such a body should have consultative powers and be fully representative in order to keep the timing and the costs of consultation processes at acceptable levels

3. For, but recommending or proposing only a consultation of advisory body

Whatever the form of railway organisation, synergy with all “players” is a common requirement. The more integrated the solution, the less this need will be apparent.

It has been suggested that a united manager should be flanked by a consultative body with regard to system operation. The idea is based on the port development councils currently operating in France.

The main role of the “railway development council” would be to establish or confirm a code of railway practice setting out user rules and priorities, to make recommendations on capacity planning and priority and allocation rules, investment projects on the basis of an assessment of their socio-economic impact, and the impact on the train diagram on line commissioning.

Improve the governance and legitimacy of infrastructure investment decisions by involving all infrastructure users in a non-binding manner.

Whatever the form of Infrastructure Manager / Railway Undertaking integration, we welcome any arrangement likely to ensure that Infrastructure Managers take account of all railway undertakings’ needs and concerns.

In Latvia an advisory council already exists, consisting of railway undertakings, the performer of essential functions, incumbent associations, railway administration and technical inspection representatives.

Comments (in some cases abbreviated)

For, but concerned how governance would protect smaller operators

The railway market consists of a few large operators (incumbent operators in a Member State) and a concern is that a specific body would be dominated by the larger operators.

Ensure that the infrastructure manager takes duly into account the market needs of the operators. Trasse Schweiz (Switzerland) for example integrated therefore the association of all incumbent and non-incumbent operators into the ownership by a minority shareholding.

Infrastructure Managers are uniquely powerful actors in the system and must not be allowed to become free-floating monopolists answerable to no one except the Ministry.

4. For, at least for coordination in real-time train control

In an open market where many actors operate, there is a strong need for coordination in the field of path allocation, traffic management, maintenance and infrastructure investments.

All Railway Undertakings should be represented in the traffic control room on the case of open access.

5. For, but favours wide membership

Should include both operators and Competent Authorities

- 6.123 We have grouped the comments above into a number of themes, which we refer to further below. We note, however, that none of the stakeholders put forward a specific proposal for what powers a new body would have or how it would be governed.

Bureaucracy and cost

- 6.124 We have not attempted to estimate the additional costs of establishing a new body. The net costs of such a body would depend on the number of actors and on the detail of whether any of its functions were transferred from existing bodies or arrangements, although we note that where such functions were specified in legislation it would be necessary for additional legislation to arrange the transfer of powers.

Duplication

- 6.125 A number of stakeholders pointed out that such a body might duplicate existing functions, in particular those of the Regulatory Body.

Governance

- 6.126 Our initial thinking related to the possible powers or governance of such a coordination body. However, a number of stakeholders made clear that they saw this as a potential difficulty. None suggested any specific governance arrangements, possibly because many assumed that the body would only have a consultative or advisory role.
- 6.127 If the body were to be given any authority or powers, there would need to be careful consideration as to the structure of decision-making, or voting rights. In particular, it would be important to ensure that the interests of small operators
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were taken into consideration. Such authority or powers would also need to be aligned appropriately with those of the relevant Regulatory Body.

- 6.128 One option would be to make it a requirement that all decisions would be made by consensus, effectively giving small Railway Undertakings and even prospective applicants a veto. However, the practicality of this is may be problematic in all but the simplest of national systems.

The need for coordination

- 6.129 In principle, there may be a need for coordination within any industry separated into multiple actors, and it might be expected that evidence for such need in the railway industry would be greatest in those Member States that have separated and where full institutional separation has taken place.
- 6.130 Operation of the railway involves a series of interrelationships, and there is a need to ensure that those relationships operate effectively and efficiently. In a competitive and institutionally separated market, the ability for all users of the infrastructure to work together in a coordinated and constructive manner has significant merit. Where there are many users of a network, the ability to understand the priorities and challenges facing the railway will provide a better basis on which the industry can respond.
- 6.131 A coordination body will not generate all the answers. Indeed, there is a risk that as a more open railway attracts more users, the number of interfaces makes it increasingly complex for incentives to become aligned between all parties. But, a coordination body may facilitate an environment in which policy and operational issues affecting a cross-section of the rail industry can be addressed with a common purpose.
- 6.132 To be effective, a coordination body might need careful design, especially as the more users exist in a network the more interfaces will emerge. Key questions that need to be considered are:
- How large can a coordination body become before it inevitably becomes more of a discussion or consultation forum than a decision-making one?
 - How does the body ensure fair representation of all passenger and freight users when there are many parties with different degrees of interest in the network. For example, how will powers be balanced between a former incumbent operating over 90% of the train-kilometres, an applicant proposing to operate passenger services between two cities, and a freight undertaking with infrequent or irregular operations within a single Member State?
 - What powers does the coordination body have in relation to those of a Regulatory Body?
 - Should the Regulatory Body ensure that there is no discrimination within the coordination body?

Existing coordination bodies

- 6.133 We reviewed evidence for the existence of a need for coordination, and processes or bodies that deal with it, in a number of Member States, including all those which have full institutional separation as envisaged in option U2. We looked

specifically for examples of coordination processes or bodies including Infrastructure Manager and Railway Undertakings. We discuss our findings on each Member State in turn below.

Denmark

- 6.134 In Denmark the national transport authority, Trafikstyrelsen, was established in 2003, is reported to have recruited capable staff, and is now well-established. Trafikstyrelsen and the Regulatory Body, Jernbanenævnet, established in 2010, have powers over Infrastructure Manager Banedanmark in a number of areas. For example:
- Processes for network change are specified in the access contract. Banedanmark is required to consult Railway Undertakings and Competent Authorities before making changes, but also has to submit plans to Trafikstyrelsen for approval. Closure of lines requires Parliamentary approval
 - The planning of infrastructure capacity is led by Trafikstyrelsen, so that Railway Undertakings or Competent Authorities can negotiate for additional capacity from Trafikstyrelsen rather than directly with Banedanmark. Trafikstyrelsen remains in control until the end of the planning phase before handing to Banedanmark a specification for renewal and enhancement work and an agreed level of funding. Banedanmark must then construct the new infrastructure in and around its operation, maintenance and renewal of the “live” railway. It must also report regularly on expenditure and progress and inform Parliament of any major overruns.
 - Responsibility for setting access charges lies with Trafikstyrelsen (Access charges are paid not to the Infrastructure Manager but direct to the Ministry of Finance).
 - The technical norms and standards applied by Banedanmark are approved by Trafikstyrelsen. Subject to these norms and standards, it subcontracts not only the engineering design and construction of infrastructure enhancements but also track renewals and at least some types of infrastructure maintenance. We were told that these arrangements worked well and that the key issue was the ability of the Infrastructure Manager to choose whatever approach was appropriate.
 - Jernbanenævnet is now responsible for the design of the performance regime.
- 6.135 In summary, Denmark has already allocated many of the issues of coordination to bodies other than the Infrastructure Manager, and in particular Trafikstyrelsen, which is responsible for coordination not only within the rail industry but also with other transport sectors.

Netherlands

- 6.136 In the Netherlands the Infrastructure Manager ProRail and incumbent Railway Undertaking NS have been separated since 2001 and do not share offices or board members.
- 6.137 Arrangements in the Netherlands are broadly similar to those in Denmark, with the Ministry of Infrastructure and the Environment responsible for awarding the national PSC and holding 90% of the shares in Infrastructure Manager ProRail.

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- 6.138 Following the implementation of unbundling, Steenhuisen and de Bruijne (2009) observed that NS's punctuality fell from above 86% in 1999 to below 80% in 2001. In addition, Mulder et al. (2005) indicated that the reliability of rolling stock and infrastructure deteriorated due to excessive rationalisation, resulting in poor levels of punctuality (the paper quotes a fall from 86% in 1999 to below 80% in 2001). This poor performance has been attributed to a focus on rationalisation of the infrastructure without a coordinated view of what the main operator wanted in terms of infrastructure quality. This was also tied with uncertainty around investment in the infrastructure that delayed investment in rolling stock. Passing of investment decisions to ProRail enhanced the need for coordination in this respect.
- 6.139 Following these poor levels of punctuality, the industry took steps to ensure that there was further coordination in the industry. These steps are set out in a paper by Delft University of 2005 which lists:
- The "Use and Build" vision developed by the main industry players and the Ministry of Transport
 - The "Working Together" initiatives where the main operators meet quarterly to discuss interfaces and assess progress with the "Use and Build" vision
- 6.140 In addition, ProRail has received regulatory approval to collaborate with Railway Undertakings in the Operational Control Centre Railway (OCCR) established in 2010, which deals with rail disruption, such as a computer failures in the rail control centre. ProRail has been permitted to enter these arrangement subject to:
- Guaranteeing capacity allocation in an independent and non-discriminatory manner
 - Preserving confidential information
 - Charging Railway Undertakings the costs of the OCCR through an infrastructure charge
 - Including all information regarding the OCCR in the Network Statement
- 6.141 ProRail's 2012 Network Statement describes OCCR as including a national control room in a shared workspace on the handling (and anticipation of) disruptions, disasters and other exceptional situations, open to all Railway Undertakings operating on the railway network.
- 6.142 However, while it may be possible to have a national control room in networks the size of the Netherlands, regional or local ones may be necessary in larger networks.
- 6.143 The Regulatory Body NMa has powers to examine and impose fines with regard to:
- The content of the network statement
 - The infrastructure allocation processes
 - The charging framework
- 6.144 In summary, operators have voiced concerns not only about ProRail's neutrality with regard to capacity allocation but also about NS's involvement in the Operational Control Centre Rail. This highlights the issue of the governance of any coordination body and in particular the extent to which it can be dominated by an

incumbent or dominant national, regional or local operator at the expense of smaller operators.

- 6.145 However, this issue is dealt with by conditions imposed by NMA rather than merely relying on a coordination body which an incumbent might dominate.

Sweden

- 6.146 Arrangements in Sweden are not static and have continued to develop since the initial separation of Infrastructure Manager from Railway Undertakings. Changes have been made to the number and roles of national bodies with a role in coordination of the industry.

- 6.147 The current arrangements are that the national transport administration, Trafikverket, is also the Infrastructure Manager, combining many of the functions performed in Denmark by Trafikstyrelsen and Banedanmark. However, current Swedish legislation also allocates some responsibilities to the Regulatory Body, Transportstyrelsen which:

- Examines the Network Statement (and has imposed changes to it)
- Oversees the infrastructure allocation process
- Examines timetable compilation and application
- Oversees the charging system

Great Britain

- 6.148 Arrangements in Great Britain are complex, but the Regulatory Body, ORR, has at least some degree of oversight of all the issues set out in the Commission's proposals for a coordination body. Other key points are:

- The Regulatory Body imposes on the Infrastructure Manager specific duties to coordinate or consult where necessary, through a licence condition
- The extensive use of consultation, which is often public and not limited to existing or applicant Railway Undertakings

- 6.149 While Infrastructure Manager Network Rail meets the Railway Undertakings in a variety of fora at national and regional level, there is no single national coordination body at which all Railway Undertakings are entitled to be represented.

- 6.150 However, arrangements in Great Britain have not been static and have changed a number of times since the initial restructuring following Directive 91/440/EC. Even as recently as 2011, the Government-initiated "McNulty" Rail Value for Money Study of the industry concluded with many recommendations, including that a new industry body (the Rail Delivery Group) should be established to coordinate the industry's efforts to improve efficiency, and that there should be closer coordination between the Infrastructure Manager and Railway Undertakings.

Rail Delivery Group

- 6.151 The formation of the Rail Delivery Group was announced on 19 May 2011. Its terms of reference specify that:

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- Its membership consists of nominated Chief Executives or Board Directors of the Infrastructure Manager and the major (but not all) operating groups, but not the government, the Regulatory Body or external representatives
 - It will not duplicate or override existing primary accountability
 - It will coordinate the activities of other key cross-industry groups
 - It will conduct reviews of the Rail Value for Money Study and the other cross-industry groups
 - Other bodies will provide it with support
 - It will have a Chairman and a vice-Chairman, rotating on an annual basis
 - It will meet every two months
- 6.152 The Rail Delivery Group publishes its proceedings, but membership is voluntary and by invitation rather than a duty or right. It is not defined specifically as a coordination body, and has duties but no explicit powers, which instead derive from the executive powers of its nominated members, who represent only the major industry parties. It has published its own priorities, which broadly focus on coordinating industry efforts to improve costs and value for money. While its workload will focus on strategic issues, the consequences of the Group's work have yet to materialise.
- 6.153 In July 2012 the Office of Rail Regulation began consultation on proposals to formalise the Rail Delivery Group into a company limited by guarantee and in particular to place an obligation on "key industry players" to participate by the introduction of a licence condition requiring participation in the group.
- Alliance arrangements
- 6.154 A further idea promoted by the Rail Value for Money Study was the concept of alliancing in which the infrastructure manager and users of the network in regional areas work more closely together to improve performance and the efficiency of the network.
- 6.155 This concept has been implemented in one part of Great Britain with Stagecoach, the operator of the South Western franchise (PSC) and Network Rail forming a combined coordination body to manage the operations of the business on the network over which South Western services operate. All other passenger and freight operators using the infrastructure involved are kept informed of the activities of the alliance, which is subject to regulatory approval and oversight.
- 6.156 This form of regional coordination body is in its infancy, but initial reports are that it is having a positive effect in improving working relationships, and increasing efficiency and performance between the infrastructure manager and the operators for the benefit of the passengers and freight customers.
- Other Member States and railways referred to by stakeholders*
- 6.157 Stakeholders refer to a number of bodies which they considered performed some coordination role including:
- Regulatory Bodies, which some argued already have, or should have, the relevant powers to ensure non-discrimination
 - Railway Network Europe (RNE), European Rail Infrastructure Managers (EIM), Community of European Railway and Infrastructure Companies (CER), as

examples of bodies which already exist, although these are all international bodies

- An advisory council in Latvia

6.158 In France, a proposed “Railway Development Council”, modelled on port development councils, would be attended by a wide range of bodies. However, we understand that details proposals have not yet been defined. We also note that the proposed attendance, at least based on that of port development councils, may extend beyond the Commission’s proposed focus on Infrastructure Manager, Railway Undertakings and passenger and freight representatives.

6.159 In Switzerland, Trasse Schweiz’s role focuses on the independent allocation of infrastructure capacity and proposing action on congested routes, but has no role or powers relating to infrastructure charging or performance. This is consistent with its role as an independent capacity allocator but much more restricted than the role proposed by the Commission.

Summary

6.160 Our review of published documentation has shown that a need for coordination has been identified, particularly in the Netherlands and Great Britain, but also in Denmark and Sweden.

6.161 Coordination processes at regional and local level exist in a number of Member States, particularly in relation to activities which are, by their nature, related to a limited part of the network and hence only to those making use of that part of the network:

- Real time control
- Emergencies and disasters
- Possessions and maintenance planning
- Enhancement and investment planning

6.162 The evidence of the Member States which have implemented full institutional separation is that formal responsibility for coordination issues lies in the hand of one or both of:

- The Regulatory Body
- The national transport authority or Ministry

6.163 This does not mean that there are no bodies, organised or chaired by the Infrastructure Manager, with roles of coordination or consultation in one or more areas. However, we have identified no such bodies which are referred to directly in industry legislation, other than to the extent that they are a licence condition of the Infrastructure Manager, as in Great Britain.

The potential role of a specific coordination body

6.164 Given the proposals, in option U2, for institutional separation applying to all functions of the Infrastructure Manager, consideration should be given to making specific provisions to maintain effective coordination between the Infrastructure Manager and infrastructure users. The Commission recognises the importance of

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this objective and suggested a potential model for an independent body to support this aim, as described in Figure 6.4 below.

- 6.165 The creation of such a body at Member State level would provide the platform for all industry players to interact and find solutions to network management problems without having to proceed with lengthy appeals to Regulatory Bodies or to national courts. It is clear that not all disputes will be resolved within this context, but one possibility is that it could reduce the number of complaints forwarded to the Regulatory Body.
- 6.166 There would be costs associated with the set-up of such a coordination body. This would, amongst other items, include:
- Administration costs of meeting invitations, agendas, minutes and organisation
 - Attendance of meetings by members of the coordination body, both in terms of cost of attendance and the opportunity cost from diverting time away from other activities
 - The position of a Chairman who might be remunerated on an independent basis
 - Additional work and activities needed to ensure that the actions and issues arising from the new body are undertaken and delivered
- 6.167 We would expect there to be a number of savings that could be made, though these are equally intangible. These might include:
- Savings in references to the Regulatory Body of cases of discrimination or other concerns
 - Ability for the Infrastructure Manager and other parties to meet and resolve issues at one time rather than many bilateral meetings and/or exchanges
- 6.168 On balance, while there would be costs associated with a coordination body, there may be a number of consequential cost savings that could offset or even exceed the costs of administering such a coordination body.

FIGURE 6.4 ILLUSTRATION OF POTENTIAL SPECIFIC COORDINATION BODY

Potential specific Coordination Body in support of full institutional separation

A coordination committee would be set up for each network to allow a constant exchange of information between IMs and infrastructure users. Membership of this committee would be open at least to known applicants and, upon their request, potential applicants, their representative organisations, and representatives of users of the rail freight and passenger transport services. Member State representatives could be also invited to the meetings of the coordination committee as observers. The relative strength of each member of the body would be such that it does not give undue power to any particular entity and the Chairman of the body would be independent of all parts of the industry. The tasks of the coordination body would be to make proposals concerning or advise the infrastructure manager and, where appropriate, the Member State on:

- The needs of applicants related to the maintenance, renewal, upgrade and development of the infrastructure capacity
- The content of the user oriented performance targets contained in the contractual agreements and of the incentives schemes and their implementation
- The content and implementation of the network statement
- The charging framework and rules set by the State and the charging scheme established by the infrastructure manager and the level and structure of infrastructure charges
- The process for allocation of infrastructure capacity
- Any other issues related to the conditions for access and use of the infrastructure and the quality of the services of the infrastructure manager

The bodies would draw up their own written rules of procedure covering, inter alia participation, the appointment of chairpersons, and the frequency of meetings (although monthly meetings would be most appropriate). Reports of the discussions in the coordination committee would be submitted to the infrastructure manager, the regulatory body and the Member State concerned.

Member States could choose whether or not to make the decisions of the body binding on all Members, in the event that this was the case, any single Member could in any case appeal to the Regulator (who, as mentioned above, would not be a member of the Body).

Finally, a representative (probably the Chairman) of each coordination body would participate in a joint meeting of all European coordination bodies (possibly bi-annually) to exchange best practice at a Member State level. This meeting may also be attended by the Commission.

Consultation bodies

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6.169 We carried out further desk research to cite what arrangements currently exist for the exchange of information between Infrastructure Managers and infrastructure users in areas described above. From a review of Network Statements of Member States, we found few references to consultation bodies as such and no evidence of any body with a role similar to that outlined by the Commission in Figure 6.4. However, we found a number of examples where consultation between the Infrastructure Manager and infrastructure users takes place, as illustrated in Table 6.14.

TABLE 6.14 EXAMPLES OF CONSULTATION IN NETWORK STATEMENTS

Member State	Infrastructure Manager	Year	Consultation on
Austria	ÖBB	2013	Timetabling
Belgium	Infrabel	2013	Network Statement
Czech Republic	Railway Infrastructure Administration	2013	Network Statement, timetabling, congested infrastructure
France	RFF	2012	Extensive, see Table 6.16
Germany	DB Netz	2013	Network Statement, train paths, engineering work
Netherlands	ProRail	2012	Extensive but not listed
Sweden	Trafikverket	2012	Network Statement, except matters of safety and law
United Kingdom	High Speed 1	2012	Extensive, see Table 6.16
	Network Rail	2014	Extensive, see Table 6.15

Source: Network Statements, Steer Davies Gleave analysis

6.170 This desk research revealed a number of points about consultation processes already existing within the Member States:

- All the Infrastructure Managers except Austria consult on the Network Statement itself, but many of them also consult on a wide range of other matters.
- Some of this consultation is referred to as being a legal requirement, often of the national implementation of existing Railway Packages (such as Article 3 of Directive 2001/14/EC, that “The infrastructure manager shall, after consultation with the interested parties, develop and publish a network statement obtainable against payment of a duty which may not exceed the cost of publishing that statement”). If the Commission were to put forward proposals for a new coordination body, it might be necessary to include this consultation requirement as part of the role.
- Much consultation is subject to legal and regulatory oversight. Bodies carrying out consultation may be held responsible for demonstrating that the issues and proposals have been clearly set out, that all relevant stakeholders have been

given the opportunity to comment, that responses have been analysed in a consistent and impartial manner, and that due weight is given to them in conclusions, recommendations and action.

- The volume of consultation in some Member States is extensive and cannot all be supervised in detail. In Great Britain, for example, there are consultations not only by the two Infrastructure Managers shown in Table 6.14 but also by the Regulatory Body and the competent authorities, in relation to issues such as planning applications affecting the railway, investment schemes, PSC service specifications, ticketing and fares. The principal safeguards are statutory requirements, guidelines and good practice, the transparency of the processes and, where relevant, the option of drawing the attention of the Regulatory Body to the performance or behaviour of the Infrastructure Manager. The circumstances in which the Regulatory Body can become involved, and influence the conduct of a consultation process, will depend on the specific powers and duties assigned to it in each Member State.
- Consultation on such a wide range of matters typically involves multiple processes and organisations at various levels across the industry. In France, RFF's Train Path Department has a Planning and Consultation Division, and consultation is carried out at national and regional level. Where matters are of a purely local or regional nature, it would seem unnecessary for them to be discussed by a national committee when this could more effectively be done between representatives of the Infrastructure Manager and any affected or interested Railway Undertakings based in the area. A coordination body need not be national, and there may be merit in considering coordination bodies to act at more than just the national level.
- Conversely, while some activities require coordination at local and regional level, some require coordination at the international level. For example, we found consultation on a European Rail Freight Corridor coordinated by five Infrastructure Managers, Infrabel in Belgium, RFF in France, Eurotunnel, High Speed 1 and Network Rail, and inviting comment from interested parties irrespective of the Member State in which they are based.
- Consultation can in principle be based on a fixed body holding meetings, briefings, discussion groups and feedback sessions, but all of these require the physical attendance of consultees and are based on the limited discussions which can be carried out at the time. Consultation almost invariably now includes opportunities for stakeholders to provide comment in writing, by email, or through an online questionnaire. This could be handled by a consultation division, as in France, but a formal programme of consultation meetings might be of limited or declining relevance. Our work for the Commission on the Evaluation of Regulation 881/2004⁸, specifying the creation of the European Rail Agency, identified the benefits of broad consultation through a website or other accessible medium.
- Consultation takes place on a wide range of technical matters which will only be of interest to participants with particular technical skills. It would not be

⁸ Evaluation of Regulation 881/2004, Final Report, Steer Davies Gleave, April 2011

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practicable or effective to deal with all consultation matters at a single meeting attended by technical experts on every part of the agenda. This might mean that, rather than a single “coordination body”, there would need to be a hierarchy of consultation processes (as carried out in France for example), dealing separately with:

- Different national, regional and local geography
- Different technical issues

The range of issues for consultation and coordination

- 6.171 An examination of Network Statements revealed the depth and breadth of issues for which there is a need for Infrastructure Managers to consult infrastructure users and thus a potential need for coordination between the parties affected. To illustrate this point we reviewed the written references to consultation processes in the three Network Statements which made most reference to them, and attempted to allocate them to the coordination task areas as identified in Figure 6.4. This analysis is summarised in Table 6.16.
- 6.172 All the Network Statements referred to at least some consultations relating to maintenance, renewal, upgrade and development, including matters such as dealing with emergencies, access during maintenance and engineering works, and in some cases capacity planning. In the case of Network Rail, however, much capacity planning takes place through studies by local or competent authorities, or through the Regulatory Review process, and is managed or led by other bodies.
- 6.173 In this sample of Network Statements, there was no evidence of Infrastructure Managers consulting on the content of the user-oriented performance targets contained in the contractual agreements or of the incentives schemes and their implementation. This is likely to be a reflection of the fact that, in at least some Member States, consultation on such matters is led by the Regulatory Body. Similarly, we also found relatively few references to consultation on the user charging regime, also an area on which consultation is frequently led by the Regulatory Body.
- 6.174 All the Network Statements examined made reference to the process for allocation of capacity and access arrangements together with a wide range of other, many of them relating to detailed technical issues such as:
- Rules for capacity applications and preparing timetables
 - Rules for access and control
 - Vehicle acceptance
 - Vehicles carrying dangerous goods
 - Special types of vehicle and train
 - Adverse weather conditions

TABLE 6.15 EXAMPLES OF CONSULTATION BY INFRASTRUCTURE MANAGERS

Task	RFF	High Speed 1	Network Rail
Network Statement content and implementation	Yes	Not clear	Yes
Maintenance, renewal, upgrade and development of infrastructure capacity	Emergencies and alternative routes Maintenance Windows of unavailability due to works and maintenance Track possessions Vehicles belonging to works enterprises	Disruptive events Congested Infrastructure	Measures in the event of disturbance Engineering access statement Enhancements Network change and short term network changes (STNC) Long term planning
Charging framework and rules and level of charges		Investment recovery charge Freight avoidable costs Discount applications	Setting of the Coal Spillage Reduction Investment Charge
Allocation of infrastructure capacity	Capacity applications Nationally applicable operating documents Safety documents	Timetabling Rules of the Route Rules of the Plan	Timetable planning
Other issue related to the conditions for access and use of the infrastructure and the quality of the services of the Infrastructure Manager	Rolling stock acceptance process Running test trains Operational radio links Dangerous goods The use of sidings Operation by private siding owners on the national rail network Regular tourist traffic Rolling stock of private siding owners Local instructions Snow, frost or ice Refuelling	Rolling stock acceptance process Station access conditions	Rolling stock compatibility Train regulation policies

Source: Network Statements, Steer Davies Gleave analysis, some tasks abbreviated

Note: no reference to user-oriented performance targets and incentive schemes was found

- 6.175 This highlights that depth and breadth of issues on which infrastructure users have a vested interest and on which consultation and coordination is required.

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The possible role of a specific coordination body

- 6.176 In light of the issues identified in our research, we consider below the concept of a specific coordination body as described in Figure 6.4 and the role it could play in mitigating the potential risks associated with separation, particularly the lack of coordination between Infrastructure Managers and infrastructure users.
- 6.177 Increased separation between Infrastructure Managers and infrastructure may result in a greater need for coordination between those parties to ensure efficient and effective operation of the railway network. The concept of a specific coordination body to ensure a continual exchange of information between these parties and to mitigate any risk of user discrimination is a logical potential measure to address these needs. However, there are a number of issues that need to be considered, as discussed below.
- 6.178 We noted that some Member States already have mechanisms and/or bodies in place not only to consult but also to act on the range of issues listed in Table 6.16. Requiring that the Infrastructure Manager established a national body specifically to consult on them and report on deliberations risks duplicating consultation already carried out effectively, by a variety of means, at national, regional and local level. It would not seem appropriate, for example, to require that issues affecting a small region of a large Member State were on the agenda of a single national forum which might be remote from the area concerned. In these circumstances, Railway Undertakings able to attend or make written submissions to a local, and technically focused, forum, might be reluctant to attend meetings of a national forum with no specific focus. By example, our work for the Commission on the Evaluation of Regulation 881/2004 identified a need to ensure that meetings and workshops were accessible to those who needed to attend them.
- 6.179 We also consider that the requirements on the coordination body to report its discussions should be limited to parties based on relevance. The reports should be published such that they are fully accessible, but we do not think the relevant parties would typically include the Commission as suggested in Figure 6.4.
- 6.180 The effectiveness of the specific coordination body would depend on what steps each Member State takes to ensure that it is recognised to perform a useful and worthwhile function by the relevant stakeholders. This will be essential to incentivise attendance and active participation by the infrastructure users. In this regards, key issues for each Member State will include:
- Definition of the remit and scope
 - Coordination with, and avoiding duplication of, existing arrangements
 - Managing the overall volume of work required
 - Covering the range of technical topics to be considered
 - Respecting the purely regional or local focus of many issues
 - Reconciling confidentiality with the duty to report all discussions
 - The powers of the body vis-à-vis other bodies, such as the Regulator

- 6.181 There is potential merit in a forum which provided a means of ensuring that there is effective information exchange and coordination between the Infrastructure Manager and infrastructure users, particularly if it can also be achieved in manner that protects all users from discriminatory practices. However, there are a number of practicalities that will need to be addressed:
- How membership of the body could be open to all parties, without diluting its effectiveness. A wide membership could bring with it a wide range of minority interests and thereby diluting the strategic focus on the overall national railway system.
 - How dominance of major parties at the expense of minority parties could be prevented from directly or indirectly discriminating against the latter.
 - Whether the breadth of issues, as listed in Figure 6.4 could all be considered within a single forum, or whether various sub-committees would be necessary.
 - Whether the body should have any decision-making powers and if so, what legal provisions would be necessary.
 - Whether the Regulatory Body would have any oversight of the body to ensure that it functions in an effective and non-discriminatory manner.
 - Whether such a coordination body should be mandatory in each Member State.
- 6.182 An alternative to mandating a coordination body could be to mandate an obligation on Member States to put in place ‘appropriate’ measures to ensure that potential problems in the coordination between Infrastructure Managers and infrastructure users are properly identified and addressed. Such measures could include, at the discretion of the Member State, establishment of a coordination body for this purpose.
- Summary*
- 6.183 A need for coordination has been identified in a number of other Member States, but in general this has been part of the initial industry design rather than a reaction to emerging problems. Denmark, the Netherlands, Sweden and Great Britain all give responsibility for many coordination activities to the Regulatory Body and/or the national transport authority, which have specific powers and duties in a number of areas. We have identified specific developments which, arguably, are intended to address coordination issues, including a wide range of consultation processes, joint control rooms, and alliances between the Infrastructure Manager and an operator, but there is no standard arrangement and little similarity between these arrangements and the proposals set out in Figure 6.4.
- 6.184 While we would assume that such arrangements, once introduced, would not be continued if not beneficial, we have seen no evidence of formal appraisal of the costs and benefits of particular coordination arrangements. We also note that in Sweden and Great Britain, the two Member States in which institutional separation is longest established, arrangements continue to evolve. In Great Britain in particular, the “McNulty” Rail Value for Money Study suggested a large number of changes, many of which have yet to be implemented. This suggests that

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coordination requirements may evolve over time and that Member States will need flexibility to adapt arrangements to changing needs.

- 6.185 The need for and value of a specific coordination body will depend on the effectiveness of the relationships between the Infrastructure Manager and infrastructure users. The integrated nature of the technical characteristics of the railway system and its operation creates a strong incentive on the parties to cooperate and coordinate their activities, for example they share a mutual self-interest in a safe, efficient and reliable railway.
- 6.186 The extent to which the relationships that develop between the Infrastructure Manager and infrastructure users will also be influenced by the contractual arrangements, including access conditions and performance regimes. These may also serve as incentives to the parties concerned to establish effective relationships involving coordinating processes and procedures.
- 6.187 Evidence of unbundling to date has shown that there is typically a transition period over which the relationships develop and processes and procedures for coordination are put in place. Therefore, the need and value of a coordination body in the form as proposed is likely to vary according to the particular conditions in each Member State and the extent to which the parties have formed effective working relationships.
- 6.188 In conclusion, in option U2 requiring full institutional separation in all Member States, measures may be necessary or desirable to mitigate against the potential risks, especially those associated with a lack of coordination between the Infrastructure Manager and infrastructure users.
- 6.189 A coordination body, such as that described in Figure 6.4 could provide a useful measure. However, it should not be considered as the only measure necessary and, as initially defined, may not be appropriate for all Member States. Given the complexity and range of issues that require coordination effort, it is likely that a single body would only be able to provide an overarching strategic view.
- 6.190 Given that a range of coordination measures will likely be required, a key question is whether such a coordination body should be mandated, or whether there should be a wider mandate on Member States to put in place “appropriate” measures to mitigate the risks inadequate coordination.

Options: framework conditions for rolling stock

- 6.191 Our analysis in Appendix H highlights the difficulties of introducing effective framework conditions to improve the availability of rolling stock. These include:
- The various models of rolling stock provision and maintenance including ownership, leasing, and provision as an integrated service
 - The potential conflicts with generally established property rights
 - The scope for incumbent Railway Undertakings to evade the objectives of any policy by selling stock outside the EU or restructuring as a “rolling stock provider” to a shell RU
 - The timescale to replace existing rolling stock with a working life of 30-40 years
 - The need for mechanisms to create, fund, manage and, if necessary, regulate leasing companies, and to plan future fleets on an efficient basis

- 6.192 Our analysis identified a number of potential difficulties with all of the options we considered. Implementation of any of them would almost certainly depend both on the amount that Member States or Competent Authorities were prepared to spend to “buy out” existing rights, and the willingness of other parties for them to do so.
- 6.193 We agreed with the Commission that we should consider four conceptual options for improving access to rolling stock, as set out in Table 6.16.
- 6.194 Option RS1 would require Member States to create rolling stock leasing companies, with the objective of creating a leasing market for rolling stock. The evidence from Member States such as Sweden (D3.1) and particularly Great Britain is that an effective leasing market can remove many barriers to entry to the passenger rail transport market.
- 6.195 Option RS2 would require that Competent Authorities owned all the rolling stock required to operate the PSCs for which they were responsible. This would place an obligation of Competent Authorities to make sure that stock would be available.
- 6.196 Stakeholders were consulted on option RS1 and RS2 and a number of their comments are relevant. There was generally high support for “creation of rolling stock companies” (Figure A.13) although no suggestions as to who should create, fund, manage or, if necessary, regulate them. However, only 20% supported “automatic” transfer of rolling stock (Figure A.14) and only 5% supported “compulsory” transfer (A7.23). Overall, stakeholder responses did not support any firm conclusions (A7.28) although some agreed that no universal solution was possible (A7.32). Some Railway Undertakings saw provision of their own rolling stock as a key part of their competitive offer (A7.30).
- 6.197 Options RS1 or RS2 could only apply to existing rolling stock if owners were willing to be bought out and, without powers amounting to confiscation, they would have every incentive to demand generous terms, which would be expensive for the Member States or Competent Authorities. At first sight, violation of property rights can be avoided by requiring bidders for PSCs to commit to transfer their rolling stock to a leasing company, or the Competent Authority, at the end of the contract. There are, however, examples of dominant national incumbents refusing to bid on this basis, leaving Competent Authorities with little option but to accept their terms. Even if operators were willing to accept these terms, it would not be until the end of the next PSC cycle, of up to 22½ years under current EU legislation, that all existing stock would be transferred. A PSC now being offered in Berlin on this basis will, even if successfully tendered, not make the rolling stock available for lease until 2032.
- 6.198 Option RS1 would require the establishment both of rolling stock leasing companies with a range of technical skills (H4.43), and of processes to fund them, to plan future fleets, and potentially to regulate them.

TABLE 6.16 OPTIONS: FRAMEWORK CONDITIONS FOR ROLLING STOCK

Option	RS0	RS1	RS2	RS3	RS4
Definition	Baseline: no specific EU requirement	Mandatory creation of leasing companies	Mandatory ownership of rolling stock by CAs	Mandatory sale or lease of rolling stock at market price by one PSC operator to the next	Ensure that financial risk related to the residual value of rolling stock is not borne by the PSC operator
Evidence supporting this particular option		None, but ... At first sight, creates a leasing market	None, but ... Requires CAs to ensure that stock is available	None, but ... At first sight, lowers barriers to entry	None, but ... Allows a mix of RS1, RS2, RS3 or other approaches
Stakeholder Consultation and views		✓ Figure A.13 First rating	✓ Figure A.13 Second rating	✗ Figure A.13 Third rating A7.23 Only 5% for compulsory transfer A7.30 Some RUs consider rolling stock is key to competition	✗ A7.30 Should be left to the market A7.32 Competent Authorities often subject to funding constraints
Practical issues if introduced		H4.46 Property rights may limit effects H4.49 leasing companies may need regulation	H4.43 Competent Authorities need funds and skills of leasing companies	H4.26 The underlying problem is that there is no reliable market or “market price”	H4.23 Many practical and financial difficulties May be “least bad” option if applied flexibly
Assessment evidence and data		Timescales, costs and regulatory requirements all unclear	May not be practicable, no evidence for effects	May not be practicable, no evidence for effects	If made flexible, even less certain that other options
Conclusion	IA baseline	✗	✗	✗	Take to IA
Tested in packages					Packages 3, 4, 5

- 6.199 Option RS2 might remove the need for regulation but would require that the skills required by leasing companies were duplicated in every Competent Authority, which could also be costly.
- 6.200 Option RS3 would require outgoing PSC operators to sell or lease rolling stock at a “market price” to their successor, although the principal problem to be addressed, the lack of an effective rolling stock market, means there is no “market price”. PSC operators would probably have to be required to transfer stock at a price set out in the tender documents, in which case option RS3 would effectively be identical to RS1 or RS2.
- 6.201 Option RS4 would be to ensure that the financial risk related to the residual value of rolling stock is not borne by the PSC operator, but does not specify how this should or could be achieved. As set out in greater detail in Appendix H, we concluded that addressing the need for a rolling stock market is likely to be problematic, and it is uncertain either how Competent Authorities and Member States would react to this obligation or what effect it would have. All of the options considered could be difficult to implement effectively, rapidly or without additional cost.
- 6.202 For Impact Assessment purposes, we agreed with the Commission that we should proceed with option RS4, which we assumed might be possible to express in legislation flexible enough to allow Competent Authorities and Member States to apply a mix of options, potentially resulting in some improvement in access to rolling stock.
- 6.203 We found no credible and quantified evidence of the costs and benefits of any of the individual options RS1, RS2 and RS3, or a mix of them in as yet unknown proportions in the form of RS4. We conclude that it may be difficult to identify any basis for either a qualitative or quantitative Impact Assessment, as we discuss in Chapter 7.

Options: framework conditions for ticketing

- 6.204 In Appendix H we discussed the complexities of ticketing and in particular the way in which the optimum arrangements may vary between Member States, markets, and even travel between the same stations at different times or under different circumstances. Arrangements in the Member States are varied and changing, but at two extremes:
- In urban and suburban areas, passengers are likely to expect, and Competent Authorities are likely to require, standardised fares and tickets integrated not only between rail operators but also between modes, often with season tickets, a zonal fare system and smart card ticketing.
 - In high speed and long distance markets, at least where demand is not sensitive to journey frequency, passengers, Member States, Competent Authorities and competition authorities may expect rail operators to maintain separate fares, ticketing conditions and reservations and sales systems, and compete on price.
- 6.205 The Stakeholder Consultation was not able to explore all the possible options on ticketing arrangements (some of which we discuss in Appendix H5), although we noted that ticket prices were generally ranked more important than intramodal integration, which could be taken to imply that price competition is more

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important than inter-available ticketing (Figure A.6). Some stakeholders considered that competition depended on Railway Undertakings having their own ticketing and pricing (A7.36, D5.38). Public bodies and passenger organisations were concerned about the complexities of multiple ticket and sales channels (A7.38, D2.2, D2.37, D3.6, D4.3, D5.40). Some expressed a strong preference that agreements on ticketing should be voluntary (A7.42) and others expressed an equally strong preference that they should be compulsory (D5.20). Other stakeholders noted that open access operators needed to be free to adopt a business model which met travellers' needs (D5.8). In many ways, the diversity of stakeholder comments reflects the practical complexities of ticketing as an issue.

6.206 We agreed with the Commission that we should consider three conceptual options for improving ticketing, as set out in Table 6.17:

- T1, an enabling clause allowing Member States or Railway Undertakings on a voluntary basis to establish “national ticketing”.
- T2, a mandatory integrated ticketing system established at the national level by Member States: it would be for the Member States to decide what form such system took.
- T3, a mandatory integrated ticketing system established at EU level, with a requirement that the systems did not discriminate between operators.

6.207 However, Member States which still have a single operator may favour compulsory integration, or compulsory competition, or a mix of the two in different markets. The direction of change which would result from options T2 and T3 is uncertain.

6.208 We agreed with the Commission that the Impact Assessment should be based on option T1, in which arrangements are left to the Member States. The Commission advised us that it intends that this ticketing option would not act as a barrier to fares reductions.

6.209 However, there is as yet no evidence of what ticketing arrangements the Member States will adopt as a part of market opening, or of the effects of possible changes to them, which may be minimal. It may be difficult to identify any basis for either a qualitative or quantitative Impact Assessment, as we discuss in Chapter 7.

TABLE 6.17 OPTIONS: FRAMEWORK CONDITIONS FOR TICKETING

Option	T0	T1	T2	T3
Definition	Baseline: implementation of the passenger rights Regulation and recast Directive	Enabling clause allowing Member States or RUs on a voluntary basis to establish national ticketing	Mandatory integrated ticketing system established at national level by Member State systems	Mandatory integrated ticketing system established at EU level subject to non-discrimination requirements
Evidence supporting this particular option		None, but ... Offers maximum flexibility to Member States	None, but ... May offer some flexibility to Member States	None, but ... May harmonise systems across Member States
Stakeholder Consultation and views		x	x	x
		<p>Figure A.6 Ticket prices are ranked more important than intramodal integration</p> <p>A7.34 45% net support for “inter-availability of tickets”</p> <p>A7.36, D5.38 Own ticketing and pricing key to competition</p> <p>A7.38, D2.2, D2.37, D3.6, D4.3, D5.40 Dislike of multiple tickets and sales channels</p> <p>A7.39 Ticketing and operations should be separate</p> <p>A7.42 Strong preference for voluntary agreement</p> <p>D5.20 Strong preference for compulsory agreement</p> <p>D5.8 Open access operators must be able to follow travellers’ needs</p>		
Practical issues if introduced		<p>H5.5 Optimum arrangements may vary by MS, market segment and competitive environment</p> <p>In consequence, ticketing is technically complex and not suited to specification in legislation</p>		
Assessment evidence and data		<p>H5.12 Needs and effects will vary from market to market within and between MSs</p> <p>No evidence of what arrangements Member States will adopt following market opening and hence the potential direction of any change through mandatory rules</p> <p>No evidence on how voluntary and mandatory arrangements would differ in practice, but any mandatory arrangements may be counter-productive in some markets</p>		
Conclusion	IA baseline	Take to IA	x	x
Tested in packages		Packages 3, 4, 5		

Options: market opening: competitive tendering for PSCs

- 6.210 We agreed with the Commission that we should consider two conceptual options for competitive tendering for PSCs, as set out in Table 6.18.
- 6.211 As we noted in paragraph 6.21, stakeholders ranked all options for competitive tendering of PSCs similarly. Different questions revealed preferences for any of:
- Retention of the existing legal framework
 - “A specification of negotiation elements ...”
 - Competitive tendering for all PSCs

Negotiation

- 6.212 We set out in Appendix H our analysis and conclusion (H2.91) that compulsory competitive tendering should be extended to all PSCs, but that the Competent Authorities’ requirements, which would need to be defined in contracts, might vary widely between Member States and, within them, between Competent Authorities with different requirements or objectives. We concluded that Competent Authorities should have the powers to negotiate details of PSCs, particularly where these might be complex. More widely, Competent Authorities should have as much flexibility as possible to achieve their public mobility policy objectives.

A size below which PSCs could be directly awarded “de minimis”

- 6.213 The evidence of the country fiches for Germany, Sweden and Great Britain suggests that it can be cost-effective to carry out tenders for very small service packages, at least on a gross cost basis. In Germany, the smallest package of services successfully tendered is for only 20,000 train-kilometres a year, which can be operated by a single train. In Great Britain, from 1996 to 2007 the Island Line, currently operated with only ten vehicles, was subject to a PSC on a net cost basis.
- 6.214 Nonetheless, we concluded that it would be appropriate to provide exemptions permitting Competent Authorities to award directly PSCs below a certain threshold. This is also the practice in public procurement legislation. While it has proven possible to let small contracts in the past, and stakeholders did not generally expect or demand such an exemption (Appendix Figure A.30), this would allow Competent Authorities to procure small variations or additions to commercial services, such as additional station calls, connections, earlier first or later last trains, on a “de minimis” basis (H7.26).

TABLE 6.18 OPTIONS: MARKET OPENING: COMPETITIVE TENDERING FOR PSCS

Option	B0	B1	B2
Definition	Baseline: Regulation 1370/2007, in which Competent Authorities may award PSCs directly or through a competitive tendering process	Mandatory competitive tendering above a “de minimis” threshold Negotiation permitted Maximum PSC size in train-kilometres per year or as a share of network PSC scope determined by criteria under control of Regulatory Body	Mandatory competitive tendering above a “de minimis” threshold Negotiation permitted Maximum PSC size in train-kilometres per year or as a share of network PSC scope determined by criteria under control of European Commission
Evidence supporting this particular option		None, but ... Flexibility for CAs to negotiate “De minimis” threshold permits direct awards Maximum PSC size might increase entry and allow SMEs to bid Rules set nationally by Regulatory Bodies	None, but ... Flexibility for CAs to negotiate “De minimis” threshold permits direct awards Maximum PSC size might increase entry and allow SMEs to bid Rules set centrally by European Commission
Stakeholder Consultation and views		*	*
	D4.1 Choice should be left to MSs D5.32 Solution depends on local conditions	A7.50 Minority support for intervention Figure A.19 Minority support for any option	A7.50 Minority support for intervention Figure A.19 Minority support for any option A7.57 95% support for consultation on any EC intervention
Practical issues if introduced		H2.80, H7.11 May be impractical to impose maximum PSC sizes H7.16 No relevant skills in Regulatory Bodies (or EC) H7.19 May be impractical to devise a central list of forbidden or mandatory PSC contract terms	
Assessment evidence and data		H7.9 No evidence of the mix of future package sizes in many MSs No analysis available of the practicalities, costs or benefits of intervention in PSC contract terms	
Conclusion	IA baseline	Take to IA	*
Tested in packages		Packages 3, 4, 5	

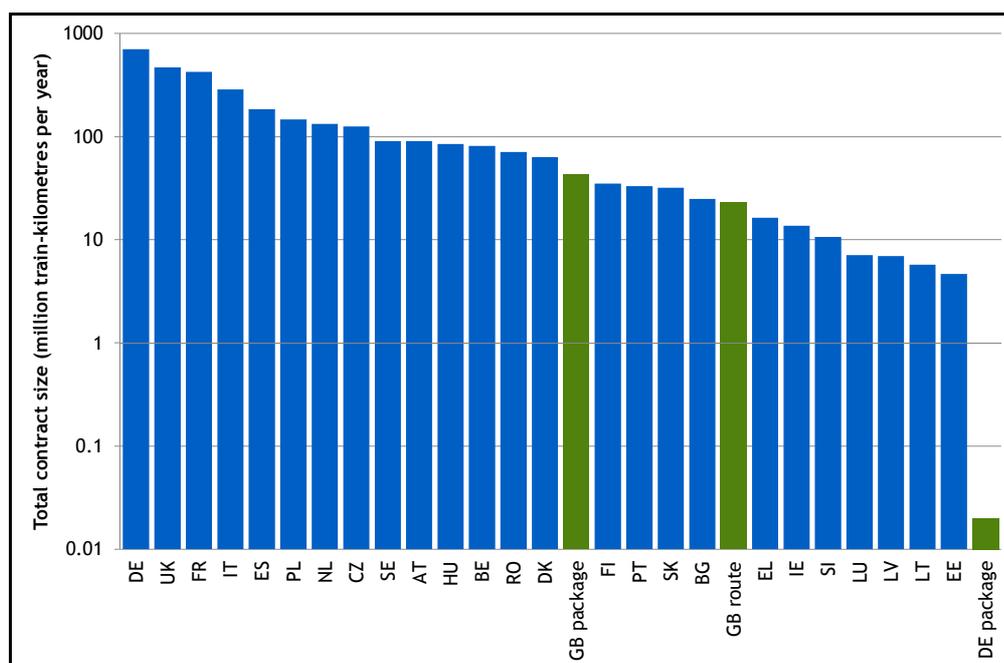
Policy Options

A size above which PSCs would not be permitted

6.215 Figure 3.1 compares, using a measure of train-kilometres per year:

- The relative sizes of the national networks, from RMMS data
- The largest package currently operating in Great Britain
- The largest single route, Thameslink, currently operating in Great Britain
- The smallest package we identified in Germany

FIGURE 6.5 SIZES OF NATIONAL NETWORKS AND PSC CONTRACTS



6.216 Throughout our work we considered whether it should be required that PSC packages were no larger than a certain size. This might:

- Improve financial transparency by associating subsidy for PSCs with services in a specific region or route
- Increase the prospects that every Member State would have more than one Railway Undertaking, by preventing small national passenger networks from being let as a single tender
- Increase the scope for small and medium enterprises (SMEs) to bid for PSCs

6.217 However, while Competent Authorities may wish to take control of services in their area, and to maximise competition for them, PSC packages must be designed to be operationally feasible. Railway operations may not naturally align with the boundaries of Competent Authorities or permit the efficient subdivision of individual urban or regional routes necessarily served by a single fleet or depot.

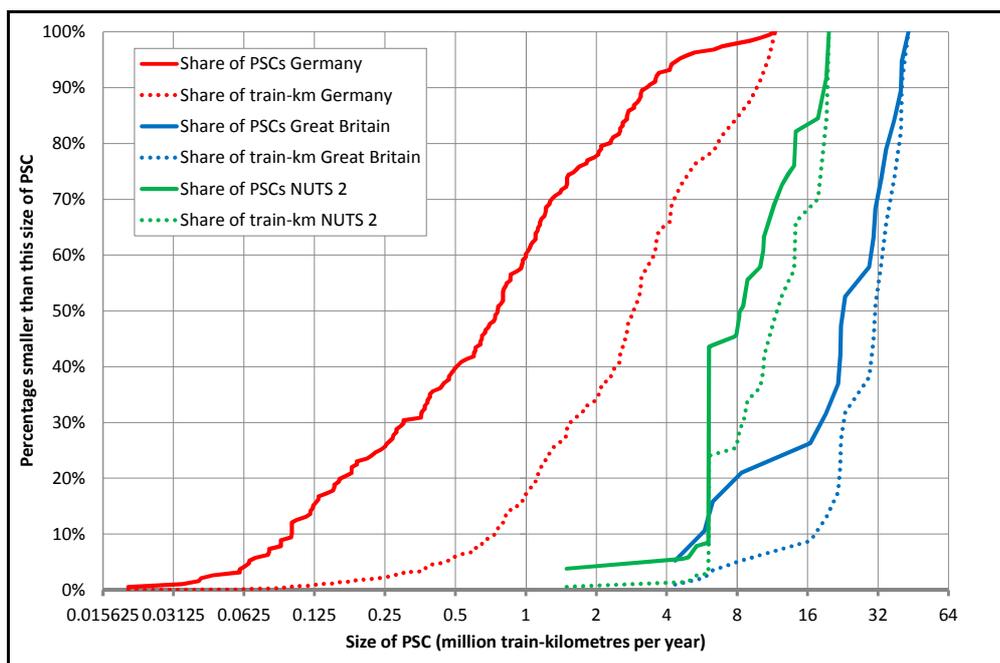
6.218 We discuss in turn the potential approaches of annual maxima of:

- 25-50 million train-kilometres, reflecting existing package sizes
- 5 million train-kilometres, to facilitate entry
- 2 million train-kilometres, to subdivide networks
- A percentage of network size, to subdivide networks

- A maximum of 25-50 million train-kilometres, reflecting existing package sizes*
- 6.219 In Germany, tendering has recently begun for the Berlin S-Bahn network which, even after subdivision into three contracts, includes a package for 9.4 million train-kilometres per year, larger than the entire operation in some Member States. The need for even larger packages may emerge elsewhere in the future.
- 6.220 In Great Britain the entire network has already been subdivided into packages on the basis of extensive analysis of all the relevant constraints including:
- The underlying constraints of railway operations
 - The desire to ensure that packages were commercially coherent
 - The desire to attract as much interest as possible to the franchising system, and in particular to ensure that bids could be submitted by a range of types and sizes of organisation
- 6.221 The largest package in Great Britain is currently Northern, with around 43 million train-kilometres per year, although it might be possible in principle to subdivide this further. However, the Thameslink package of around 23 million train-kilometres per year, and scheduled to become larger, consists of one regional and urban route across London which will be operated as a unit with a single type of rolling stock provided under an integrated train supply agreement.
- 6.222 This suggests that a maximum permitted size for a package might need to be at least 25 million, and possibly 50 million, train-kilometres per year if existing PSC packages were to be allowed to continue or be renewed.
- A maximum of 5 million train-kilometres, to facilitate entry*
- 6.223 Figure 6.6 summarises further analysis of the potential sizes of PSCs. It includes:
- PSCs which have been offered for tender in two large Member States, Germany (red) and Great Britain (blue) (this uses the same data as Appendix Figure H.2 and Appendix Figure H.3)
 - An estimate of the average size of PSCs which would emerge in other Member States if there were on average one PSC per NUTS 2 zone⁹
- 6.224 In Germany a number of packages have been offered for tender, but only 5% of them, operating only 25% of PSC train-kilometres, are for more than 5 million train-kilometres per year. Under the framework conditions in place in Germany, no PSCs over this size have been won by any operator other than the incumbent. This suggests that, to be effective in Germany, an upper limit set with the aim of improving new entrants' prospects of winning PSCs would need to be below 5 million train-kilometres per year.

⁹ NUTS2 is the second level of zoning in the Nomenclature of Territorial Units for Statistics (NUTS) zoning system used by EUROSTAT. In Germany, Berlin and Hamburg are single NUTS 2 zones but other Länder have include several zones. there are typically several NUTS 2 zones in each Land. In Great Britain, NUTS 2 zones are typically the size of a county.

FIGURE 6.6 PSCS OFFERED FOR TENDER: ILLUSTRATIVE ESTIMATES OF SIZE



Note: NUTS 2 analysis assumes that on average there is one PSC per NUTS 2 zone (see text) Germany and Great Britain based on actual PSCs

- 6.225 As noted above, Great Britain is the only Member State in which all services have been successfully converted to PSCs. In contrast to Germany, only 1 of the 19 current PSCs, all let by competitive tendering, is for less than 5 million train-kilometres, and represents less than 5% of PSC contracts and less than 1% of PSC train-kilometres.

- 6.226 Our analysis also suggests that for Europe as a whole, if there were on average one PSC per NUTS 2 zone, a very large majority of PSCs would be larger than 5 million train-kilometres per year. In practice, PSCs might be both smaller and larger, depending on the needs of the Member States and Competent Authorities. We stress that these results are illustrative, but the actual scale of PSCs consistent with Competent Authorities’ requirements, market interest and other constraints is not yet known.

A maximum of 2 million train-kilometres, to subdivide networks
- 6.227 The smallest national network, that of Estonia, operates a total of just under 5 million train-kilometres per year. If the Commission wished to ensure that even the smallest national networks were subdivided, this might be achieved by mandating a maximum PSC size of around 2 million train-kilometres a year.
- 6.228 We also note below (see 7.129) that a package of 2 million train-kilometres a year is likely to be the largest which could be operated by a small and medium enterprise (SME).
- 6.229 However, even if it were operationally feasible to divide small national networks, it would still be necessary to deal with large urban routes such as those in Berlin and London described above. The proposed Berlin package would need to be subdivided into at least 5 PSCs, the current Thameslink package would need to be subdivided into at least 12 PSCs, and other even larger packages in Great Britain

might need to be divided into at least 20 such PSCs, meaning 20 competitive tenders, and potentially 20 separate operators. Similar issues might also arise in other Member States. In practice, such a complex process to let what is self-evidently a single service would be inefficient and might damage the credibility of the policy initiative.

- 6.230 The size of these existing and potential PSC packages raises issues of what restrictions, if any, the Commission could impose on the size of PSCs if, in the absence of effective framework conditions for tendering of large PSCs, unnecessarily large PSCs were used to create a barrier to entry.
- 6.231 If the Commission were to set a threshold that allowed routes of the size of Thameslink to be operated as a single PSC, as seems likely to be necessary to enable them to be tendered, then by implication the entire networks of some Member States could be covered by a single PSC.
- 6.232 If the Commission set a threshold that did not allow large routes of this size to be operated as a single PSC, it seems unlikely to be possible to operate them as a series of independent operations. Imposing maximum sizes on PSCs would raise severe practical difficulties in Member States with services which cannot easily be subdivided, such as Germany and Great Britain:
- If the maximum size of PSCs were to be 5 million train-kilometres, the size which might be necessary to ensure effective tendering in Germany, at least 104 PSCs would be needed in Great Britain, including 64 in London alone.
 - If the maximum size of PSC were further reduced to 2 million train-kilometres per year, to ensure that even the smallest national networks were subdivided, at least 254 PSCs would be needed in Great Britain, with over 150 in London and over 20 serving some individual stations.
- 6.233 If required by European law to do so, one potentially legally compliant approach would be for competent authorities to restructure such routes as:
- A single timetable set by the Competent Authority
 - A single train fleet
 - A single train provider/maintainer (this is the approach planned for Thameslink, which will have 100 trains and 1,200 vehicles)
 - Multiple Railway Undertakings, each contracted by competitive tender, to operate a small number of stations (if needed) and either:
 - To drive a small number trains throughout the day
 - To drive all trains over a short section of route before handing them to a driver employed by another Railway Undertaking
- 6.234 To impose such arrangements, and the resulting contractual and operational complexity, would be inefficient and might be strongly resisted by Member States with large indivisible services. It might be seen as disproportionate merely to force Member States with smaller networks to subdivide them into packages, even if that were possible.
- A percentage of network size, to subdivide networks*
- 6.235 As an alternative approach to ensuring that multiple PSCs existed even in Member States with smaller networks, a threshold could be based on a measure of relative,

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rather than an absolute, size. For example, the Commission might require that no more than 40% of the PSC train-kilometres in a Member State could be let as a single PSC, with the aim of requiring that all Member States let at least three contracts. However, without detailed studies of the smaller national networks we cannot confirm whether it would be practicable to subdivide them in this way.

6.236 We conclude that, given current patterns of PSC packages, the smallest maximum size which is demonstrably workable would need to be at least 25 million, and possibly 50 million, train-kilometres per year. However, in Member States which have disaggregated PSCs, the exact patterns of packages have continued to evolve:

- In Sweden, the advent of the Öresund link has resulted in new packages extending not only across several Swedish counties but also into Denmark.
- In Great Britain packages are generally large but, following the Localism Act 2011, proposals are now emerging both for smaller packages under local control and for larger ones jointly specified by cooperating Competent Authorities.

6.237 There may be no simple or sustained relationship between the size and number of Competent Authorities and the size and number of PSCs.

6.238 We noted above that smaller PSCs could improve financial transparency by associating subsidy for PSCs with services in a specific region or route. However we conclude that it is not yet clear whether, and at what level, a maximum size of PSC contract can be set, either as an absolute size or as a percentage of the national network, that would meet the potentially conflicting objectives of:

- Being effective in terms of opening up PSC markets to competition
- Making economic and operational sense

6.239 This will remain the case at least until, as a minimum, all Member States, Railway Undertakings and Competent Authorities have, like Great Britain, carried out a comprehensive exercise of subdividing PSC services into packages which they expect to be both operationally viable and attractive to bidders.

6.240 Alternatively, it may be possible to identify variations of this option that would give the flexibility required to meet the desired policy objective while recognising operational and economic constraints. For example, in principle it would be possible to provide for approval of package size by the national Regulatory Body, or derogations where necessary to give additional flexibility.

Criteria for the specification of PSCs

6.241 Approaches to the specification of PSCs already vary widely between and within Member States. For example:

- In Germany most PSCs are based on contracts drafted locally to reflect the Competent Authorities' requirements
- In Sweden, PSCs are let at both the national and regional/local level
- In Great Britain, most PSCs extend over a number of administrative boundaries and are let under a national template contract

6.242 It might be possible to standardise some clauses, but European rules on how Competent Authorities should specify PSOs and PSCs were not popular with

- stakeholders, might raise issues of subsidiarity, and might be of limited value if Competent Authorities are permitted to negotiate with bidders, as is proposed.
- 6.243 Nevertheless, in the view of the potential value of specification criteria in terms of providing greater clarity to the market, we agreed with the Commission two conceptual options for the compulsory competitive tendering of PSCs:
- Option B1 would let Member States determine whether and what restrictions would be placed on how the Competent Authorities could define PSCs.
 - Option B2 would involve specification at EU level, implicitly defining PSC terms which would be mandatory, recommended, permitted or forbidden.
- 6.244 Both would involve mandatory competitive tendering above a “de minimis” threshold and allow the Competent Authorities to negotiate, and could include a maximum PSC size expressed in train-kilometres per year and/or as a share of the network. Both would require that any rules restricting the specification of PSCs would be overseen by the national regulatory bodies, although we note that the regulatory bodies might need to acquire a wide range of new skills and resources to do so.
- 6.245 Stakeholder consultation did not cover these specific options, but only a minority of stakeholders supported EU intervention in the definition of PSCs (A7.50) and there was also only minority support for any intervention option (Figure A.19). If there were to be EU intervention, 95% of stakeholders considered that consultation would be needed on any proposals to do so (A7.57).
- 6.246 Given that a sample PSC contract could extent to 165 pages (Appendix Table H.14), we also doubted the practicality, and consistency with subsidiarity, of EU-level consultation and consensus on which clauses should be mandatory, recommended, permitted or forbidden.
- 6.247 We agreed with the Commission that the Impact Assessment should be limited to option B1, in which Regulatory Bodies in the Member States would determine whether and how they would impose any constraints on the Competent Authorities’ existing rights to define their PSC requirements and potentially (see 6.240) their maximum size.
- 6.248 Nonetheless, with no list of the range of clauses which Competent Authorities might wish to include in PSC contracts, the effects of rules on which of these clauses would be mandatory, recommended, permitted or forbidden are uncertain.
- 6.249 In addition, with no evidence of what PSC sizes will emerge in Member States which have not yet allocated their services to operationally separable packages supervised by Competent Authorities, the exact effects of rules related to package size, whether to exempt small packages or to prohibit large ones, are uncertain.
- Options: market opening: open access**
- 6.250 We agreed with the Commission that we would consider four conceptual options for market opening through open access, as set out in Table 6.19.

TABLE 6.19 OPTIONS: MARKET OPENING: OPEN ACCESS

Option	A0	A1	A2	A3	A4
Definition	Baseline: no open access right provided under EU law, de jure monopolies can be retained	Open access is unrestricted, but MSs could limit access if the economic equilibrium of PSCs is affected	Open access is unrestricted on specific routes, with PSCs on the remaining network	Open access is limited to “routes” not covered by PSCs	Open access is unlimited
Evidence supporting this particular option		H2.34 Risk of cherry-picking H2.39 Protect PSC viability H2.40 Allows net cost PSCs	None, but ... Arguable that open access rights would only be needed on some routes	None, but ... A simplistic approach is to make open access and PSCs mutually exclusive	None, but ... Superficially analogous to some other deregulated transport markets
Stakeholder Consultation and views		✓	✓	✓	✓
	Figure A.24: Fifth net rating	Figure A.24: First net rating Figure A.25: =First ranking D5.7 risk of taking PSCs passengers	Figure A.24: Third net rating Figure A.25: Third ranking	Figure A.24: Second net rating Figure A.25: =First ranking	Figure A.24: Fourth net rating Figure A.25: Fourth ranking D5.27, D5.29, D5.30 Costly for taxpayers D5.28 May be little entry
Practical issues if introduced			H2.56 Links could be redefined to evade policy	H2.49 PSCs could be created to evade policy	H2.66 Services resulting may be unstable and chaotic
Assessment evidence and data			No precedent to estimate evasion or effects A3 likely to have less effect than A1 because, where there are PSCs, open access would be prohibited, rather than merely subject to an economic equilibrium test		
Conclusion	IA baseline	Take to IA	*	Take to IA	*
Tested in packages		Packages 1, 4		Packages 3, 5	

- 6.251 A wide range of options for open access were considered in the stakeholder consultation, in which the baseline of continuing with the existing arrangements received the lowest net rating (Figure A.24).
- 6.252 Unlimited open access (A4) received the lowest rating and ranking of any option for change (Figure A.24), and was identified by many stakeholders as likely to be costly for taxpayers (D5.27, D5.29, D5.30), although some stakeholders considered that there would in practice be little commercial entry (D5.28). Our own analysis, and evidence from other markets, suggested that this could result in unpredictable and chaotic services, with extensive disruption before any abandoned but socially necessary service could be replaced (H2.66). With almost no practical experience of how this option could be introduced and would work in a fully liberalised rail industry, we therefore rejected it for Impact Assessment.
- 6.253 Open access on certain routes with only PSCs elsewhere (A2) could be proposed on the basis that there would be no need to create rights of entry on routes where it would not be possible. However, there is no certainty that rules set in EU legislation could identify in advance, in each individual Member State, either:
- Where open access would be viable and would occur
 - Where PSCs would not be needed
- 6.254 This option was rated (Figure A.24) and ranked (Figure A.25) third by stakeholders. We also noted how Member States or Infrastructure Managers could redefine links in the network to evade the objective of market opening (H2.52). We therefore rejected it for impact assessment.
- 6.255 Open access on all “routes” not covered by PSCs (A3) received the second highest rating (Figure A.24) and first equal ranking (Figure A.25) by stakeholders, but our analysis identified that the effects might be limited by new PSCs introduced either to meet genuine mobility needs or simply to prevent market opening (H2.48). More widely, while new PSCs may be introduced, existing ones may never be cut back, raising the prospect of a gradual trend to PSCs extending to all stations, as in Sweden and Great Britain, although the scale and speed of this effect is uncertain.
- 6.256 Open access on all “routes”, but limited if the economic equilibrium of PSCs is affected (A1), is the approach to domestic passenger services already applied in some Member States. It minimises the risk of “cherry-picking” (H2.34), protects the viability of PSCs (H2.39) and offers the greatest scope for Competent Authorities to let PSCs on a net cost basis (H2.39). Stakeholders rated it first (Figure A.24) and ranked it first equal (Figure A.25), and noted that it would allow Competent Authorities to manage the abstraction of passengers from PSC services (D5.7). It might, however, mean that more existing services would become PSCs.
- 6.257 We agreed with the Commission that Impact Assessment should be based on options:
- A1, open access unrestricted, but Member States could limit access if the economic equilibrium of PSCs is affected
 - A3, open access provided by Railway Undertakings on “routes” not covered by PSCs

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Options and packages taken forward for Impact Assessment

- 6.258 The Commission advised us that it will be submitting two separate Impact Assessment reports to the Impact Assessment Board:
- Unbundling: Legislative Proposal on the Governance of Railway Infrastructure in the Single European Railway Area
 - Market opening: Legislative Proposal on Access to Domestic Passenger Rail Markets
- 6.259 Our analysis has consistently suggested that there are likely to be considerable synergies between different options including between market opening and unbundling options. For example:
- Unbundling, followed by
 - The introduction of suitable framework conditions, followed by
 - Market opening, through competitive tendering for PSCs, followed by
 - Open access, where this did not affect the economic equilibrium of PSCs
- seems likely to achieve greater benefits than implementation of only some of these elements.
- 6.260 In discussions with the Commission, we agreed to include an impact assessment of the combined effects of both unbundling and market opening.
- 6.261 As a first stage, however, we set out to establish the likely effects of each broad option in isolation, not least to understand what might be achieved by each element of any legislative change proposed. This provided a basis for further analysis of the impact of a combination of changes.
- 6.262 In discussion with the Commission we therefore agreed to take forward to Impact Assessment the options and packages set out in Table 6.20, dealing separately with unbundling and then market opening.

TABLE 6.20 OPTIONS AND PACKAGES FOR IMPACT ASSESSMENT

Package	Unbundling	Rolling stock	Ticketing	Competitive tendering	Open access
	Table 6.4	Table 6.16	Table 6.17	Table 6.18	Table 6.19
U1	U1				
U2	U2				
Package 1					A1
Package 2					A3
Package 3		RS4	T1	B1	
Package 4		RS4	T1	B1	A1
Package 5		RS4	T1	B1	A3

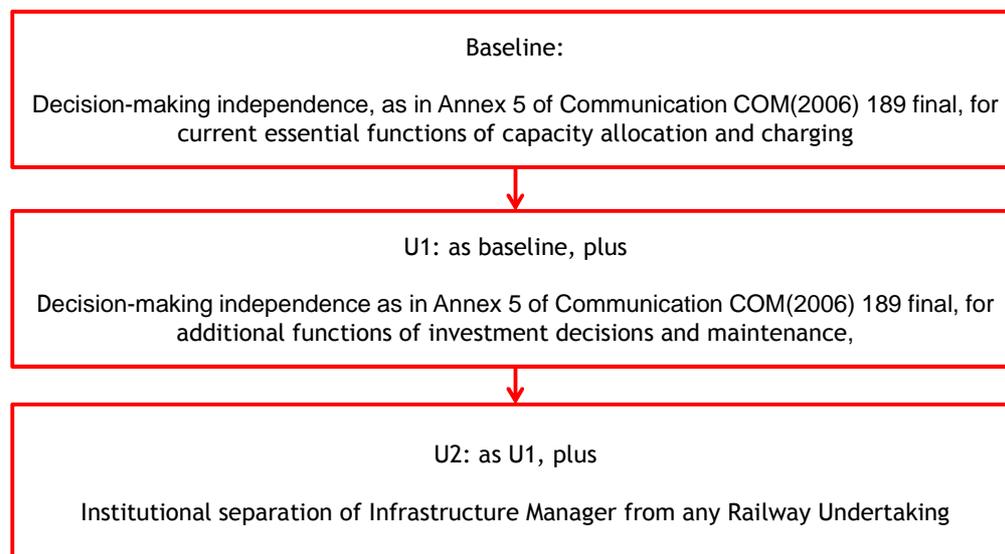
Note: blank cells represent the baseline option in Table 6.4 to Table 6.19

- 6.263 We discuss our approach to carrying out an impact assessment combining both unbundling and market opening in Chapter 7 and in particular in Table 7.11.

Unbundling packages

- 6.264 In Figure 6.7 below, we show how the individual unbundling options specified by the Commission are related.

FIGURE 6.7 OPTIONS FOR UNBUNDLING

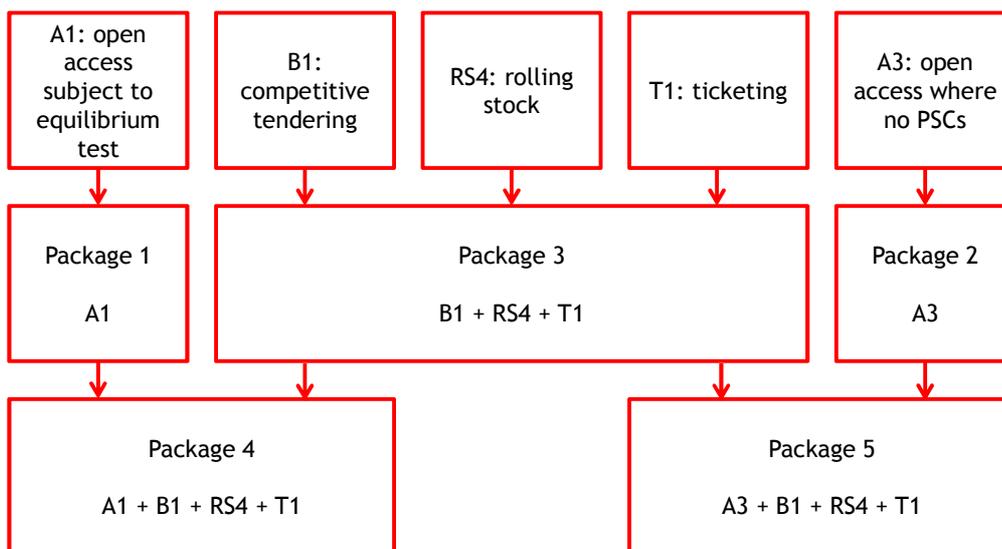


- 6.265 The current requirement is that there is decision-making independence for the essential functions of capacity allocation and charging.
- 6.266 Option U1 adds a requirement that there is also decision-making independence for maintenance planning and investments.
- 6.267 Option U2 adds a requirement for institutional separation of the Infrastructure Manager from any Railway Undertaking.
- 6.268 Following discussion with the Commission, these unbundling options explicitly exclude the option of making Infrastructure Managers responsible for passenger stations and freight terminals, which could, by implication, remain controlled or owned by individual Railway Undertakings.

Market opening packages

- 6.269 In Figure 6.8 below, we show how the individual market opening options build up into the packages described in Table 6.20.
- 6.270 Package 1 comprises open access option A1 in which open access is unrestricted but MSs could limit access if the economic equilibrium of PSCs is affected. As the Commission noted in the Task Specifications, the impact of such an option is likely to be very limited.
- 6.271 Package 2 comprises open access option A3 in which open access is limited to “routes” not covered by PSCs. On routes with PSCs, open access would be prohibited rather than subject to an economic equilibrium test: by implication package 2 would have an even more limited effect than package 1.

FIGURE 6.8 OPTIONS AND PACKAGES FOR MARKET OPENING



- 6.272 Either package 1 or package 3 might result in some or all of the incumbent’s “commercial” services being converted to PSCs, either immediately or over time as the effect of threat of open access rendered them unviable.
- 6.273 Package 3 adopts the alternative approach of market opening by compulsory competitive tendering using option B1 with provisions for “de minimis” direct awards, negotiation and, if workable, an upper limit on the size of a PSC contract, with Member States deciding what, if any, restrictions they impose on Competent Authorities’ specifications. This would also be supported by option RS4, in which Competent Authorities would provide or procure residual value guarantees for rolling stock at some level to be determined, and option T1, an enabling clause allowing them, on a voluntary basis, to establish national ticketing.
- 6.274 Package 4 repeats package 3 but adds open access option A1 in which open access is unrestricted but MSs could limit access if the economic equilibrium of PSCs is affected. Package 4 is the package most similar to the most effective option identified in Appendix Table H.18.
- 6.275 Package 5 repeats package 3 but adds the more limited open access option A3 in which open access is limited to “routes” not covered by PSCs.

Combined packages

- 6.276 In Chapter 7 we describe the development of:
- A qualitative Impact Assessment of each of the unbundling options shown in Figure 6.7 and each of the market opening packages shown in Figure 6.8
 - A quantitative Impact Assessment of the preferred unbundling option and market opening package and a combination of them both

7 Impact Assessment

Introduction

- 7.1 We set out in Appendix Table H.18 the characteristics of the package of measures most likely to meet the Commission's objectives:
- Mandatory full unbundling, with institutional separation for all the functions of the Infrastructure Manager, competitive tendering for all services covered by a PSC, ideally including a negotiation procedure, and rights of open access subject to a test on the effects of the economic viability of PSCs
 - No new legislation, or at most flexible arrangements or guidelines, on inter-available ticketing, rolling stock, staff transfers and criteria for setting PSOs
 - No new legislation on infrastructure charging rules or the competences of the regulatory bodies
- 7.2 The packages in Table 6.20 which comes closest to meeting these requirements is a combination of unbundling option U2 and market opening package 4.
- 7.3 Nonetheless, the Task Specifications required us to carry out an impact analysis, including identification of impacts, qualitative and quantitative analysis of significant economic, social and environmental impacts including:
- Effects on transport demand, service levels and on passengers carried including for other modes
 - Effects on service quality
 - Effects on rail safety and passenger security levels
 - Effects on investments, turnovers and profitability
 - Effects on public funding, including compensation for PSCs
 - Effects of market structure, fragmentation/concentration of the market
 - Effects on employment levels and working conditions, including wages
 - Effects on noise and greenhouse gas emissions and on local air quality
 - Administrative costs calculation for each type of market player under each policy option, including Railway Undertakings, Infrastructure Managers, regulatory authorities and Competent Authorities
- 7.4 The Task Specifications also required that these results be disaggregated by type of domestic service: urban and suburban, regional, conventional inter-city, high speed, and special services such as charter and night trains.
- 7.5 In summary we were required to estimate, ideally on a quantified basis, the impact of a wide range of possible policy options, tested alone or in combinations, on all the items listed in paragraph 7.3, disaggregated by Member States and, within Member State, by type of domestic service.
- 7.6 Following discussion with the Commission, we included for comparative purposes all the options and packages listed in Table 6.20.

Impact Assessment

7.7 Development of an Impact Assessment required three separate steps, which we discuss in turn:

- Definition of a baseline against which to measure changes
- Qualitative assessment, allowing the elimination of some options and identifying the main effects of each option or packages of options, including the cumulative effects of different measures
- Quantitative assessment, where possible, of the potential scale of these effects

Baseline

7.8 All options and packages are modelled against a baseline based on current and emerging legislation and practice, which we summarise in Table 7.1.

7.9 To complete our analysis it has been necessary to make a number of assumptions, which we describe further below. These assumptions reflect our judgement of possible outcomes, drawing on the evidence collated and carried out for this study and on evidence and knowledge drawn from our wider professional experience of the European rail sector, but other assumptions and outcomes are possible.

TABLE 7.1 IMPACT ASSESSMENT: BASELINE

Issue	Reference	Assumption
Background		First Package Recast and other relevant legislation
Unbundling	Table 6.4	Decision-making independence for the essential functions of the Infrastructure Manager
	Figure 6.4	No requirement for a “coordination body”
Rolling stock	Table 6.16	No specific EU requirement
Ticketing	Table 6.17	Implementation of the passenger rights Regulation and Recast Directive which envisage that: <ul style="list-style-type: none"> • Railway Undertakings and ticket vendors shall offer, where available, tickets, through tickets and reservations • Operators of ticketing services are not obliged to supply their services to all railway undertakings but when they decide to offer them to others, they shall supply them to Railway Undertakings on a non-discriminatory manner
Competitive tendering	Table 6.18	Regulation 1370/2007, in which Competent Authorities may award PSCs directly or through a competitive tendering process
Open access	Table 6.19	No domestic open access right provided under EU law, de jure monopolies can be retained

7.10 Further details of our quantitative assumptions regarding the baseline are set out in Table 7.10 in our quantitative assessment.

Market sectors

- 7.11 We developed an Impact Assessment calculator, used in the quantitative Impact Assessment described below, on the basis of five passenger market sectors, four domestic and one international:
- International services crossing borders between Member States
 - High speed services operating at more than 250 km/h at some point in the journey
 - Long distance, at conventional speed, operating at less than 250 km/h and linking major urban areas
 - Medium distance and regional, serving smaller communities but not providing the main or fastest link between any two cities¹⁰
 - Urban and suburban serving a city or conurbation and the surrounding suburbs or commuter catchment area
- 7.12 We prepared separate estimates of impacts for freight, as described in paragraph 7.298 below.

Qualitative Impact Assessment: unbundling: economic impacts

- 7.13 We use the following coding to assess options relative to the baseline:
- ++ where we expect the impact to be much better
 - + where we expect the impact to be better
 - 0 where we expect no impact, and ± where we expect a mix of + and - effects
 - - where we expect the impact to be worse
 - -- where we expect the impact to be much worse
- 7.14 Note that for passenger fares, freight prices, journey times, crowding levels and environmental impacts, better means a reduction and worse means an increase.
- 7.15 Unbundling options will, potentially, affect:
- Domestic passenger markets in Member States which have at least partially liberalised but which remain vertically integrated, limited to cluster A
 - International passenger markets and freight markets in all Member States which remain vertically integrated, including cluster A and cluster B
- 7.16 Our qualitative assessment of a number of economic impacts is set out in Table 7.2 below, which compares the relative impacts **within a row** but not the relative importance of each row.
- 7.17 We summarise below our rationale for each element of this qualitative assessment.

¹⁰ UIC defines high-speed, long-distance and urban/suburban services. We added the category of “medium/regional” to include services, typically specified by regional authorities, serving smaller communities but not providing the main or fastest link between any two cities. In practice, individual trains may serve a mix of long-distance, medium/regional and urban/suburban travel, and any disaggregation into markets must be considered illustrative.

TABLE 7.2 UNBUNDLING: CLUSTERS A AND B: ECONOMIC IMPACTS

Economic impact key (see 7.13):		U1, decision-making independence	U2, institutional separation
++ = much better + = better 0 = same, ± = mix of + and - effects - = worse -- = much worse			
Transactions	Transaction and enforcement costs, €	±	±
New bidders	Average bidders for each PSC contract	+	++
New entrants	New entrant market share, %	+	++
Passenger fares	Average fare, € per kilometre	+	++
Industry revenue	Passenger rail industry revenue, €	±	±
Industry costs	Total industry costs, €	±	±
Rail investment	Capital investment by or for the industry, €	±	±
Industry profit levels	Average profit margin, %	-	--
Public finances	Subsidy to passenger railways, €	±	±
Freight transport	Change in rail freight tonne-kilometres	+	++
Freight prices	Change in rail freight € per tonne-kilometre	±	±
Freight mode shift	Change in rail freight mode share	+	++

Note: symbols represent averages: impacts vary by cluster, Member State and market sector
 For definition of options see Table 6.4

Transaction and enforcement costs

7.18 For the purposes of a qualitative assessment, we assume that all new EU legislation on unbundling would have both positive and negative effects on transaction and enforcement costs (but see also 6.73 to 6.90). Specifically:

- Transaction costs would rise for any unbundling options which led to more new entry because of the costs associated with dealing with such entry
- Enforcement costs might fall if better unbundling meant that less enforcement action was required against an unbundled incumbent
- Enforcement costs might rise in relation to provision of functions not currently under the control of Infrastructure Managers including services and systems such as ticketing agreements

7.19 The existence and extent of each of these additional costs would vary between Member States and with the arrangements in place for services and systems such as ticketing agreements. We conclude that, given the many variables and uncertainties, it is not practicable to identify the relative net costs of unbundling options U1 and U2.

New bidders

- 7.20 In Member States with competitive tendering for PSCs, we assume that any further unbundling might contribute to increasing the number of bidders, within the limits determined by the arrangements for control of stations and other facilities, for access to rolling stock and for staff transfers, particularly for larger PSCs. We would expect that the institutional independence provided for in option U2 would perform better in this respect than the decision-making separation provided for in option U1.

New entrants

- 7.21 In Member States with open access, unbundling might increase the scope for new entry, whether through open access, compulsory competitive tendering for PSCs or better unbundling. Again, we would expect that the institutional independence provided for in option U2 would perform better in this respect than the decision-making separation provided for in option U1.

Passenger fares

- 7.22 In Member States with open access, unbundling might increase the scope for new entry, but the evidence for the effect of new entry on the average levels of passenger fares is mixed.
- 7.23 On the one hand, competition between incumbent operators and new entrants has led to “price wars” in a number of Member States including Austria, the Czech Republic and Italy, where the recent introduction of NTV’s high speed services in competition with Trenitalia has led to a limited number of seats being made available at prices 70% below the original Trenitalia fare.
- 7.24 On the other hand, the overall effect of open access on average fares across whole networks could be relatively small because:
- New entrants may find only a few viable markets with spare capacity, and with limited scope to reduce average fares and remain profitable
 - Incumbents may find that they need only reduce fares in a few markets, and to a limited extent
- 7.25 In Great Britain, for example, where open access is long-established and it is possible to make estimates of its effect, we estimate (GB country fiche, 3.50) that fewer than 0.1% of all passengers pay an open access operator fare undercutting an interavailable fare. In addition, the fares regulation regime in Great Britain allows PSC operators’ reductions in regulated fares in response to competition to be offset by increases elsewhere, which may result in no overall gain to passengers.
- 7.26 However, we note that experience in Great Britain may not provide a reliable indication of the effect of open access in some other Member States, not least because many parts of the national network are capacity-constrained, limiting the access rights available to new entrants, and because open access services are competing on the margins. In networks in which capacity is more readily available (illustrated using one measure in Figure 4.27), the level of open access and the associated impact on fares, while uncertain, could be greater. Much will depend on the size of the relevant and viable market which, in the case of long-distance travel, could be served by more than one transport mode.

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7.27 A further potential constraint on the ability of new entrants to offer lower fares is the uncertainty as to how ticketing option T1 (see Table 6.17) will be implemented in legislation, and how Member States and Competent Authorities will exercise the flexibility it provides. As we discuss above (6.208), however, the Commission has advised us that it intends that ticketing option T1 would not act as a barrier to fares reductions.

7.28 We would expect that both options for unbundling might facilitate open access where it is already permitted and that this might, in principle, result in some reduction (and hence “improvement”) in passenger fares. Again, we would expect that the institutional independence provided for in option U2 would perform better in this respect than the decision-making separation provided for in option U1.

Industry revenue

7.29 In Member States with open access, unbundling might result in further new entry and some consequential change in industry revenue. However, the effects of unbundling on industry revenue involve an unknown balance between two principal effects:

- The scope for new entrants to open new markets, or grow existing ones (through a combination of price, frequency and quality elasticity effects) and hence increase total industry revenue.
- The expectation that new entrants will compete away excessive incumbent margins and result in lower fares to passengers, or even that there may be “price wars” as described in paragraph 7.23. This could result in a reduction in total industry revenue.

7.30 We conclude that, given the many variables and uncertainties, it is not practicable to identify the relative effects on industry revenue of unbundling options U1 and U2.

Industry costs

7.31 The effects of unbundling on industry costs (other than transition, transaction and enforcement costs described above) involve an unknown balance between two principal effects:

- Increased costs of supply, through the costs of the additional open access capacity provided by new entrants
- Potentially, reductions in the costs of the incumbent, either through withdrawal or through efficiency improvements stimulated by exposure to competition from new entry, or for lower tender prices for PSCs

7.32 Again we conclude that, given the many variables and uncertainties, it is not practicable to identify the relative effects on industry costs of unbundling options U1 and U2.

Rail investment

7.33 In Member States with open access, the evidence of different entry models suggests that the net effects of unbundling on rail investment across the industry are uncertain, for a number of reasons:

- New entry might be through new investment and result in more attractive fares or higher quality which stimulate demand, in turn creating a need for greater investment including rolling stock and infrastructure (such as NTV in Italy)
- However, new entry might be through reuse of second-hand equipment which would otherwise have been unused (such as Hamburg-Köln Express in Germany)
- Reduced margins for existing “commercial” services might result in a delay, reduction or cancellation of investment or even in a service withdrawal (such as SJ’s withdrawal from Malmö to Göteborg in Sweden, see H2.34) or a request for financial support through a PSC

7.34 Again we conclude that, given the many variables and uncertainties, it is not practicable to identify the relative effects on rail investment of unbundling options U1 and U2.

Industry profit levels

7.35 Estimating future industry profit levels is complex and the outcome is likely to depend on the balance of a number of effects in each Member State and sector.

7.36 However, in any competitive market, whether competition is “in the market” (as in open access) or “for the market” (as in PSCs), new entry will result in some downward pressure on prices, reducing profits and transferring at least some of the reductions to customers. As we noted above (6.251) a common concern of stakeholders was that open access would abstract revenues from existing services, reduce industry profits, and be costly for taxpayers.

7.37 In summary, we would expect that both options for unbundling might result in a reduction (and hence “worsening”) in overall industry profits. Again, we would expect that the increased separation provided for in option U2 would have a larger effect than the more limited separation provided for in option U1.

Public finances

7.38 We would expect the effects of further unbundling on public finances to involve a mix of opposing effects:

- In Member States where there is open access, increased new entry would reduce the profits of state-owned incumbents and, unless offset by withdrawal or efficiency improvements, increase the net subsidy to, or reduce the net profits from, passenger railways
- In Member States where there is competitive tendering, increased new entry would potentially reduce the costs of subsidy to PSCs

7.39 In essence these two effects reflect the fundamental divergence between:

- Competition in the market, which typically transfers profits from operators (and those who own and fund them) to passengers
- Competition for the market, which typically transfers profits from operators to Competent Authorities

7.40 We conclude that, given the many variables and uncertainties, it is not practicable to identify the relative effects on public finances of unbundling options U1 and U2.

Freight transport, prices and mode shift

7.41 We noted above (6.36) that neither unbundling option agreed with the Commission includes any specific proposals for access to infrastructure assets such as passenger stations and freight terminals. Nonetheless, we assume that unbundling options would result in other improvements in access to infrastructure and other facilities and might therefore all result in slightly more freight Railway Undertakings, with the following effects:

- A net increase in rail freight tonne-kilometres
- An uncertain effect on rail freight revenues per tonne-kilometre, which would depend on the requirements of customers and in particular whether there was a need for lower costs or for higher quality and levels of service
- A net shift of mode from other modes to rail

7.42 While the sign of the effect on revenues is uncertain, we would expect that the institutional separation provided for in option U2 would generally have a more beneficial effect on volumes and mode shift than the decision-making independence provided for in option U1.

Qualitative Impact Assessment: unbundling: quality impacts

7.43 Table 7.3 summarises our qualitative assessment of the impact of the unbundling options, which would affect only clusters A and B, on quality.

7.44 We discuss each quality factor in turn below, but note that the common driver of almost all quality effects is the extent to which unbundling would facilitate greater new entry and hence a wider range of suppliers and competition between them.

Service frequency and destination choice

7.45 In Member States with open access, we assume that service frequency and destination choice may improve by unbundling options U1 and U2 and that the additional separation provided for in option U2 would generally perform better.

Journey time

7.46 In Member States with open access, at first sight it seems that unbundling options may improve journey times by leading to new services with fewer stops (implicitly focusing the benefits of such services on major stations at which train stops are commercially viable). This suggests that there will, in the long term, be at least some improvement in journey times in all options.

7.47 However, there is evidence from Austria (and see also 4.30) that new entry can lengthen journey times for some passengers, particularly where the resulting timetable worsens the quality of connections. More widely, higher capacity utilisation tends to result in slightly longer journey times, both to avoid conflicts between trains and to preserve reliability, as has been seen in a number of Member States.

7.48 We conclude that, given the many variables and uncertainties, it is not practicable to identify the relative effects on rail journey time of unbundling options U1 and U2.

- 7.49 **Interchange opportunities**
We would not, in principle, expect unbundling to have any effect on the specification and timetabling of PSC services and interchange to and between them.

TABLE 7.3 UNBUNDLING: CLUSTERS A AND B: QUALITY IMPACTS

Quality impact key (see 7.13):		U1, decision-making independence	U2, institutional separation
++ = much better + = better 0 = same, ± = mix of + and - effects - = worse -- = much worse			
Service level	Frequency	+	++
	Destination choice	+	++
	Journey time	±	±
	Interchange	0	0
Fares	Fare levels	+	++
	Degree of segmentation	+	++
Booking experience	Inter-availability	-	--
	Ease of booking	-	--
Performance	Punctuality	-	-
	Reliability	-	-
In-train journey experience	Crowding levels	+	++
	Cleanliness	+	++
	Train condition	+	++
	Information provision	+	++
	Safety and security	+	++
Station experience	Cleanliness	0	0
	Information provision	0	0
	Waiting and retail	0	0
	Safety and security	0	0

Note: symbols represent averages: impacts vary by cluster, Member State and market sector
For definition of options see Table 6.4

- 7.50 However, open access services may concentrate on point-to-point markets between major centres, and are less likely to prioritise connections or facilitate interchange with other services with which they may not have through-ticketing. Evidence from some Member States with open access is that timetable adjustments to accommodate these services can restrict or reduce the flexibility to timetable

PSC services to provide for interchange. This is particularly likely to be the case where capacity utilisation is high.

- 7.51 We are also aware that some competition authorities have taken the view that deliberate coordination of services by different operators, even if to provide connections, is anti-competitive.
- 7.52 On balance we assume that unbundling alone is unlikely to result in any material change to interchange opportunities.

Fare levels and degree of segmentation

- 7.53 We set out in paragraphs 7.22 to 7.27 above our analysis of the potential effects of unbundling on passenger fares.
- 7.54 We would expect that both options for unbundling might facilitate open access where it is already permitted and that this might, in principle, result in some reduction (and hence “improvement”) in passenger fares. Again, we would expect that the institutional separation provided for in option U2 would perform better in this respect than the decision-making independence provided for in option U1.

Booking experience: inter-availability and ease of booking

- 7.55 The effect of unbundling options on inter-availability is difficult to predict without prior knowledge of the arrangements that Member States and Competent Authorities will specify either with or without the option. In principle, Member States can specify national ticketing rules, including requirements for inter-availability of tickets between some or all operators, within which Competent Authorities are in principle free to specify ticketing arrangements for any PSC, whether competitively tendered or not.
- 7.56 Nonetheless, in Member States with open access, we assume that options involving additional open access will generally tend to worsen inter-availability. There is also the possibility that some Competent Authorities will permit, encourage or require that new entrants’ tickets are not inter-available.
- 7.57 We note that individual open access operators may offer simple pricing structures and well-designed ticketing systems. However, many stakeholders were concerned (see 6.15) that options involving additional open access may worsen the perceived ease of booking, not only if there are non-interavailable tickets but also because of the wider range of pricing, terms and conditions and booking channels which passengers will need to deal with.
- 7.58 On balance we assume that inter-availability and ease of booking may worsen with unbundling options U1 and U2, and that the potentially greater new entry with option U2 would create greater effects of complexity and confusion.

Performance, reliability and punctuality

- 7.59 In Member States where open access is permitted, we assume that additional open access will add to greater traffic on the network and may marginally worsen reliability and punctuality. The net outcome will depend on the balance of these two effects and the effectiveness of performance regimes applied to the Infrastructure Manager and the Railway Undertakings.

In-train crowding, cleanliness, condition, information provision and security

- 7.60 Either in open access services or in PSCs, if unbundling facilitates new entry we would expect it to offer scope for improvements in a number of aspects of in-train journey quality.
- 7.61 On balance we assume that all aspects of in-train journey quality may improve with unbundling options U1 and U2 and that the institutional separation provided for in option U2 would mean more new entry and more improvements.

Station cleanliness, information provision, waiting and retail and security

- 7.62 Following discussion with the Commission, options U1 and U2 are defined in a way which explicitly excludes the ownership or control of passenger stations and freight terminals. We therefore conclude that unbundling would not, in itself, have any effect on the station experience.

Qualitative Impact Assessment: unbundling: other impacts

- 7.63 Table 7.4 summarises our qualitative assessment of the impact of the options and packages on:
- Financial transparency
 - Sectoral competitiveness
 - Small and medium enterprises (SMEs)
 - Employment and social effects
 - Environmental effects
 - Safety
- 7.64 We discuss each quality factor in turn below.

TABLE 7.4 UNBUNDLING: CLUSTERS A AND B: OTHER IMPACTS

Other impact key (see 7.13): ++ = much better + = better 0 = same, ± = mix of + and - effects - = worse -- = much worse	U1, decision-making independence	U2, institutional separation
Financial transparency	+	++
Sectoral competitiveness	+	++
Small and medium enterprises, SMEs	+	++
Social impacts in rail and competing modes such as employment	±	±
Environmental impacts in rail and competing modes	+	++
Safety	0	0

Note: symbols represent averages: impacts vary by cluster, Member State and market sector
For definition of options see Table 6.4

Financial transparency

- 7.65 The Task Specification required that we should identify the benefits arising from unbundling for financial transparency (account separation), in particular for the public budgets.
- 7.66 We set out in Appendix G3, and discussed further in 4.85, our analysis of the issues of unbundling and financial transparency, the general concern that reported costs and profits within railway accounts are often not linked to specific activities, and that lack of transparency is a general problem rather than being confined to a few Member States.
- 7.67 However, the relationship between unbundling and transparency is complex, as our analysis has demonstrated:
- Unbundling is often accompanied by major financial restructuring, making it more difficult to relate charges for specific activities to underlying costs. For example, RFF, the Infrastructure Manager in France, was created partly to take over the debts of the national operator SNCF, and it is not clear how far the debts transferred relate to infrastructure or how the costs of debt servicing have, or should have, influenced access charges. Similar issues arise in the Czech Republic, where the national IM, SZDC, manages the assets and debts of the national operator ČD.
 - Transparency remains an issue even where extensive unbundling has been undertaken, such as in Great Britain and Sweden. In Great Britain, privatisation has meant that much financial information is commercially confidential, making it difficult to compare the efficiency of train operators.
 - More generally, the range of sources of funding and different approaches to the allocation of costs among industry parties has made it increasingly difficult to identify underlying levels of cost and funding needs.
 - Finally, there is no standard or agreed approach for how infrastructure costs should be allocated to individual passenger and freight routes, services or packages, whether through access charges to Railway Undertakings or otherwise. This means that the total cost of particular passenger or freight services is always a consequence of a number of assumptions or conventions regarding the allocation and apportionment of infrastructure costs.
- 7.68 We also set out in Appendix F2.33 to F2.38 examples of issues of financial transparency in a number of Member States:
- In Denmark, accusations that an operator was receiving illegal cross-subsidies from DSB to expand overseas operations.
 - In Sweden, accusations that the incumbent had cross-subsidised some of its regional services with earnings from profitable routes.
 - In the Czech Republic, an investigation into allegations of lower fares in response to a competitor being funded by higher fares elsewhere (this is also implicitly permitted by the regime of fares regulation in Great Britain, see Great Britain country fiche, 3.34).
 - In the Netherlands, claims that a subsidiary of the operator of a long-term PSC in long-distance services is able to present more competitive offers in tenders.
 - In Germany, allegations that regional services are cross-subsidised from infrastructure access charges.

- 7.69 In practice, all but the last of these examples relate to cross-subsidy within a Railway Undertaking rather than from an Infrastructure Manager to a Railway Undertaking.
- 7.70 Nevertheless, it is also clear that lack of vertical separation makes it more difficult to distinguish between Infrastructure Manager and Railway Undertaking costs and hence to determine whether observed charges for different services and activities are properly reflective of underlying costs. In these circumstances “unfair” cross-subsidisation and discrimination are more difficult for regulators to identify.
- 7.71 We therefore conclude that:
- Unbundling options will, potentially, improve the transparency with which costs are identified to Infrastructure Manager or Railway Undertaking, but will not address the issue of cross-subsidy within or between Railway Undertakings
 - The institutional separation provided for in option U2 would have a larger effect than the decision-making independence provided for in option U1.

Sectoral competitiveness

- 7.72 A common theme in the evidence base, the stakeholder comments, and our analysis of market opening, is that new open access operators will develop efficient business models focused on market requirements. In addition, we would expect that additional bidders for PSCs will seek efficiencies to improve the attractiveness of their bids.
- 7.73 On balance we assume that sectoral competitiveness would improve with unbundling options U1 and U2 and that the institutional separation provided for in option U2 would generally perform better.

Small and medium enterprises (SMEs)

- 7.74 We would expect that market opening through improved unbundling would create scope for SMEs to become involved in:
- Open access operations, which can be established as relatively small businesses
 - Provision of supporting services (See Appendix Table H.8) such as cleaning and maintenance of rolling stock and stations, and a range of technical, advisory and consultancy services
- 7.75 All other things being equal, we would expect that option U2 would provide greater opportunities for SMEs than option U1.

Social impacts such as employment, wages and working conditions

- 7.76 We were not able to make a credible or conclusive estimate of the effects of unbundling on employment, wages and working conditions.
- 7.77 Unbundling does not, in itself, require any major changes in the number or role of railway employees, other than a small number dealing with interfaces between Infrastructure Manager and Railway Undertakings. The principal effect of unbundling is likely to be where it results in new entry and hence some or all of higher output, higher quality, and higher efficiency, but this is uncertain for three principal reasons:
- Higher quality may involve additional staff (for examples, see Great Britain country fiche 3.41 and Austria country fiche 4.14), but alternatively could be

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achieved through new investment, refurbishment or cleaning of existing assets, or higher service levels

- Higher efficiency may come from changes in employment, wages or working conditions, but alternatively could be achieved by other means such as better equipment
- Different Member States have different policies on protecting employment, wages and working conditions of employees

7.78 In summary, with no means to forecast the balance between reduction in costs and expansion in capacity and quality, or the extent to which any of these changes will result in changes in social conditions in different Member States with different regulatory and legal traditions, the effect of market opening remains uncertain even at the qualitative level.

7.79 We conclude that, for a wide range of reasons including the policies of the Competent Authorities and the strategies of the Railway Undertakings, it is not practicable to predict the relative social impacts of unbundling options U1 and U2.

Environmental impacts

7.80 The effects of unbundling on the environment are uncertain and will depend almost entirely on the chosen business models and approaches of new open access operators in Member States with open access and new bidders for PSCs in Member States with competitive tendering.

7.81 We would expect that any transfer of passengers and freight to rail from more carbon-intensive modes will result in an overall reduction in greenhouse gases such as carbon dioxide (CO₂), although there are potential offsetting factors:

- An increase in the supply of rail services, whether provided by open access or under PSCs, will add to their CO₂ emissions
- Additional services may be delivered using older and less efficient rolling stock

7.82 On balance we assume that environmental impacts would lessen (improve) with unbundling options U1 and U2 and that the institutional separation provided for in option U2 would generally perform better.

Safety

7.83 Directive 2004/49/EC (the Railway Safety Directive, now amended by Directive 2008/110/EC) develops a common approach to rail safety and lays down a clear procedure for granting the safety certificates. While the outcome levels of safety remain variable, particular in some of the newer Member States, very high levels of safety are now obtained in a number of railways. In an increasing number of Member States, accidents are so rare that safety can only be monitored through carefully counting of events deemed to be precursors to potential accidents.

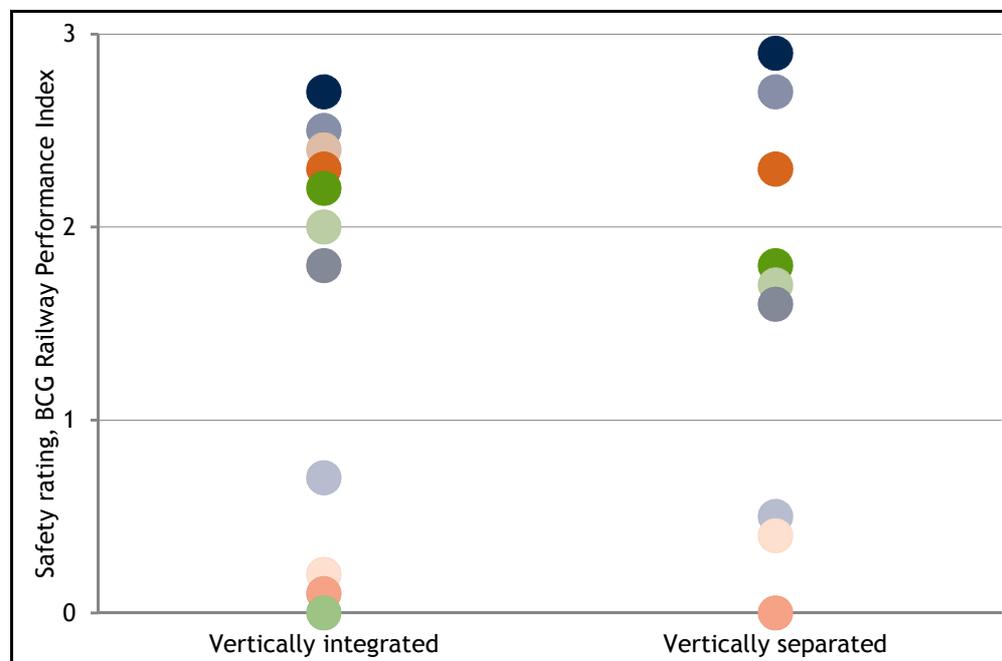
7.84 Our analysis of the impact of unbundling on performance and safety (Appendix G7) found no evidence of a reduction in safety levels following unbundling in the Netherlands, or in Great Britain and Sweden which have carried out the most extensive restructuring of their railway industries.

7.85 As an illustration of current safety levels in vertically integrated and vertically separated railways, we examined the safety component of a 2012 European Rail

Performance Index (RPI) presented by Boston Consulting Group (BCG) at the Florence School of Regulation in October 2012.

- 7.86 Figure 7.1 shows BCG's assessment of the safety rating of a sample of railways in the vertically integrated and vertically separated clusters defined in Table 6.2.

FIGURE 7.1 SAFETY IN BCG RAIL PERFORMANCE INDEX BY SEPARATION



Source: Boston Consulting Group presentation to Florence School of Regulation

- 7.87 The chart suggests that both vertically integrated and vertically separated models have produced a wide range of safety outcomes, but in the highest ratings in each case are broadly similar. There is no evidence to suggest, on a sample size limited to the small number of railways in Europe, that the presence or absence of separation, or by extension the choice of unbundling model alone, is a contributing factor to levels of safety.
- 7.88 We conclude that there is no basis on which to assume that either unbundling option U1 or option U2 will have any effect on safety.

Qualitative Impact Assessment: unbundling: conclusions

- 7.89 Table 7.2 to Table 7.4 show that the unbundling options retained for Impact Assessment can be differentiated on a number of attributes. On each attribute on which qualitative analysis alone provides evidence to differentiate them, option U2 with full institutional separation performs better than option U1 with only decision-making separation. This is consistent with our analysis, in Appendices G and H, and conclusion that the most effective options package would include full institutional separation for all functions of the Infrastructure Manager.

Qualitative Impact Assessment: market opening: economic impacts

- 7.90 We use the following coding to assess packages relative to the baseline:

- ++ where we expect the impact to be much better
- + where we expect the impact to be better

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- 0 where we expect no impact, and ± where we expect a mix of + and - effects
- - where we expect the impact to be worse
- -- where we expect the impact to be much worse

7.91 Note that for passenger fares, freight prices, journey times, crowding levels and environmental impacts, better means a reduction and worse means an increase.

7.92 Our qualitative assessment of a number of economic impacts of market opening options is set out in Table 7.5, which compares the relative impacts **within a row** but not the relative importance of each row.

Transaction and enforcement costs

7.93 We would expect that all market opening options would incur more transaction and enforcement costs. These would be higher in packages 3, 4 and 5, which will involve competitive tendering of all PSCs, than in open access packages 1 and 2.

New bidders

7.94 We would not expect that open access would materially affect the number of bidders for PSC contracts although, once established, open access operators may also bid for PSCs. During the stakeholder conference, new entrants in open access indicated that they would participate in PSC tenders, and RegioJet is operating PSCs in Slovakia. In contrast, introduction of compulsory competitive tendering through packages 3, 4 and 5 would almost certainly result in a market with a number of potential bidders, at least for PSCs which were effectively contestable (see “Tendering large service packages” from 7.140 below).

7.95 We would expect that package 2, restricting open access to “routes” not covered by PSCs (see Table 6.19), would result in less entry than all the other packages.

Passenger fares

7.96 Stakeholders did not expect compulsory competitive tendering alone to have much effect on fares (see 3.33). We agree that it would be unlikely that package 3 would have a significant effect on fares, which might remain largely or wholly controlled by the Competent Authorities or through the national ticketing system included as option T1, as discussed in 7.27. Subject to any constraints imposed by this system, we would expect the greatest scope for fares reductions to be through open access operators offering lower fares:

- On some “routes” not covered by PSCs in packages 2 and 5
- On a wider range of routes where the economic equilibrium of PSCs was not affected in package 1 and 4

TABLE 7.5 MARKET OPENING: CLUSTERS B, D AND E: ECONOMIC IMPACTS

Economic impact key (see 7.90):		1 = A1	2 = A3	3 = B1+RS4+T1	4 = B1+RS4+T1+A1	5 = B1+RS4+T1+A3
++ = much better						
+ = better						
0 = same, ± = mix of + and - effects						
- = worse						
-- = much worse						
Transactions	Transaction and enforcement costs, €	-	-	--	--	--
New bidders	Average bidders for each PSC contract	0	0	++	++	++
New entrants	New entrant market share, %	++	+	++	++	++
Passenger fares	Average fare, € per kilometre	++	+	0	++	+
Industry revenue	Passenger rail industry revenue, €	±	+	+	++	+
Industry costs	Total industry costs, €	±	±	±	±	±
Rail investment	Capital investment by or for the industry, €	±	±	+	+	+
Industry profit levels	Average profit margin, %	--	-	-	--	-
Public finances	Subsidy to passenger railways, €	--	-	±	±	±
Freight transport	Change in rail freight tonne-kilometres	0	0	0	0	0
Freight prices	Change in rail freight € per tonne-kilometre	0	0	0	0	0
Freight mode shift	Change in rail freight mode share	0	0	0	0	0

Note: symbols represent averages: impacts vary by cluster, Member State and market sector
For definition of options and packages see Table 6.16 to Table 6.20

Industry revenue

- 7.97 We assume that growth in industry revenue would be limited in package 2 to the small amount generated by open access on “routes” not covered by PSCs, and in package 3 to the effects of any frequency or quality increases obtained by the Competent Authorities through competitive tendering. We would expect the greater scope for new entry in other options, particularly packages 1 and 4 including option A1, to offer greater prospects of growth in industry revenue.

Industry costs

- 7.98 The effects of market opening on industry costs is likely to be complex:
- Additional services provided by open access will add their own costs, but these additional costs may be partially or wholly offset by cost savings stimulated in incumbents.
 - Competitive tendering of PSCs may result in lower tender prices, and hence also to saving of some or all of the incumbent’s costs, but these savings will be reduced if Competent Authorities choose, or are required by increases in demand, to pay for investment in additional quality or capacity (we note evidence of this effect in Great Britain in 7.181 below).

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7.99 On balance we conclude that, given the many variables and uncertainties, it is not practicable to estimate the net effect on industry costs of any market opening from purely qualitative analysis.

Rail investment

7.100 In the discussion of unbundling above (7.33) we concluded that the net effects of open access packages 1 and 2 on rail investment across the industry are uncertain, for a number of reasons:

- New entry might be through new investment and result in more attractive fares or higher quality which stimulate demand, in turn creating a need for greater investment including rolling stock and infrastructure
- However, one of the strategies for new entry is through reuse of second-hand equipment which would otherwise have been unused
- Reduced margins for existing “commercial” services might result in a delay, reduction or cancellation of investment or even in a service withdrawal or a request for financial support through a PSC

7.101 In contrast, we would expect that the more stable environment of compulsory competitive tendering would consistently result in more investment unless Competent Authorities favoured cost reductions over quality and capacity improvements and actively discouraged new investment.

Industry profit levels

7.102 As we discussed in the context of unbundling options (see 7.35), estimating future industry profit levels is complex and the outcome is likely to depend on the balance of a number of effects in each Member State and sector. However our analysis suggests that:

- Open access operations may themselves be loss-making or only marginally profitable but will abstract revenue from, and hence worsen the profitability of, incumbent commercial operators.
- Compulsory competitive tendering is intended to ensure that PSC providers make only reasonable profits and return any cost savings to the Competent Authority.

7.103 On balance we assume that all market opening packages will reduce industry profits, but that this will be worst in packages 1 and 4 permitting open access where this does not affect the economic equilibrium of PSCs.

Public finances

7.104 Similarly, and as set out in 7.38, we would expect the effects of market opening on public finances to involve a mix of opposing effects:

- With open access, increased new entry would reduce the profits of state-owned incumbents in their domestic markets and, unless offset by withdrawal or efficiency improvements, the additional railway services will increase the net subsidy to, or reduce the net profits from, passenger railways.
- With competitive tendering, increased new entry would potentially reduce the costs of subsidy to PSCs but, as noted above, Competent Authorities might choose or need to pay for investment in additional quality or capacity.

7.105 The impact on public finances also depends on the design of PSC bundles. Profits from profitable lines may be re-used to finance unprofitable lines within the same bundle.

7.106 On balance we assume that:

- Open access may affect overall industry finances and hence public finances, and that this effect will be worse in package 1 than in package 2
- The effect of compulsory competitive tendering in packages 3, 4 and 5 is uncertain, depending primarily on the extent of investment in additional quality or capacity.

Freight transport, prices and mode shift

7.107 In the absence of other changes, we would not expect any form of opening of domestic passenger markets to have a material effect on freight transport, prices or mode shift. We note, however, that where infrastructure capacity is constrained, capacity allocators may need to make trade-offs between freight services and open access passenger operators.

Qualitative Impact Assessment: market opening: quality impacts

7.108 Table 7.6 summarises our qualitative assessment of the impact of the market opening options on quality. We discuss each quality factor in turn below.

Service frequency and destination choice

7.109 We would expect that the greatest effect on service frequency and destination choice from market opening would be in conditions where open access was least restricted, namely packages 1 and 4.

TABLE 7.6 MARKET OPENING: CLUSTERS B, D AND E: QUALITY IMPACTS

Quality impact key (see 7.90):						
++ = much better						
+ = better						
0 = same, ± = mix of + and - effects						
- = worse						
-- = much worse						
		1 = A1	2 = A3	3 = B1+RS4+T1	4 = B1+RS4+T1+A1	5 = B1+RS4+T1+A3
Service level	Frequency	++	+	+	++	++
	Destination choice	++	+	+	++	++
	Journey time	±	±	±	±	±
	Interchange	0	0	+	+	+
Fares	Fare levels	++	+	0	++	+
	Degree of segmentation	++	+	0	++	+
Booking experience	Inter-availability	-	-	0	-	-
	Ease of booking	-	-	0	-	-
Performance	Punctuality	-	-	+	±	±
	Reliability	-	-	+	±	±
In-train journey experience	Crowding levels	+	+	+	+	+
	Cleanliness	+	+	+	+	+
	Train condition	+	+	+	+	+
	Information provision	+	+	+	+	+
	Safety and security	+	+	+	+	+
Station experience	Cleanliness	0	0	+	+	+
	Information provision	0	0	+	+	+
	Waiting and retail	0	0	+	+	+
	Safety and security	0	0	+	+	+

Note: symbols represent averages: impacts vary by cluster, Member State and market sector
 For definition of options and packages see Table 6.16 to Table 6.20

Journey time

7.110 The effect of compulsory competitive tendering on journey times will depend primarily on the timetables specified by the Competent Authorities. As with unbundling, the effects of open access may be mixed:

- It may improve journey times by leading to new services with fewer stops (implicitly focusing the benefits of such services on major stations at which train stops are commercially viable) (see 7.46)
- New entry can lengthen journey times for some passengers, and higher capacity utilisation tends to result in slightly longer journey times (see 4.30 and 7.47)

- 7.111 We conclude that the overall effects of all market opening options on journey times are uncertain.

Interchange opportunities

- 7.112 We would not expect that open access would create any new interchange opportunities but would expect that, all other things being equal, compulsory competitive tendering in packages 3, 4 and 5 might lead to some improvements, such as where offering better interchange could form part of a winning tender.

Fares levels and degree of segmentation

- 7.113 As set out in 7.96, we would not expect that compulsory competitive tendering alone, in package 3, would have any effect on fares, which might remain largely or wholly controlled by the Competent Authorities or through the national ticketing system including as option T1, as discussed in 7.27. Subject to any constraints imposed by this system, we would expect open access operators to offer lower fares on some “routes” not covered by PSCs in packages 2 and 5 and on a wider range of routes where the economic equilibrium of PSCs was not affected in package 1 and 4.

Booking experience: inter-availability and ease of booking

- 7.114 We would not expect compulsory competitive tendering alone, in package 3, to have any effect on the booking experience. Given the extensive stakeholder feedback referred to in 6.205, we would expect all packages 1, 2, 4 and 5 involving open access, and potentially tickets with different fares and validities, to worsen passenger perception of the booking experience.

Performance, reliability and punctuality

- 7.115 We would expect that compulsory competitive tendering alone in package 3 might result in some improvements in performance including reliability and punctuality. We would also expect that additional open access services in packages 1 and 2 might result in some deterioration. The outcome of packages 4 and 5 would depend on the relative size of these effects.

In-train crowding, cleanliness, condition, information provision and security

- 7.116 We assume that either new entry or compulsory competitive tendering will improve all these measures. We note, however, that measures to improve access to rolling stock (option RS4 in packages 3, 4 and 5) may improve or worsen train condition and information provision, depending on whether the net effect is wider use of old stock or wider purchase of new stock.

Station cleanliness, information provision, waiting and retail and security

- 7.117 We assume that open access operators will not have sufficient influence over the majority of stations to affect any of these measures. We therefore assume that all these measures will improve only with options including compulsory competitive tendering, and potentially quality incentives, in packages 3, 4 and 5.

Qualitative Impact Assessment: market opening: other impacts

- 7.118 Table 7.7 summarises our qualitative assessment of the impact of the market opening options and packages other issues, dealing in turn with financial

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transparency, sectoral competitiveness, small and medium enterprises (SMEs), employment and social effects, environmental effects and safety.

TABLE 7.7 MARKET OPENING: CLUSTERS B, D AND E: OTHER IMPACTS

Other impact key (see 7.90): ++ = much better + = better 0 = same, ± = mix of + and - effects - = worse -- = much worse	1 = A1	2 = A3	3 = B1+RS4+T1	4 = B1+RS4+T1+A1	5 = B1+RS4+T1+A3
Financial transparency	0	0	+	+	+
Sectoral competitiveness	+	+	+	++	++
Small and medium enterprises, SMEs	+	+	+	++	++
Social impacts in rail and competing modes such as employment	±	±	±	±	±
Environmental impacts in rail and competing modes	++	+	+	++	+
Safety	0	0	0	0	0

Note: symbols represent averages: impacts vary by cluster, Member State and market sector
For definition of options and packages see Table 6.16 to Table 6.20

7.119 We discuss each quality factor in turn below.

Financial transparency

7.120 We would not expect open access in package 1 or 2 to have any effect on financial transparency within the rail sector.

7.121 We also set out in 7.67, in the context of unbundling, that the need either to exclude infrastructure costs or to develop conventions on their allocation means that there can be no absolute definition of the costs of particular passenger or freight services. Nonetheless, we identified (Appendix G3, summarised in 7.67) a number of instances of cross-subsidy within Railway Undertakings or between related Railway Undertakings.

7.122 As set out in Table 6.18, it is envisaged that option B1 would set maximum sizes for PSCs. Where this requires subdivision of existing PSCs into smaller packages, this might improve financial transparency by associating subsidy for PSCs with services in a specific region or route. However:

- There may be constraints on the extent to which services can be subdivided (as we discuss in 6.229)
- It may not always be possible to align PSC packages of passenger services with individual Competent Authorities (6.236)
- It will not reveal cross-subsidy between services operated “commercially”
- It will not prevent cross-subsidy within or between related Railway Undertakings

7.123 Nonetheless, option B1 will provide a tighter linkage between specific public funds and the PSOs they are intended to support. We conclude that any disaggregation of

PSC payments resulting from compulsory competitive tendering against published PSOs in packages 3, 4 and 5 will increase transparency in the funding of PSOs.

Sectoral competitiveness

- 7.124 Common themes in the evidence base, the stakeholder comments, and our analysis of market opening are that:
- Open access operators will develop efficient business models focused on market requirements
 - Compulsory competitive tendering will force bidders to develop more efficient approaches to service delivery, reducing costs
- 7.125 Either method of market opening should, in principle, improve the competitiveness of the rail sector, and we would expect the overall benefits to be greatest in packages 4 and 5 combining both approaches.
- 7.126 However, while open access may return the benefits of efficiency and cost savings to passengers (and freight customers), compulsory competitive tendering may return some or all of them to the Competent Authorities, and we would expect (as shown for package 3 in Table 7.6) improvements in service levels but not reductions in passenger fares.
- 7.127 On balance, options involving both open access and competitive tendering (packages 4 and 5) have the greatest potential effect on sectoral competitiveness. However, the benefits of competitiveness may flow to Competent Authorities as financial savings, rather than to passengers as additional capacity or quality.

Small and medium enterprises (SMEs)

- 7.128 We noted above that the size of PSC contracts is highly variable. Published data on franchises in Great Britain show that a PSC operator such as First ScotRail serving a mix of markets operates a net cost PSC contract of around 45 million train-kilometres per year:
- Its staff of around 4,500 suggest that a medium enterprise with up to 250 staff could operate a PSC contract of around 2½ million train-kilometres per year
 - Its revenue and expenditure, excluding infrastructure charges, of around €750 million, suggests that a medium enterprise with up to €50 million turnover could operate a PSC contract of around 3 million train-kilometres per year
- 7.129 These figures are illustrative. Staff numbers would depend on the number of stations operated and the extent of subcontracting, and turnover would depend on whether either passenger revenue or infrastructure charges are included. Nonetheless, they suggest that SMEs might typically operate PSCs of up to 2-3 million train-kilometres per year.
- 7.130 However, the opportunities for SMEs need not be limited to bidding for PSCs, and in practice we would expect that market opening would create scope for SMEs to become involved in:
- Open access operations, which can be small
 - Provision of supporting services (See Appendix Table H.9) such as cleaning and maintenance of rolling stock and stations, and a range of technical, advisory and consultancy services

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7.131 We conclude that any options or packages involving unbundling, new open access rights or compulsory competitive tendering would, prima facie, provide new opportunities for SMEs. The largest potential opportunity would be if a combination of open access and compulsory competitive tendering (packages 4 and 5) created specific opportunities for SMEs to tender to operate or support small and medium-sized PSCs.

Social impacts such as employment, wages and working conditions

7.132 Our analysis highlighted a number of issues related to employment, wages and working conditions, particularly in association with extensive competitive tendering of PSCs, which we summarise below.

Balancing rights, stability and innovation

7.133 Stakeholders held a range of views on the objectives of market opening and hence on the relevance of staff transfers and workers' rights:

- Some considered that the terms and conditions of workers in the incumbent operator should be extended to any new entrants, include open access operators, with the aim of sheltering existing workers from competition from cheaper or more flexible ones. We describe in Appendix F (F3.15) how the Ministry of Transport in Austria stated that competitive tendering cannot be introduced while ÖBB's staff costs are 20% higher than those of its competitors.
- Others argued that existing workers' rights should be protected in the event of a transfer but that, provided that this was the case, competitive tendering was acceptable and open access operators should be free to negotiate the terms and conditions of new recruits.
- Others saw the introduction of more flexible working conditions as the key to improving industry efficiency and part of the *raison d'être* of market opening, and any obligation to take on any or all existing staff as an impediment to efficiency. The Italian Competition Authority (AGCM), for example, has ruled that compulsory adoption of the National Contract for the winner of a tender represents "an entry barrier which raises operational costs for those operators currently having different arrangements to those imposed".

7.134 In other words, the view of the Competition Authorities in at least one Member State is that new entrants should be able to employ staff on new, and potentially less attractive, terms and conditions. This could apply to all market opening options.

Imposing existing standards on new entrants

7.135 The view of some of the stakeholders that more flexible working conditions are part of the *raison d'être* of market opening raises another fundamental issue for the Commission. It may be necessary for framework conditions to make an explicit choice between:

- The rights of existing railway employees to continue their terms and conditions, and to be sheltered from competition from cheaper or more flexible workers.
- The rights of new entrants, particularly open access operators, and their employees, to design a business and its staffing arrangements in any way they consider efficient, and of passengers and CAs to benefit.

- 7.136 The choice, and the consequent effect on employment, terms and conditions, will depend on the extent to which the Commission prioritises one or other of these objectives.

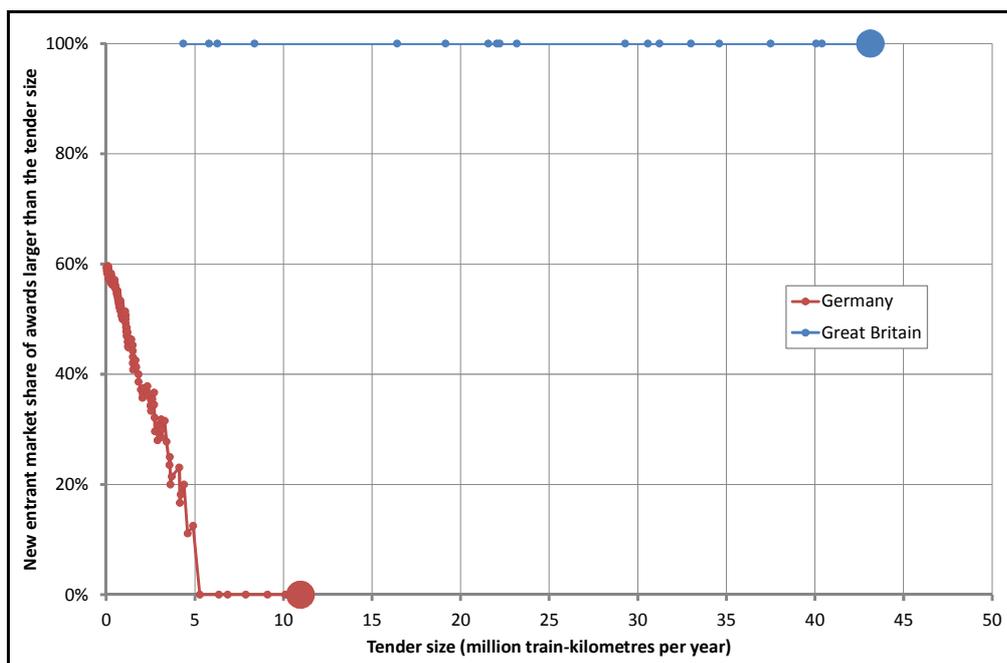
Existing legislation on workers' rights

- 7.137 Directive 2001/23/EC sets minimum standards for workers' rights in the event of transfer of undertakings. However, Article 8 states that "This Directive shall not affect the right of Member States to apply or introduce laws, regulations or administrative provisions which are more favourable to employees or to promote or permit collective agreements or agreements between social partners more favourable to employees."
- 7.138 The administrative provisions, regulations, laws or (potentially) constitutionally defined rights in the Member States may not be consistent with the transfer of employees between Railway Undertakings. If they are not, implementation of a competitive tendering model involving transfer of staff, rather than recruitment of new staff, may require changes to the national employment law of some Member States. These changes would either reduce such rights in general or restrict or remove them in relation to certain specified transfers within the railway industry for the purposes of facilitating unbundling, open access, competitive tendering or the introduction of new framework conditions.
- 7.139 Again, the effects on market opening on employment, terms and conditions, will depend on the competitive model adopted in each Member State, which we discuss further next.

Tendering large service packages

- 7.140 Effective staff transfer, and the conditions on which it takes place, is potentially important where Competent Authorities wish to tender large PSO packages.
- 7.141 In Appendix Figure H.2, which we repeat below as Figure 7.2, we compared data on PSC contracts recently offered for tender in Great Britain and Germany.
- 7.142 In Great Britain, several PSC operators employ over 4,000 staff, and in designing the competitive tendering system it was not considered reasonable either for new entrants to recruit so many staff or for railway employees' jobs to be at risk each time a PSC was re-let. The chosen solution was to restructure the incumbent operator into a number of companies, each employing the staff necessary to provide the package of services for which they were responsible. Rather than taking over staff, PSC contractors take over the company, including not only its staff and employment conditions but also its "contractual matrix" of suppliers and subcontractors, including Infrastructure Manager, rolling stock leasing companies, and competitors who provide it with services such as stations and ticketing. There is therefore no transfer of staff when PSCs are handed over to a new operator.

FIGURE 7.2 PSCS OFFERED FOR TENDER IN GERMANY AND GREAT BRITAIN



Note: large bullet shows size of largest current contract awarded in each Member State

- 7.143 In Germany, in contrast, the approach to competitive tendering has been to require the successful bidder to recruit their own staff, and implicitly to “build” their own contractual matrix, before beginning services. PSCs are typically awarded two years in advance, to give time to procure rolling stock, and this also allows for an extended process of staff selection, recruitment and training. However, there are generally no guarantees to the incumbent’s staff that they will be taken on by a new entrant. As yet there is little experience of whether and how staff employed by a new entrant find new work when its contract is not renewed, or evidence of what models of staff transfer are or would be preferred by railway workers.
- 7.144 In Italy, an intermediate approach is used in which the tender requires the winner to hire all existing staff (except senior management) at the same contractual conditions. This approach provides job security but, as we note above (7.133), the Italian Competition Authority (AGCM), has ruled that compulsory adoption of the National Contract for the winner of a tender represents an entry barrier.
- 7.145 In Germany new entrants win 65% of small contracts, and around 60% of all contracts, but new entrant share falls rapidly with the size of the contract. The largest tender not won by Deutsche Bahn was for 5.28 million train-kilometres. All larger contracts were awarded direct to Deutsche Bahn or its subsidiaries. This suggests that it is difficult, with the current framework conditions in German, to obtain effective competition for tenders for more than around 5 million train-kilometres per year. Everis noted that typically only one or two bids are received for PSC contracts in Germany. In Great Britain, in contrast, it has been possible to award contracts for over 40 million train-kilometres a year, for each of which interest remains strong. Everis noted that typically four bids for each franchise are received in Great Britain. All PSC contracts in Great Britain have been awarded to new entrants.

- 7.146 After preparing Figure 7.2 we were informed that a contract has been let in Germany for 8.5 million train-kilometres a year without making any special provision for staff transfer. Even if there is a successful transfer, award of such contracts still typically requires a lead time of two years.
- 7.147 The approach adopted in Germany would, if extended to all PSCs in all Member States, imply a high level of uncertainty and job insecurity for a large number of railway employees. If all PSC services were re-let every 10 years, 20% of the railway network and the railway staff would be in transition at any one time. If the average duration of PSC contracts were shorter, the proportion of staff in transition at any one time would be even higher.
- 7.148 This issue is avoided with the model used in Great Britain, where staff can be transferred with their company at relatively short notice, and any “re-mapping” of activities and transfer of staff to reflect changes to the franchise package are normally carried out as a separate exercise within the life of the PSC contract.
- 7.149 Again, we conclude that, given the uncertainty in whether Member States would restructure their incumbent railways into a number of PSO-facing companies, it is not practicable to estimate the disruptive effects on job security of a package involving compulsory competitive tendering.

Mandating staff transfer

- 7.150 Following discussion with the Commission, we also considered the possibility of mandatory staff transfer, but we concluded that staff cannot be forced to transfer from one operator to another, as they always retain the right to resign and seek employment elsewhere. The Commission cannot impose an obligation for workers to change employer. It would, however, be possible, either:
- For incumbent railways to be restructured into PSO-facing companies in advance of competitive tendering, so that competitive tendering does not result in any subsequent change of employment.
 - For existing employers to be required to negotiate with staff to put in place terms and conditions for their future transfer in the event that this is necessary as the result of a competitive tender.
- 7.151 Either model is potentially workable, although it is not yet clear which would be preferred by railway staff, or whether or how the Commission could or should mandate either of them. One approach which could be investigated further, however, would be to require any Railway Undertaking awarded a PSC to complete negotiations with its staff, during the life of the PSC, to enable their transfer to another Railway Undertaking at the end of the PSC, on a basis consistent with EU and national employment law.
- 7.152 However, it is difficult to see what sanctions could be implemented against a large incumbent railway which failed to do so, particularly if its employers enjoyed special status or protection. In France, for example, the President has personally endorsed the preservation of the special status (“*statut cheminot*”) of railway workers. This is another area of uncertainty in the effect of market opening on employment, wages and working conditions.

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Subcontracting by a “shell” Railway Undertaking

- 7.153 A further issue to be addressed in the context of staff transfers is the wide range of activities which are subcontracted by Railway Undertakings.
- 7.154 The Task Specifications refer to “compulsory competitive tendering for PSC”, and similar wording has been used in options B1 and B2 (see Table 6.18), but neither it nor existing legislation defines what minimum activities would be directly provided by the tenderer, rather than subcontracted from other parties.
- 7.155 We described above (6.233) how a Competent Authority could divide a large package into a series of small tenders, inter alia by allowing subcontracting between a number of PSC providers. Subcontracting by Railway Undertakings is already widespread, and Table 7.8 below lists some existing examples of elements of the train service not always provided by the tenderer in PSCs.
- 7.156 Table 7.8 provides evidence that the range of services provided in different Member States varies widely. We assume that the relevant Competent Authorities have bona fide reasons for not requiring the PSC operator to set fares or take revenue risk, or to operate stations, or to make use of rolling stock provided by the Competent Authority, a leasing company or a manufacturer.
- 7.157 This demonstrates the range of models which Member States and Competent Authorities have found to be effective. However, these requirements mean that many of the activities normally associated with providing a train service may be subcontracted to parties either specified by the Competent Authority or chosen by the PSC operator.

TABLE 7.8 SERVICE ELEMENTS NOT ALWAYS INCLUDED IN PSCS

Service element	Examples
Fares setting and revenue risk	“Gross cost” contracts in which the PSC operator is contracted to provide a specific service to a specific quality. Common in Germany and Sweden and also used in Great Britain in PSC contracts serving urban areas where a large proportion of revenue is from multimodal tickets.
Ticket sales	PSC operator CrossCountry in Great Britain provides on-train sales, but has no ticket offices and calls only at stations operated by other PSC operators or by the Infrastructure Manager.
Station staffing	
Train ownership	In many Member States, PSC operators lease trains from rolling stock leasing companies or from the competent authorities. In some Member States, PSC operators have contracted for manufacturers to provide and maintain trains.
Train maintenance	
Train provision	

- 7.158 The Commission may need to decide whether it would be appropriate for incumbent railways, alone or in collusion with Competent Authorities, to be permitted to restructure themselves as a series of “shell” Railway Undertakings. This might, for example, be essential if Competent Authorities in Great Britain were required to subdivide a large package such as Thameslink into multiple independent PSCs (see 6.229).

- 7.159 For example, a Railway Undertaking might subcontract almost all its activities back to other subsidiaries of the incumbent on long term contracts on generous terms, such as:
- Train provider
 - Train crew provider
 - Station provider
 - Retail provider
- 7.160 If this were done, the activities subject to competitive tendering might be limited to oversight of these subcontracts, with little or no scope to manage, innovate or earn a profit from doing so.
- 7.161 However, it is not clear what steps the Commission could take to prevent such restructuring by incumbents. Subcontracting, particularly of rolling stock provision and maintenance, is also a bona fide means of facilitating competition and seeking efficiencies.
- 7.162 There is therefore a possibility that legislation to require compulsory competitive tendering will precipitate pre-emptive restructuring of some Railway Undertakings to “lock value” into subcontractors outside the process of competition between Railway Undertakings. This might require an initial transfer of employees into the contractors, but would remove them from exposure to future employment uncertainty each time a PSC was re-let.

Summary

- 7.163 It has not proved practicable to make a conclusive estimate of the social impacts of the proposed options and packages, due to the following uncertainties:
- Member States have different policies and legislation on protecting employment, wages and working conditions of employees. In Austria (F3.15) the Ministry of Transport has stated that competitive tendering cannot be introduced while ÖBB’s staff costs are 20% higher than those of its competitors. In Italy (H3.14), in contrast, the Competition Authority has ruled that compulsory adoption of the National Contract for the winner of a tender represents a barrier to entry, implicitly encouraging entry by “low cost” operators.
 - Member States and Competent Authorities may have different approaches to how they arrange competitive tendering, and in particular whether and how the incumbent railway is restructured, either as a series of self-contained PSC-facing Railway Undertakings or as a series of subcontractors to one or more Railway Undertakings that have been awarded PSCs.
 - Member States and competent authorities may have different aspirations and objectives for compulsory competitive tendering, including the balance between quality improvements and financial savings.
 - Quality improvements may involve additional staff, but alternatively could be achieved through new investment, refurbishment or cleaning of existing assets, or higher service levels (see 7.100).
 - Financial savings may come from changes in employment, wages or working conditions, but alternatively could be achieved by other means such as new investment. In Great Britain, for example, staff terms and conditions of

employment are protected on transfer, and wages for some specialist skilled groups such as drivers have risen as competing operators, including new entrants, have paid more to attract staff. The transfer of performance risk to franchise operators has also incentivised strategies to minimise risks of industrial action by workers. This model has not resulted in new “low cost” operators depressing wages and working conditions, as had been speculated by some observers.

- 7.164 In summary, there is no basis on which to forecast the balance between reduction in costs and expansion in capacity and quality, or the extent to which any of these changes will result in changes in social conditions in different Member States with different regulatory and legal traditions. We conclude that the effect of market opening on employment and social effects is subject to considerable uncertainty.

Environmental impacts

- 7.165 We noted above (7.81) that we would expect that transfer of passengers and freight to rail from more carbon-intensive modes will result in an overall reduction in greenhouse gases such as carbon dioxide (CO₂). There are, however, potential offsetting factors:

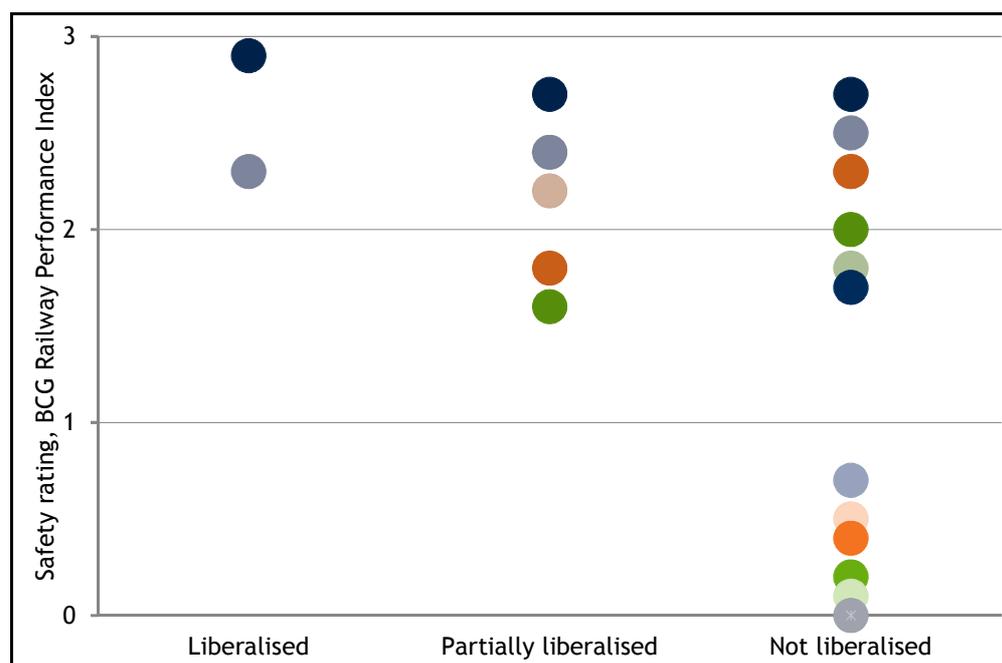
- An increase in the supply of rail services, whether provided by open access or under PSCs, will add to their CO₂ emissions
- Additional services may be delivered using older and less efficient rolling stock

- 7.166 On balance we assume that environmental impacts would lessen (improve) with all packages, but the greatest improvement would be with packages 1 and 4 with greater scope for new open access services.

Safety

- 7.167 We noted above (7.83) that Directive 2004/49/EC (the Railway Safety Directive, now amended by Directive 2008/110/EC) develops a common approach to rail safety and lays down a clear procedure for granting the safety certificates. We also examined the safety component of a 2012 European Rail Performance Index (RPI) presented by Boston Consulting Group (BCG) at the Florence School of Regulation in October 2012.
- 7.168 Our analysis of the impact of unbundling on performance and safety (Appendix G7) found no evidence of a reduction in safety levels following market opening in the Netherlands, or in Great Britain and Sweden which have carried out the most extensive restructuring of their railway industries.
- 7.169 Figure 7.3 shows BCG’s assessment of the safety rating of railways in the liberalised, partially liberalised and not liberalised clusters defined in Table 6.2.

FIGURE 7.3 SAFETY IN BCG RAIL PERFORMANCE INDEX BY LIBERALISATION



Source: Boston Consulting Group presentation to Florence School of Regulation

- 7.170 The chart suggests that different levels of liberalisation have produced a wide range of safety outcomes. While there are only two fully liberalised railways in the same, there is no evidence to suggest that liberalisation is a contributing factor to levels of safety.

Qualitative Impact Assessment: market opening: conclusions

- 7.171 Table 7.5 to Table 7.7 show that the packages can be differentiated on a number of attributes:
- Packages 3, 4 and 5 provide the best scope for attracting new entrants and new PSC bidders, but also have the highest transaction costs
 - Packages 4 and 5 provide the best scope for small and medium enterprises and sectoral competitiveness
 - Packages 4 and 5 provide the best scope for growing revenue and demand, reducing fares and scope for improving the station experience
 - Package 4 will perform better than package 5, because on “routes” with PSCs, package 5 prohibits open access while package 4 permits it subject to an economic equilibrium test
- 7.172 In practice, a qualitative Impact Assessment of the type set out above cannot repeat all the more detailed qualitative arguments for a preferred approach which we set out in Appendices G and H. We therefore draw on these Appendices to support our conclusions on the preferred market opening approach.
- 7.173 As we discussed in Appendix H, our preferred approach to open access is open access everywhere subject to a test of the economic equilibrium of PSCs (option A1). The alternative, limiting open access to “routes” not covered by PSCs (option A3), could merely result, immediately or over time, in all “routes” being covered by PSCs, leaving markets closed to open access. The only potential advantage of

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option A3 relative to option A1 is the lower transaction costs resulting from not needing to carry out any tests of economic equilibrium or, in Member States with PSCs on all passenger “routes”, not needing to deal with open access at all.

7.174 The preferred market opening package, as anticipated in Appendix Table H.18, is therefore package 4, with:

- Open access subject to a test of the economic equilibrium of PSCs
- Compulsory competitive tendering for all PSCs above a certain “de minimis” size threshold

Quantitative Impact Assessment

7.175 We discuss next our approach to carrying out a quantitative Impact Assessment of:

- Unbundling option U2
- Market opening package A4
- A combination of them

7.176 In the remainder of this Chapter we:

- Summarise the principal risks and uncertainties associated with preparing forecasts of future industry structure and performance
- Set out our quantitative assumptions and the evidence supporting them
- Present the results of the Impact Analysis calculator for a “conservative” scenario and an “optimistic” scenario
- Present sensitivity tests developed in discussion with the Commission

Quantitative Impact Assessment: risk and uncertainty

7.177 The evidence available to support any quantitative assessment of the options and packages discussed above is limited and open to a range of interpretations. Small changes in assumptions might produce significantly different results, for reasons we discuss below.

Limited experience and unexpected outcomes

7.178 The effects of railway restructuring to date have revealed that legislation may result in both unexpected opportunities and unexpected difficulties, making the outcomes difficult to predict.

Sweden

7.179 Sweden restructured its industry in 1988. The principal changes were the separation of operations and infrastructure, infrastructure access charges set at a very low level, and the introduction of competitive tendering for unprofitable services. As far as we were able to establish, the authorities did not attempt to forecast either the scale of new entrant activity or the timescales over which it would appear. In practice, the initial impact of the changes was limited, but further changes were only introduced gradually and over an extended timescale. It was ten years before the Competent Authorities established rolling stock leasing company Transitio to own a pool of rolling stock for PSC services, and over twenty years before some elements of original incumbent SJ’s monopoly were removed.

Great Britain

- 7.180 Great Britain restructured its industry in parallel with the implementation of Directive 91/440/EEC. Infrastructure capacity was more than sufficient to carry the expected static or falling demand, and the expectation was that restructuring would reduce the costs of infrastructure and operations. In particular, financial assumptions suggested that an increasing proportion of operations would become profitable, and it was assumed that PSCs would gradually be reduced in scope in favour of open access services taking advantage of spare capacity.
- 7.181 Following restructuring, franchisees in Great Britain focused on increasing revenues, particularly through service differentiation and yield management, rather than cutting cost, and the resulting rise in demand has required very expensive investment in new trains and infrastructure. However, and as Table 4.1 shows, 97% of long distance services, whether specified in a PSC or not, are still provided by franchisees experiencing, in many cases, rapid growth in demand. The current focus of infrastructure planning is to expand capacity sufficiently to accommodate the growing volume of services specified in PSCs, with little or no capacity remaining available for open access.

Germany

- 7.182 In Germany there has been no centralised plan for market opening, and forecasts of the effects of liberalisation focused on qualitative analysis rather than quantified predictions. We saw no forecasts of the scale or timing of market entry.
- 7.183 Emerging and empirical findings, such as the decline in the number of bidders for PSCs (DE country fiche Figure 16), and the effective inability of new entrants to win PSCs for more than 5 million train-kilometres per year (Appendix Figure H.2), might have been predicted but were not quantified. One consequence is that different patterns of German national and regional powers, or Competent Authorities, or PSC packages, might have resulted in a very different volume of bidding and successful tendering and new entry.

Other transport sectors

- 7.184 In aviation, forecasts of the effects of liberalisation of the European aviation market in 1993 focused on the expected effects of competition between existing airlines on existing routes. The subsequent expansion of low cost carriers opening wholly new routes was not anticipated.
- 7.185 In bus transport, a two-year review of competition in the supply of local bus services in the UK, completed by the UK Competition Commission in 2011, identified a number of barriers to competition, estimated the scale of their impacts and recommended a number of remedies. However despite having extensive powers to obtain and analyse industry financial data it did not attempt to forecast the expected impact on market structure, fares, quality, profitability or passenger volumes.

Principal uncertainties

- 7.186 We summarise in Table 7.9 a longer list of the principal uncertainties in our assessment of the extent of market entry, drawing on the relevant analysis in earlier Chapters, Appendices or country fiches.

TABLE 7.9 PRINCIPAL UNCERTAINTIES

Option	Issue
Baseline	Impact of European Court of Justice decision on separation requirements
Unbundling	Uncertain effects of unbundling in isolation
	Abuse of “infrastructure” such as ticketing controlled by a dominant RU
	Effectiveness of regulation to limit any common interest between IMs and RUs
	Coordination between Infrastructure Managers and transport operators
Rolling stock	Affordability and level of residual value guarantee
	Extent of other rolling stock models, such as provision as a service
Ticketing	Unknown “default” ticketing arrangements in some MSs
Compulsory competitive tendering	Operationally separable service packages
	Boundaries and cooperation between CAs
	Contestability of PSCs, particularly given the need for staff and rolling stock
	Timing and funding, including improved access to rolling stock
	Average reduction in operating costs
	Proportion of cost savings reinvested, and consequential effects
Open access	Viable markets with spare capacity
	The effect of the economic equilibrium test
	The timing of new entry
	The extent of “commercial” services which remain viable with open access
	The share of new entrants’ passengers taken from incumbents
	Reduction in incumbents’ costs stimulated by competition from open access

7.187 We discuss each of the issues in Table 7.9 further below.

Baseline

7.188 On 6 September the European Court of Justice Advocate General delivered a non-binding opinion that Directive 91/440/EEC permits the adoption of a holding company structure and that the structure adopted by the incumbent railways in Germany and Austria is permitted. We understand that a final ruling is expected in 2013. We identified the possibility that incumbent railways in one or more other Member States take advantage of this legal clarification to reintroduce a holding company structure. This might result in them incurring additional transition costs to be compliant with further requirements put forwards under the Fourth Package.

7.189 On 29 October 2012, shortly before finalisation of this report, proposals were announced to attach the French Infrastructure Manager RFF to Railway Undertaking SNCF in a single grouping. This announcement was too late to be

incorporated into our analysis and modelling, and our baseline therefore assumes that RFF and SNCF remain separated as at present. We note, however, the possibility that the incumbent railways in one or more Member States reverse at least some of the separation currently in place. This might materially affect the transition costs of unbundling from the baseline.

Unbundling

Effects in isolation

- 7.190 We noted above (6.39) that no Member State has unbundled as envisaged in option U1 or option U2, or without simultaneously or soon thereafter making other changes, and that there are lags before effects become clear, during which time other changes happen. There is no consensus on the quantification of the effects of the proposed unbundling options in isolation, or of the relative net costs and benefits.

Abuse by a dominant Railway Undertaking

- 7.191 As we set out in Appendix H6, and summarised in H6.10, the effects of more extensive unbundling of the elements of railway infrastructure (as defined in Annex II to Directive 2001/14/EC), may be limited if a dominant Railway Undertaking still controls assets, services and systems not currently defined as infrastructure but still, in practice, required by other Railway Undertakings.
- 7.192 In many Member States, the extent of such control and dominance will depend on whether, and in what way, the responsibilities of the current monopoly or dominant operator are changed, potentially as part of market opening, and the extent to which functions in monopoly supply become independent of any one operator in accordance with Directive 2012/34/EU.

Effectiveness of regulation

- 7.193 Full institutional separation may not be fully effective unless there is also effective regulation to ensure that the Infrastructure Manager continues to act in a non-discriminatory way as required by Directive 2012/34/EU.

Coordination between Infrastructure Managers and transport operators

- 7.194 For unbundled railways to operate efficiently there will need to be effective coordination between Infrastructure Managers and infrastructure users.
- 7.195 We set out in 6.183 to 6.190 our conclusion that a creation of a coordination body might be of merit but would require further work before it could be considered an appropriate or useful mechanism in the context of institutional separation.
- 7.196 There are, however, a number of ways in which coordination could be improved. For example, nearly 20 years after formal separation of Infrastructure Manager from Railway Undertakings in Great Britain, an alliance has been created between Infrastructure Manager Network Rail and Railway Undertaking South West Trains. More such alliances are proposed.
- 7.197 However, the coordination issues arising vary between Member States, and the effectiveness of arrangements which may be adopted and developed to address them, are currently uncertain.

Rolling stock

Ensuring that PSC contractors do not bear residual value risk

- 7.198 We set out in Appendix H a number of practical difficulties with attempting to legislate, at EU level, to improve access to rolling stock. In Chapter 6 (6.203) we noted that we found no firm evidence of the costs and benefits of any of the individual options RS1, RS2 and RS3, or a mix of them and other unspecified measures in as yet unknown proportions in the form of RS4.
- 7.199 Our Impact Assessment is therefore based on illustrative assumptions about the possible effects of a mix of such developments over time.

Other models, such as provision of rolling stock as a service

- 7.200 A further possibility is that rolling stock is increasingly provided as a service. Under this model, a Railway Undertaking contracts with a train service provider for the supply of rolling stock on an availability basis, where the train service provider takes responsibility for the procurement, maintenance and presentation of the rolling stock for operations. The train service provider role may be undertaken by manufacturers or train maintenance companies or potentially, as we discuss in H3.22, by an incumbent Railway Undertaking restructuring to separate a profitable (and monopoly) train service provider from a (marginally viable) Railway Undertaking. Rolling stock is already provided through this model in some Member States but the further development of this pattern of industry operation is uncertain.
- 7.201 We did not assume widespread provision of rolling stock as a service, but it may fundamentally change the scope of activities carried out by Railway Undertakings (see Appendix Table H.9) and hence Railway Undertakings' ability to manage to improve quality or reduce costs.

Ticketing

Unknown "default" arrangements in some Member States

- 7.202 We noted (6.207) that Member States which still have a single operator may favour compulsory integration, or compulsory competition, or a mix of the two in different markets. This means that even the starting position, and hence the direction in which policy initiatives at the EU level will require some Member States to move, is uncertain.
- 7.203 Packages 3, 4 and 5 include option T1 in which decisions on whether to establish ticketing agreements will be left to the Member States. Some may take advantage of the enabling legislation, and we assume that they will not introduce arrangements which are likely to be counterproductive. However the direction or extent of change, by Member State and market, remains uncertain.

Compulsory competitive tendering

Operationally separable service packages

- 7.204 We identified (H7.6) PSC contracts ranging in size from 20,000 to over 40,000,000 train-kilometres a year, a variation in scale of over 2,000 to 1. Packages as large as 9.4 million train-kilometres per year in Berlin (H2.80) and 23 million train-

kilometres per year in London (H2.81) appear to be difficult to split for operational reasons, which might damage the credibility of the policy initiative.

- 7.205 While Great Britain has subdivided all existing services into packages, and some Member States have subdivided all existing PSC services into packages, others have not. We set out in Figure 6.6 illustrative estimates of the possible number and size of PSCs in other Member States, but detailed studies will be required to define packages which are operationally viable.
- 7.206 Even if the Commission does not legislate to specify maximum sizes of PSC packages (see 6.215 to 6.240), this creates two major uncertainties:
- Whether small packages will attract market interest, given the evidence of low numbers of bidders in Sweden (SE country fiche 2.16) and declining number of bidders in Germany (DE country fiche Figure 16)
 - Whether large packages can attract interest from, or be winnable by, operators other than the incumbent with current arrangements for the transfer of staff (Appendix Table H.8) and the limited proposals for improved access to rolling stock proposed in option RS4 (H4.15)

Boundaries and cooperation between CAs

- 7.207 PSC packages must not only be operationally viable but also relate to the responsibilities of the Competent Authorities, whether acting individually or in groups. Where two adjoining authorities require cross-boundary services, for example, it may be possible for each to specify, and pay for, half of the timetabled trains. Where a service is required across many boundaries, however, it may be easier for all the Competent Authorities involved to agree a single joint specification and funding arrangement.
- 7.208 In Member States with a single national PSC, the future pattern of Competent Authorities, and the resulting effects on the size, patterns, attractiveness and contestability of PSCs are all unknown. In addition, evidence from Sweden and Great Britain (see 6.236) is that the size and patterns of PSCs will change over time.

Contestability of PSCs

- 7.209 As we note in H2.97, passenger railway services cannot be provided without suitable rolling stock, and skilled and qualified technical staff.
- 7.210 The competitive tendering model adopted in Great Britain was based on bidders taking control of an existing Railway Undertaking company, complete with a “contractual matrix” including PSC obligations, infrastructure access rights, rolling stock provision and staff. Changes in rolling stock and staff generally take place gradually, during the life of a PSC, rather than instantaneously on transfer of services from one operator to another. This gives the franchisee time to modify rolling stock or staffing to improve efficiency or quality or, under the directions of the Competent Authority, to meet future requirements including changes to PSC services and, in some cases, the boundary of the PSC package. This model can be interpreted as one of “continuous improvement” of an existing PSC “business”.
- 7.211 In contrast, some Member States leave it to bidders to assemble their own “contractual matrix” including procurement of rolling stock and recruitment of staff. Unlike the “continuous improvement” model, this means restarting the PSC

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business “instantaneously” with each new PSO, which may raise a number of practical issues (H4.15) including delays of up to 2 years to mobilise staff and resources (H3.8). It is not yet clear how the industry, and staff within it, would perform in a situation in which, if PSC contracts typically last 10 years, 20% of operations and staff were in transition at any one time (H3.11).

7.212 We discuss elsewhere the scope for EU legislation either to improve access to rolling stock (H4) or to change the terms and conditions of employment of existing and potential railway workers in the Member States (H3.4). We also note that views vary between the Member States: some argue that all railway workers should have the same terms and conditions, others argue that bespoke working conditions are a key part of new entrants’ competitive advantage (H3.15).

7.213 In the absence of certainty in the timing and effectiveness of moves to improve access to rolling stock, or Member States’ future policy on staff terms and conditions and transfers, the effective contestability of PSC packages, particular those requiring large numbers of trains or staff, remains uncertain.

Timing and funding

7.214 The Impact Assessment requires assumptions about the rate at which PSCs will be re-let by competitive tender in each of the Member States.

7.215 We noted above (7.179) that it was ten years after initial market opening before Competent Authorities in Sweden established Transitio to improve access to rolling stock. Looking forward, we also noted that:

- Existing PSC contracts in some Member States will not expire until 2025 (Appendix Table F.1)
- A PSC in Berlin is now being let on the basis that the rolling stock must be made available for lease when it ends, but this would not be until 2032 (6.196).
- Some Member States could re-let long contracts to incumbents just before EU legislation was implemented, potentially delaying the effects of market opening by compulsory competitive tendering by up to 15 or even 22½ years (H2.47).

7.216 In principle, at least, it is therefore possible that a Regulation coming into force in 2019 (see Table 7.16 below) would result in little or no change before 2030 in at least some Member States.

Average reduction in operating costs

7.217 The effect of competition on the costs of PSCs will depend on the existing situation but, to characterise two extremes:

- There may be considerable scope to cut costs in incumbents which have been generously supported and faced little pressure to strive for efficiency.
- There may be little or no scope to cut costs in incumbents which have been starved of cash or underfunded. In these circumstances, the efficient levels of costs may be above the subsidy currently made available to the incumbent.

Proportion of cost savings reinvested, and consequential effects

7.218 Member States and Competent Authorities may focus on cost reduction and use compulsory PSC tendering as an opportunity to minimise the costs of provision of

the current services. This will maximise the financial benefit to them but will not improve capacity or quality or result in any mode shift of external benefits.

- 7.219 Alternatively, Member States and Competent Authorities may “reinvest” some of the potential cost savings in capacity and/or quality, increasing rail demand, generating mode shift and benefits such as reductions in greenhouse gas emissions.
- 7.220 In practice, however, there is little evidence from which to estimate the level of savings which are subsequently reinvested in this way. We are not aware of any competitive tendering competition in which the Competent Authority has committed, in advance, to reinvest a defined proportion of any savings.
- 7.221 In practice, competent authorities benefitting from price reductions will have additional funds available which, over time, they may spend on other activities, or on rail at the next competitive tender (which in some cases might not be for 10 to 15 years). We are not aware of any research identifying the proportion of cost savings from competitive tendering which have been returned to the rail sector through further investment or higher specifications.
- 7.222 In practice the choice, or more probably the balance, between these two extreme approaches in future will lie in the hands of individual Member States and Competent Authorities depending on their transport and financial priorities. The likely outcome is particularly uncertain where PSC services have not yet been either subdivided into packages or allocated to Competent Authorities.

Open access

Viable markets with spare capacity

- 7.223 Open access will only occur where new entrants can find viable markets in which revenues exceed costs. However:
- Costs include infrastructure charges, the level and structure of which vary widely between Member States.
 - Revenues will often be constrained by competition from other modes and by fare levels of competing PSC services. We note that, to a new entrant, Member States’ or Competent Authorities’ policies of setting fares on PSC services below costs are indistinguishable from state aid. A further difficulty is that the revenues obtainable in the market by the incumbent are rarely known to potential new entrants.
 - Capacity must be available to operate the service in a way which is profitable. While no Infrastructure Manager has declared any part of its infrastructure to be congested as defined in Directive 2001/14/EC, many report that they have problems with capacity.
- 7.224 We did not attempt to assess the present or future scope for open access by Member State and station pair, which would require a large number of detailed studies. Entry to date has been limited (see Table 4.1), and financial data, where available, suggests that it is often not profitable. Assumptions regarding the scope for viable entry in other Member States are therefore necessarily subject to a wide range of uncertainty.

The effects of the economic equilibrium test

- 7.225 A further constraint on open access, in packages 1 and 4, would be a test of the effects of open access on the economic equilibrium on PSC services. The exact definition of such a test will need to be determined, and the outcome will depend on the evidence available relating to the individual markets in which entry is proposed. This is likely to depend, inter alia, on the size and pattern of PSCs and the extent to which open access services can target individual station-to-station flows on which they are dependent.
- 7.226 In Italy, the regulatory body determined that the entry of Arenaways would render an existing PSC awarded to Trenitalia unprofitable. In Great Britain, we set out in detail a theoretical approach to how new entrants might choose to enter the market (Great Britain country fiche 3.46 to 3.50) and estimated that a new entrant introducing services between a single station pair could render a PSC contract for 20 million train-kilometres per year unprofitable.
- 7.227 Taken together, the need to find viable markets and satisfy the economic equilibrium test suggest that the scope for open access is likely to be limited to specific markets, such as on high speed lines, where:
- Existing services are commercial and not subject to or parallel to a PSC
 - Spare capacity is available
 - An operationally efficient and commercially attractive service can be fitted into this spare capacity
 - The market is sufficiently large to support this additional service

The timing of new entry

- 7.228 Processes already in place for freight and international passenger operators should make it possible for potential new entrants to determine the availability of capacity and the costs of entry. However they may, as noted above, be unable to make sufficiently robust estimates of their potential revenue, or the incumbent's response, to justify the risks of market entry. They may also be deterred from entry by factors such as the size of financial commitment to rolling stock, staff or access charges, or uncertainty over the effectiveness of measures to prevent anti-competitive behaviour by the incumbent. Even in markets which are open and prima facie commercially attractive, there is uncertainty over when new entrants will enter the market.

The extent of "commercial" services which remain after open access

- 7.229 The options for open access envisage protection for PSCs but not for services which are currently notionally "commercial". In practice, we would expect that many commercial services are marginal and that even limited open access might render them unprofitable. In the Austria country fiche 4.5, for example, we note that ÖBB services competing with commercial entrant WESTbahn lose €20 million a year (although these are currently included within a PSO).
- 7.230 In some cases the incumbent might be allowed to withdraw, but we instead assumed that a decision would be made to protect the service with a PSC. In the case of Austria, ÖBB's loss-making services are already covered by a PSC.
- 7.231 We also note in Appendix H that pressure from passenger representative groups and bodies may make it easier to add a PSC than to remove one, with the result

that the proportion of stations calls protected by PSCs grows over time. A possible outcome is a gradual trend to PSCs extending to all stations, as is already the case in Sweden and Great Britain, although how rapidly this would occur is uncertain.

The share of new entrants' passengers taken from incumbents

- 7.232 Forecasts of the financial effects of open access are highly sensitive to the origins of the open access operators' passengers. With an economic equilibrium test, open access will only be permitted if a high proportion of these passengers either change mode from car or air or are new travellers. The scope for mode shift, or generating new travel, will vary widely from station pair to station pair.

Reduction in incumbents' costs stimulated by competition from open access

- 7.233 In principle, incumbents operating "commercial" services without PSC support already have incentives to cut costs to maintain or grow profits. While open access operators' services add to the industry cost base, they may, through competition, stimulate further cost reduction by the incumbent, at least in the station-to-station markets where they compete. The scale of this effect is uncertain.

Quantitative Impact Assessment assumptions: baseline

- 7.234 We set out here our quantitative assumptions for the Impact Assessment baseline described in Table 7.1.

Market sizes and incumbent shares

- 7.235 Incumbent share in most Member States is 90-100%. We assumed, in the baseline:
- In the long distance and high speed markets, new open access operators will continue in Austria, the Czech Republic, Italy and Sweden, even in the absence of further liberalisation measures
 - In other markets, current market shares will continue

Passenger demand

- 7.236 We assumed growth in demand in passenger markets based on those in the Transport White Paper, but extrapolated to 2035 as shown in Table 7.10 below.

TABLE 7.10 BASELINE GROWTH IN DEMAND

Mode	Segment	2009-2010	2011-2015	2016-2020	2021-2025	2025-2035
Rail	Urban and suburban	0.9%	2.1%	1.9%	1.8%	
	Medium and regional	0.8%	1.9%	2.0%	2.1%	
	Long distance					
	High speed	2.1%	2.1%	2.9%	3.1%	
	International					
Road	All	0.7%	1.6%	1.1%	0.8%	
Air	All	1.3%	4%	3.5%	2.8%	
Inland waterways	All	0%	0%	0%	0%	

Quantitative Impact Assessment assumptions: option U2 and package 4

- 7.237 As the range of options and packages being considered has developed, we:
- Extended our modelling approach to reflect the principal expected effects of the current options and packages, and their relative importance
 - Focused our modelling approach on first order and larger effects
- 7.238 Two scenarios have been considered for the quantitative impact assessment of option U2 and package 4.
- The first scenario is termed “conservative” and provides results on the basis of a series of assumptions that are considered cautious.
 - A second “optimistic” scenario has also been produced using assumptions applied in agreement with the Commission.
- 7.239 The assumptions for the two scenarios are tabulated in developed on this basis, are set out in Table 7.11 and Table 7.12, which show in turn
- The effect of applying option U2 to the baseline, applied to Member States in clusters A and B without institutional separation
 - The effect of applying package 4 to the baseline, applied to Member States in clusters B, D and E without full liberalisation
 - The effect of applying option U2 and then package 4, so that all Member States have institutional separation and full liberalisation
- 7.240 We have prepared results for the conservative scenario that show the impact of option U2 and package 4 in isolation relative to the baseline. Subsequently, we have reported the effect of combining option U2 and package 4 both for the conservative and the optimistic scenarios.

TABLE 7.11 ASSUMPTIONS FOR CONSERVATIVE SCENARIO

Assumption		Option U2	Package 4	
			Alone	With U2
Open access effects				
Sectors	High speed, long distance, medium/regional, international			
Effects	New entrant's open access train-kilometres as a proportion of current "commercial" train-kilometres	1%	2%	3%
	Share of incumbents' "commercial" services in this sector converted to PSC as a result of open access competition	10%	20%	30%
	New entrant's fares as a proportion of the incumbent's	95%		
	Share of new entrant's passengers taken from incumbents	70%		
	New entrants operating costs per train-kilometre as a proportion of incumbent's	80%		
	Potential reduction in incumbent's operating costs (A)	20%		
	Proportion of incumbent's services stimulated to higher efficiency by new entry (B)	10%	15%	20%
	(AxB) Resulting average reduction in incumbent's costs in this sector stimulated by competition from open access	2%	3%	4%
Compulsory competitive tendering effects				
Sectors	All PSCs, including commercial services becoming PSCs because of open access			
Effects	Reduction in incumbent's share of PSC train-kilometres	2%	10%	15%
	Potential reduction in PSC service operating costs (C)	10%		
	Proportion of PSCs subject to effective competition (D)	10%	50%	75%
	(Cx D) Resulting average reduction in PSC costs	1%	5%	7.5%
	Share of PSC cost savings invested rather than retained	0%/50%, see 7.280		
	Quality-related rise: train-kilometres and capital expenditure	0.1%	0.5%	0.75%
	Quality-related rise: passenger-kilometres and revenue	0.1%	0.5%	0.75%
Timescales and discounting				
Start	Implementation of Package, creation of open access rights and award of first competitive tenders for PSCs	2019		
End	Last existing PSC contracts replaced in competitive tendering	2025		
	Base year for discounting purposes	2019		

Note: for further details of assumptions, see Appendix I

TABLE 7.12 ASSUMPTIONS FOR OPTIMISTIC SCENARIO

Assumption		Option U2	Package 4	
			Alone	With U2
Open access effects				
Sectors	High speed, long distance, medium/regional, international			
Effects	New entrant's open access train-kilometres as a proportion of current "commercial" train-kilometres	1%	2%	3%
	Share of incumbents' "commercial" services in this sector converted to PSC as a result of open access competition	10%	20%	30%
	New entrant's fares as a proportion of the incumbent's	95%		
	Share of new entrant's passengers taken from incumbents	20%		
	New entrants operating costs per train-kilometre as a proportion of incumbent's	80%		
	Potential reduction in incumbent's operating costs (A)	20%		
	Proportion of incumbent's services stimulated to higher efficiency by new entry (B)	10%	15%	20%
	(AxB) Resulting average reduction in incumbent's costs in this sector stimulated by competition from open access	2%	3%	4%
Compulsory competitive tendering effects				
Sectors	All PSCs, including commercial services becoming PSCs because of open access			
Effects	Reduction in incumbent's share of PSC train-kilometres	2%	10%	15%
	Potential reduction in PSC service operating costs (C)	15%		
	Proportion of PSCs subject to effective competition (D)	25%	75%	90%
	(Cx D) Resulting average reduction in PSC costs	3.75%	11.25%	13.5%
	Share of PSC cost savings invested rather than retained	0%/50%, see 7.280		
	Quality-related rise: train-kilometres and capital expenditure	0.1%	0.5%	0.75%
	Quality-related rise: passenger-kilometres and revenue	0.1%	0.5%	0.75%
Timescales and discounting				
Start	Implementation of Package, creation of open access rights and award of first competitive tenders for PSCs	2019		
End	Last existing PSC contracts replaced in competitive tendering	2025		
	Base year for discounting purposes	2019		

Note: for further details of assumptions, see Appendix I

7.241 We summarise below our rationale and the evidence for these assumptions.

Open access: market sectors

7.242 We identified no urban/suburban services which are operated commercially or where there have been applications to operate open access services. We therefore assume that the effects of both option U2 and package 4 on open access would be confined to:

- Domestic high speed, long distance and medium/regional sectors
- Additionally, in option U2, international passengers, although we note that the effect on each service will depend on the extent of unbundling and other conditions in all the Member States through which it operates
- Freight, which we consider separately below (7.298)

Open access: scale of new entry

7.243 We set out in Table 4.1 the market share of new entrants providing open access services reached in 2012, which is typically 1-2%, as measured by train-kilometres, of the relevant long distance or high speed market sector. We assume that:

- In Member States where open access is currently permitted but there is no institutional separation (effectively limited to cluster A), option U2 might result in an increase in open access equivalent to 1% of the incumbent's "commercial" train-kilometres, or around half the volume currently observed in Table 4.1.
- In Member States where there is institutional separation but open access is not currently permitted, package 4 might result in open access equivalent to 2% of the incumbent's "commercial" train-kilometres, broadly consistent with the average seen in Table 4.1. (Note that this is the assumed further increase over and above open access services existing in the baseline, including NTV in Italy, WESTbahn in Austria, and Hamburg-Köln Express and Veolia's InterConnex in Germany.)
- In Member States where there is neither institutional separation nor open access, option U2 alone would result in no change but package 4 might result in open access equivalent to 3% of the incumbent's "commercial" train-kilometres, broadly consistent with the maximum seen in Table 4.1.

7.244 This final assumption is that, in Member States where there is currently neither institutional separation nor open access there will, once these measures are put in place, be 50% more open access as a proportion of commercial services than has typically been observed to date.

Open access: incumbent response

7.245 Faced with the threat of open access, where it is permitted, incumbents operating monopolistic "commercial" services might respond in a number of ways:

- Withdraw non-essential services
- Remain in the market, possibly increasing efficiency
- Following a threat to withdraw essential services, have them converted to a PSC by a Competent Authority

7.246 We assumed that no services would be withdrawn and that currently "commercial" services would either:

- Continue to operate as “commercial” services in open access
 - Be converted to PSCs
- 7.247 The limited data available suggest that many services considered “commercial” are in fact of only marginal viability. However, there is little firm evidence, from the limited volume of open access which has emerged to date, as to the long term effect of open access on the “commercial” services provided by incumbents under a de jure monopoly, and in particular the proportion that would be converted to PSCs. For our quantitative Impact Assessment we assumed that:
- In Member States where open access is currently permitted but there is no institutional separation (effectively limited to cluster A), option U2 might result in 10% of the incumbent’s “commercial” train-kilometres being converted to PSCs
 - In Member States where open access is not currently permitted (effectively limited to clusters B, E and in Denmark and the Netherlands which are part of cluster D), package 4 might result in 20% of the incumbent’s “commercial” train-kilometres being converted to PSCs
 - In Member States where there is neither institutional separation nor open access (effectively limited to cluster B), option U2 alone would result in no change but with package 4 might result in 30% of the incumbent’s “commercial” train-kilometres being converted to PSCs
- 7.248 We discuss below (see Table 7.26) a sensitivity test to alternative assumptions.
- Open access: new entrants’ fares***
- 7.249 We assumed that new entrants would be permitted to offer lower and non-interavailable fares and examined the scope for them to do so while remaining profitable. The limited financial data available suggested that, even at the lower operating costs discussed below, they could on average be loss-making if their average fares per passenger-kilometre were below 95% of existing fares. We therefore assumed that new entrant fares would, on average, be 95% of incumbent fares. We stress that this assumption necessarily represents an extreme simplification of the dynamics of competitive entry, which may not result in a stable outcome (see H2.66, and the examples of “price wars” listed in 7.23).
- 7.250 We do not assume any corresponding reduction in incumbents’ fares, which might be constrained by a national ticketing system including, in some Member States, a fixed system of fares related directly to distance. In addition, any fares reduction by incumbents would reduce their incomes, worsen the finances of their public sector owners, and might result in them becoming loss-making or be converted to PSCs.
- 7.251 We discuss below (see Table 7.26) a sensitivity test to alternative assumptions.
- Open access: new entrants’ abstraction from incumbents***
- 7.252 We would expect new entry to increase overall passenger demand through a number of effects:
- Price elasticity, through the 5% lower fares of new entrants described above. We note, however, that our own experience, and evidence provided by the Commission from a number of Member States, suggests that price elasticities

are already typically around -1 where the fares of “commercial” services are market-based. This means that changes in fares in either direction may result in transfer of passengers between incumbent and new entrant, but not in any overall increase in revenue.

- Frequency elasticity, through the increased number of services on routes with new entry.
- Quality elasticity, through the expected higher quality, including factors such as new entrants’ higher staffing levels (see 7.77).

- 7.253 The extent and mix of these factors will vary with the fares environment in each Member State and market and the market entry strategy of each future new entrant, so we did not attempt to model each of the factors separately.
- 7.254 Instead, in the conservative scenario, we assumed that new entrants will take only 70% of their passengers from the incumbent, and that the remaining 30% will result from either mode shift or new travel. This is equivalent to assuming that, for every 100 existing passengers transferring from incumbents to new entrants in response to 5% lower fares, 42 (30%/70%) new passengers are attracted to rail. We did not attempt to calculate whether either new entrants or incumbents would be able to carry such additional passengers without further expenditure on higher capacity.
- 7.255 In the optimistic scenario, we assumed that new entrants will take only 20% of their passengers from the incumbent, and that the remaining 80% will result from either mode shift or new travel, as suggested by preliminary evidence from WESTbahn. This is equivalent to assuming that for each passenger transferring from the incumbent’s services to the new entrant services, there will be a further four passengers who have been attracted through modal shift or are genuine new travellers. We did not attempt to calculate whether either new entrants or incumbents would be able to carry such additional passengers without further expenditure on higher capacity.

Open access: new entrants’ operating costs

- 7.256 We noted above (7.72) the expectation that new entrants would develop efficient business models focusing on market requirements. We assume that by design an efficient operation not constrained by a PSC, and using modern practices, new entrants operating costs per train-kilometre would be only 80% of those of the incumbent. As we noted above (7.249), we estimated that new entry would, on average, only just be profitable with these operating costs and fares at 95% of those of the incumbent.
- 7.257 We discuss below (see Table 7.26) a sensitivity test to alternative assumptions regarding the efficiency gains achievable.

Open access: improvements in incumbents’ efficiencies

- 7.258 We also assume that incumbents’ “commercial” services directly exposed to open access would, under pressure from competition, achieve reductions of 20% in operating costs, bringing them up to the levels of efficiency of new entrants. We assume the proportion of incumbents’ “commercial” services stimulated to achieve these 20% operating cost reductions is:

- 10%, from the 1% additional entry with unbundling option U2 alone (conservative and optimistic scenarios)

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- 15%, from the 2% additional entry with market opening package 4 alone (conservative and optimistic scenarios)
- 20%, from the 3% additional entry with both option U2 and package 4 (conservative and optimistic scenarios)

7.259 We discuss below (see Table 7.26) a sensitivity test to alternative assumptions regarding the efficiency gains achievable.

Compulsory competitive tendering: market sectors

7.260 We assume that the compulsory competitive tendering effects of option U2 and package 4 would extend to all domestic market sectors with PSCs.

Compulsory competitive tendering: reduction in incumbents' share

7.261 We set out in Appendix H how new entrants' ability to win PSC tenders depends, at least in part, on the size of the PSC and the provision of suitable framework conditions, particularly relating to effective unbundling and the accessibility of rolling stock and transfer of staff. In Germany, for example, new entrants have won:

- 65% of small tenders
- 0% of tenders for more than 5 million train-kilometres per year

7.262 In the absence of comprehensive arrangements to facilitate the transfer of staff, and given the potentially large scale of at least some PSCs (see Figure 6.6), we assumed that:

- In Member States with no institutional separation but competitive tendering (effectively limited to Germany, analysed in detail in Figure 7.2), option U2 might enable new entrants to win a further 2% of the incumbent's current share of PSCs
- In Member States with no competitive tendering, package 4 might enable new entrants to win 10% of the incumbent's current share of PSCs
- In Member States where there is neither institutional separation nor competitive tendering, option U2 alone would result in no change but package 4 might enable new entrants to win a further 15% of the incumbent's current share of PSCs

Compulsory competitive tendering: reduction in PSC operating costs

7.263 Reductions in the costs of operating PSCs are expected to be among the main benefits of compulsory competitive tendering and the overall impact of market opening depends, to a large extent, on the scale of these savings.

7.264 We assume above that new entrant open access operators might be able to operate at 80% of the incumbents' existing costs (7.256), and that incumbents exposed to competition might respond by reducing their costs by the same amount (7.258).

7.265 We are aware of reports that competitive tendering for PSCs has led to large reduction in "costs" of between 20% and 30%. However, care needs to be taken when interpreting reported lower prices for PSCs as evidence of lower costs.

7.266 Allocation of costs within railways to specific services is technically complex and, even where detailed cost analysis systems are in place, typically requires a large

number of conventions and assumptions, reflecting the objective of the analysis, as to how costs should be allocated. Incumbents providing a PSC, particularly where this covers the entire national network, may have poor knowledge of their internal cost structure and in particular the standalone or incremental costs of individual services. In addition:

- As monopolists they have every incentive to charge, or negotiate with Competent Authorities, prices well above costs.
- We understand that, once subject to competition for local and regional services, incumbents in some Member States may have deliberately quoted high prices to enable them to focus on easier-to-manage and more profitable long-distance services.

7.267 All these factors can lead to a wide gap between the **prices** for PSC services quoted by incumbent monopolies and the **costs** that they, and hence their public sector owners, would save in the medium to long term if they ceased to provide those services. The best evidence that these **prices** reflected **costs** would be if incumbents monitored and publicised the costs they actually saved after they had withdrawn, which they have not done. They would need to demonstrate that there had been not only savings in fuel and consumables but also reductions in staff numbers and fleet sizes. Otherwise any apparent “cost” saving to a Competent Authority will be at least partly offset by a reduction in profits to the incumbent Railway Undertaking.

7.268 New entrants, conversely, may win a PSC on the basis of prices below cost. This may be because:

- The information on costs and revenues provided to bidders is poor
- They have limited experience of the services required and the costs of the resources, such as staff and rolling stock, required to provide them
- They intentionally make “loss leader” bids to enter and learn about a market for the longer term

7.269 More widely, and all other things being equal, we would expect that Member States and Competent Authorities which have as yet only limited competitive tendering have prioritised the competitive tendering of services:

- Where the incumbent’s costs appear most excessive
- Where they expect that the package is effectively contestable by a reasonable number of bidders

7.270 This suggests that extension of competitive tendering to all PSC services may result in diminishing returns.

7.271 Only Great Britain has completely replaced all the services formerly provided by an incumbent with services provided by new entrants. Great Britain’s approach minimises the confusion between apparent **price** reductions and actual **cost** savings. This is because the franchising process is one of refining the efficiency and quality of the existing operation, whose costs continue to be monitored by the Competent Authority, rather than adding a new operator with no check on which, if any, of the costs of the former incumbent are subsequently eliminated.

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- 7.272 However, and as we set out in the Great Britain country fiche 3.17, differences in subsidy between incumbent and franchise operators are not transparent, for a number of reasons:
- The former national incumbent was funded centrally, and its accounts did not identify past or projected public subsidy to each of the future franchises.
 - Franchise specifications have typically included requirements for reinvestment (discussed above in Table 7.9 and paragraph 7.219) which might not have been affordable by the former national incumbent.
 - Subsidy profiles change over the life of a franchise, with subsidy typically declining as the franchise progresses, so no single year's data is representative.
 - While data on subsidy profiles is published, these do not include any projections of the costs of providing the level of service provided by the previous operator.
- 7.273 We also note that stakeholders in many Member States reported that PSCs are underfunded (see, for example, A9.9, D2.15 and E4) and that the main problem was lack of finance.
- 7.274 On balance we consider that the scope for cost reduction in PSCs may vary, as discussed in 7.217:
- In PSCs where the incumbent has been generously supported and faced little pressure to strive for efficiency, there may be scope for cost reductions. Given the constraints that the PSC imposes how the services are operated, we assume that these might be around 10%.
 - In PSCs where the incumbent has been starved of cash or underfunded, the efficient levels of costs may be above the subsidy currently made available to the incumbent, implying that PSC operating costs might rise after tendering.
- 7.275 For the quantitative Impact Assessment, we assumed that there might be scope to reduce all PSC operating costs by 10% in the conservative scenario and 15% in the optimistic scenario. However, we would only expect Competent Authorities to be able to obtain these savings on PSCs for which there is effective competition:
- In Member States with no institutional separation but competitive tendering, we assume that new entrants winning 2% more of the incumbent's current PSCs results in reductions in the prices and costs of 10% of the incumbents' services in the conservative scenario.
 - In Member States with no institutional separation but competitive tendering, we assume that new entrants winning 2% more of the incumbent's current PSCs results in reductions in the prices and costs of 25% of the incumbents' services in the optimistic scenarios.
 - In Member States with institutional separation but no competitive tendering, we assume that new entrants winning 10% of the incumbent's current PSCs results in reductions in the prices and costs of 50% of the incumbents' services in the conservative scenario.
 - In Member States with institutional separation but no competitive tendering, we assume that new entrants winning 10% of the incumbent's current PSCs results in reductions in the prices and costs of 75% of the incumbents' services in the optimistic scenario.

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also on the price and quality elasticities of demand in individual PSC markets, which may be low, particularly in urban/suburban areas.

Timescales

- 7.284 Following discussion with the Commission we assumed that the Fourth Package legislation would require implementation from the Member States in December 2019, after which the benefits of open access and compulsory competitive tendering would begin to appear.
- 7.285 The rate of emergence of open access services is uncertain, but evidence suggests that it might take at least ten years before all profitable opportunities for new entry are exploited.
- 7.286 The rate at which PSCs become tendered is also uncertain, although the Commission suggested that one possible scenario for the rate of tendering of PSC contracts would be 30% by December 2021, 60% by December 2023 and 100% by December 2025.
- 7.287 We considered this scenario but noted that, unless legislation requires that existing contracts be terminated early to meet specific targets, progress will actually depend on the rate at which existing PSC contracts, including those directly awarded, expire. Our analysis (see Appendix Table F.1) shows that some existing directly-awarded PSCs do not expire until 2025. We would expect that the process of direct awards, with progressively later expiry dates, will continue. New PSCs continue to be let and may be for up to 15 years, with potential extensions to 22½ years. While we cannot predict the exact pattern of expiry dates at the time the Fourth Package legislation comes into force, it is likely that at least some PSCs already contracted by then extend beyond 2025 and potentially to 2034, with scope for further extensions.
- 7.288 We assumed for the purposes of the Impact Assessment that all the benefits of the Fourth Package would emerge gradually over the six-year period from December 2019 to December 2025, and that the full benefits would appear in 2025 and thereafter.
- 7.289 We discuss below (see Table 7.26) a sensitivity test to alternative assumptions.

Discounting

- 7.290 Following discussion with the Commission, we discounted all impacts at 4% per annum to 2019, the year in which the Fourth Package legislation would come into effect. We note that if impacts were discounted to 2012, as was the case in the parallel study of the European Rail Agency (ERA)¹¹ which also forms part of the Fourth Package, all NPVs reported below would be reduced by approximately 24%.
- 7.291 Finally, we stress that all the above assumptions are indicative estimates, applied to the limited financial data available by market sector in each Member State, and should be treated as subject to a range of uncertainty.

¹¹ Impact assessment support study on the revision of the institutional framework of the EU railway system, with a special consideration to the role of the European Railway Agency, Steer Davies Gleave, June 2012

Quantitative Impact Assessment results: unbundling option U2

7.292 Table 7.13 repeats the detailed definition of unbundling option U2.

TABLE 7.13 OPTION U2 DEFINITION

Category	Detailed specification
Unbundling (option U2)	Infrastructure Manager responsible for current essential functions, maintenance planning and investments
	Institutional separation for these functions
	Assets such as passenger stations and freight terminals as per baseline
	Improved conditions for access to facilities in passenger stations as per baseline
	Access to fares, ticketing, reservation and revenue systems according to baseline

Note: original definitions reproduced from Table 6.4

- 7.293 The results for this option are summarised by market sector in Table 7.14 and by cluster in Table 7.15, expressed as NPVs discounted to 2019.
- 7.294 Figure 7.4 and Figure 7.5 show the estimated effect of option U2 on new entrant market share of train-kilometres across Europe by market sector and by cluster.
- 7.295 The net outcome is subject to the exact assumptions set out in Table 7.11.
- 7.296 Other than in international passenger markets, the effects of unbundling are confined to Member States in which the railways are integrated but at least part-liberalised, namely cluster A. Cluster A is dominated by Germany, where there is already effective tendering for PSCs. According to our own assumption, unbundling alone will have a limited impact on new entrants' share of PSCs, which our analysis suggests is restricted primarily by the difficulties of transferring rolling stock and particularly staff. The principal potential effect of unbundling in cluster A is therefore increased open access.
- 7.297 Introducing full institutional separation through option U2 might also create benefits in the already liberalised markets for freight, although we note that option U2 excludes any specific measures in relation to passenger stations and freight terminals (see Table 7.13).

TABLE 7.14 OPTION U2 BY SECTOR

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	High speed	Long distance	Medium/regional	Urban/suburban	International
Profits to incumbents and/or savings to public authorities	€ billion	2.62	0.41	0.59	0.68	0.34	0.60
Profits to new entrants	€ billion	0.21	0.10	0.09	0.00	0.00	0.02
Transaction and administration costs of PSCs and open access	€ billion	-1.37	Estimated unbundling costs are €0.7-2.0 billion but cannot be allocated to market sectors				
Total NPV	€ billion	1.46					
Key indicators in medium term, indicatively to 2034 as 15 years after implementation							
Increase in annual revenue	€ billion	0.03	0.01	0.01	0.0	0.0	0.01
Increase in annual capex	€ billion	0.01	0.00	0.00	0.00	0.00	0.00
Increase in annual passenger-km	billion	0.3	0.1	0.1	0.0	0.0	0.1
From road	billion	0.1	0.0	0.0	0.0	0.0	0.0
From air	billion	0.1	0.0	0.0	0.0	0.0	0.0
New entry PSC train-km	million	19	1	3	10	6	1
New entry open access train-km	million	8	3	3	0	0	2
New entrant market share							
Baseline	%	19.3%	7.2%	16.6%	29.4%	22.1%	8.4%
Option U2	%	19.8%	7.5%	17.0%	30.1%	22.6%	9.2%
Change	%	0.5%	0.4%	0.4%	0.6%	0.6%	0.8%
Emissions reductions							
CO ₂ emissions	million tonnes	0.0	0.0	0.0	0.0	0.0	0.0
CO ₂ emissions value	€ million	-1.2	-0.4	-0.4	0.0	0.0	-0.4

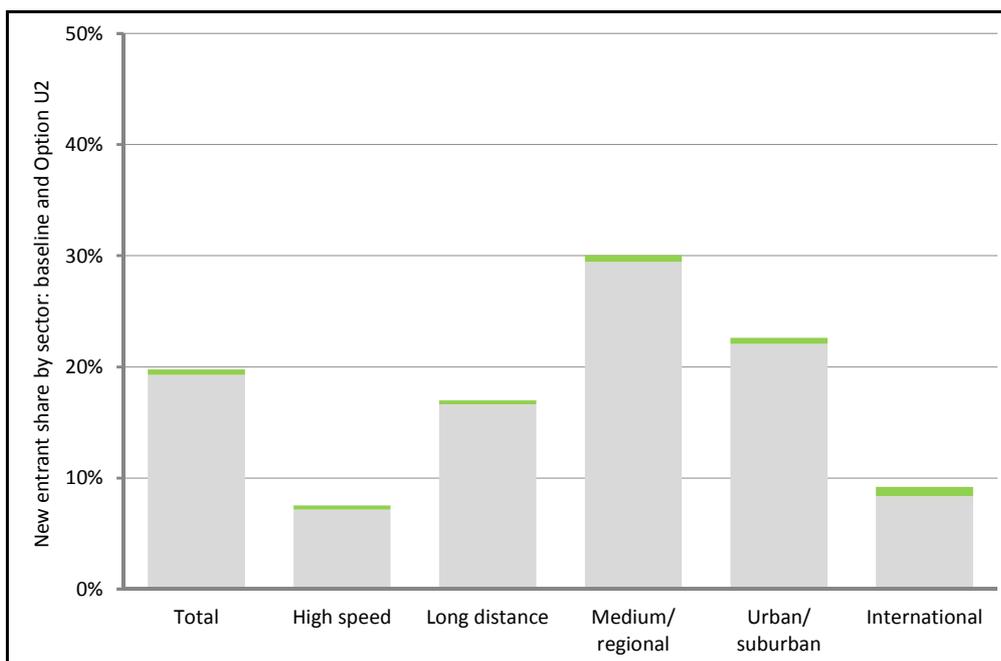
Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

TABLE 7.15 OPTION U2 BY CLUSTER

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	AT	BE	EE	FR	IE	IT	LU	LV	PL	SE	CZ	DK	NL	PO	RO	SK	BU	EL	ES	FI	
			A	B	C	D	E																
			Estimated unbundling costs are €0.7-2.0 billion but have not been identified by cluster																				
Profits to incumbents and/or savings to public authorities	€ billion	2.62	2.24	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Profits to new entrants	€ billion	0.21	0.21	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Transaction and administration costs of PSCs and open access	€ billion	-1.37	Estimated unbundling costs are €0.7-2.0 billion but have not been identified by cluster																				
Total NPV	€ billion	1.46	Estimated unbundling costs are €0.7-2.0 billion but have not been identified by cluster																				
Key indicators in medium term, indicatively to 2034 as 15 years after implementation																							
Increase in annual revenue	€ billion	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Increase in annual capex	€ billion	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Increase in annual passenger-km	billion	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
From road	billion	0.1	Not identified by cluster																				
From air	billion	0.1	Not identified by cluster																				
New entry PSC train-km	million	19	19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
New entry open access train-km	million	8	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
New entrant market share																							
Baseline	%	19.3%	8.7%	2.1%	87.1%	0.4%	0.6%																
Option U2	%	19.8%	10.1%	2.2%	87.1%	0.4%	0.6%																
Change	%	0.5%	1.4%	0.1%	0.0%	0.0%	0.0%																
Emissions reductions																							
CO ₂ emissions	million tonnes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
CO ₂ emissions value	€ million	-1.2	-1.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

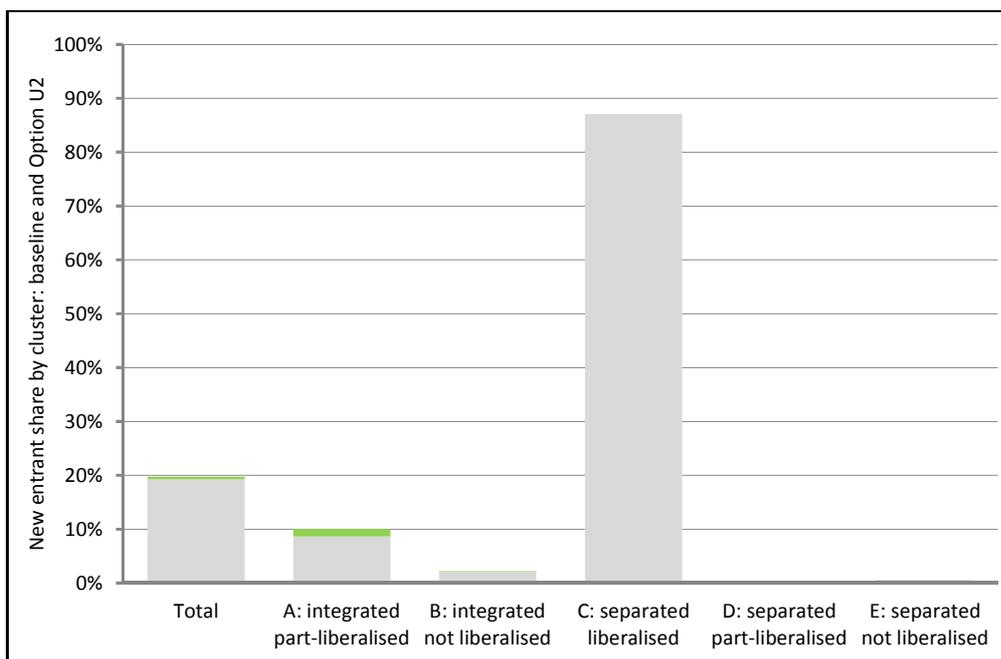
Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

FIGURE 7.4 OPTION U2: MARKET SHARE BY SECTOR



Key: grey bar = baseline, green bar = additional market share in longer term with option U2

FIGURE 7.5 OPTION U2: MARKET SHARE BY CLUSTER



Key: grey bar = baseline, green bar = additional market share in longer term with option U2

7.298 For freight, we note that the EU-wide rail freight market has a turnover of around €18 billion but has long been subject to extensive competition from other modes, is not subsidised, and under Directive 2004/51/EC has been completely liberalised since 1 January 2007. Nonetheless, we considered that effects of institutional separation, where it does not already exist, and hence greater scope for new entry, might result in some further increases in entry and hence a combination of price reductions, quality improvements and transfer to rail from other modes. If

the combined effect of extending institutional separation to all networks resulted in benefits equivalent to 1% of rail freight industry turnover, we estimate that this could result in additional benefits with an NPV of €1 billion \pm 50%. These freight benefits are additional to the benefits in domestic and international passenger markets shown above, and are included in our summaries of the total effects of each option and package in Table 7.25 and Figure 7.14.

Quantitative Impact Assessment results: market opening package 4

7.299 Table 7.16 repeats the detailed definition of market opening package 4.

TABLE 7.16 PACKAGE 4 DEFINITION

Category	Detailed specification
Rolling stock (option RS4)	Ensure that the financial risk related to the residual value of rolling stock is not borne by the PSC operator
	Excludes specification of how this risk transfer is to be achieved
Ticketing (option T1)	Enabling clause allowing Member States or Railway Undertakings on a voluntary basis to establish national ticketing systems It is intended that this would not act as a barrier to fares reductions
	Excludes additional requirements guaranteeing ticket inter-availability
Competitive tendering for PSCs (option B1)	Mandatory competitive tendering above a “de minimis” threshold Negotiation permitted Maximum PSC sizes in train-kilometres per year or a share of the network PSC scope determined by criteria under control of Regulatory Body This Regulation would come into force in 2019
	Excludes any proposals to facilitate staff transfers We did not find or model any workable rules on maximum PSC size
Open access (option A1)	Open access is unrestricted, but Member States could limit access if the equilibrium of PSCs is affected
	Excludes revision of the existing infrastructure charging rules

Note: original definitions reproduced from Table 6.16 to Table 6.20

- 7.300 The results of market opening package 4 are summarised by market sector in Table 7.17 and by cluster in Table 7.18, expressed as NPVs discounted to 2019.
- 7.301 Figure 7.6 and Figure 7.7 show the estimated effect of package 4 on new entrant market share of train-kilometres across Europe by market sector and by cluster.
- 7.302 Figure 7.8 and Figure 7.9 summarise the estimated net financial effects on the rail industry over the period to 2035, expressed as NPVs discounted to 2019.

TABLE 7.17 PACKAGE 4 BY SECTOR

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	High speed	Long distance	Medium/regional	Urban/suburban	International
Profits to incumbents and/or savings to public authorities	€ billion	14.15	2.00	3.98	4.66	3.50	
Profits to new entrants	€ billion	0.01	0.01	0.00	0.00		
Transaction and administration costs of PSCs and open access	€ billion	-0.42	-0.02	-0.10	-0.18	-0.12	
Total NPV	€ billion	13.74	1.99	3.88	4.48	3.38	
Key indicators in medium term, indicatively to 2034 as 15 years after implementation							
Increase in annual revenue	€ billion	0.09	0.06	0.03	0.00	0.00	
Increase in annual capex	€ billion	0.03	0.02	0.01	0.00	0.00	
Increase in annual passenger-km	billion	0.8	0.5	0.3	0.0	0.0	
From road	billion	0.2	0.1	0.1	0.0	0.0	
From air	billion	0.2	0.2	0.0			
New entry PSC train-km	million	180	4	55	73	48	
New entry open access train-km	million	14	9	5	0		
New entrant market share							
Baseline	%	19.3%	7.2%	16.6%	29.4%	22.1%	8.4%
Package 4	%	23.1%	8.6%	20.9%	34.4%	27.1%	8.4%
Change	%	3.8%	1.4%	4.3%	4.9%	5.0%	
Emissions reductions							
CO ₂ emissions	million tonnes	-0.1	0.0	0.0	0.0	0.0	
CO ₂ emissions value	€ million	-3.0	-2.0	-1.0	0.0	0.0	

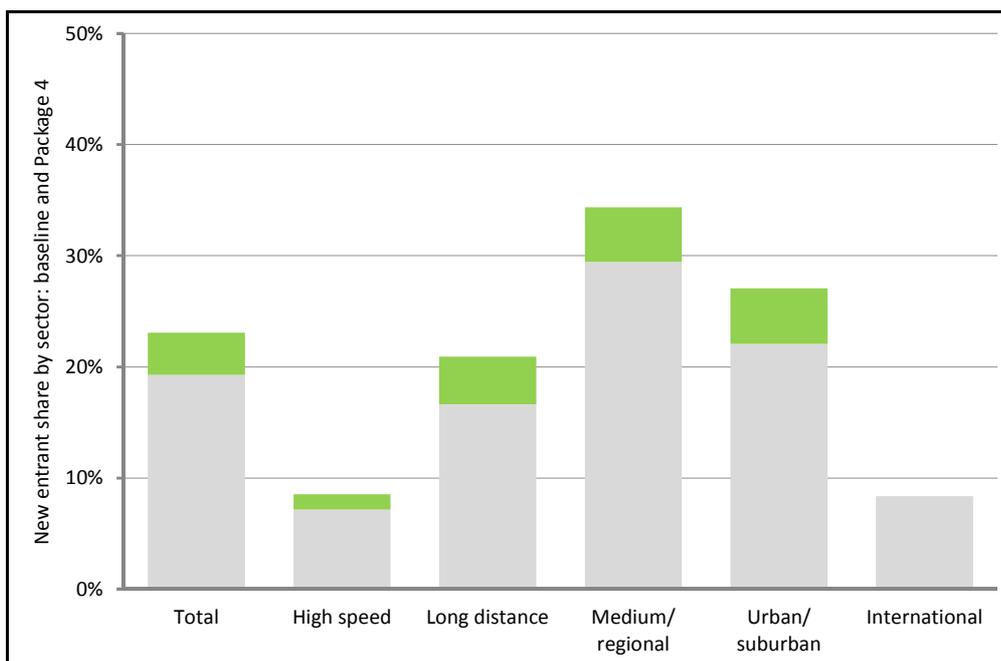
Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

TABLE 7.18 PACKAGE 4 BY CLUSTER

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	AT	BE	EE	FR	IE	IT	LU	LV	PL	SE	CZ	DK	NL	RO	SK	BU	EL	ES	FI
			A	B	C	D	E														
			Profits to incumbents and/or savings to public authorities	€ billion	14.15	2.62	7.32	0.09	1.97	2.15											
Profits to new entrants	€ billion	0.01	0.00	0.12	0.00	0.00	-0.11														
Transaction and administration costs of PSCs and open access	€ billion	-0.42	-0.07	-0.15	-0.04	-0.02	-0.14														
Total NPV	€ billion	13.74	2.55	7.29	0.05	1.95	1.90														
Key indicators in medium term, indicatively to 2034 as 15 years after implementation																					
Increase in annual revenue	€ billion	0.09	0.00	0.07	0.00	0.01	0.01														
Increase in annual capex	€ billion	0.03	0.00	0.02	0.00	0.00	0.01														
Increase in annual passenger-km	billion	0.8	0.0	0.6	0.0	0.1	0.1														
From road	billion	0.2	Not identified by cluster																		
From air	billion	0.2																			
New entry PSC train-km	million	180	37	61	3	33	46														
New entry open access train-km	million	14	0	10	0	2	3														
New entrant market share																					
Baseline	%	19.3%	8.7%	2.1%	87.1%	0.4%	0.6%														
Package 4	%	23.1%	10.8%	7.7%	87.4%	7.0%	8.2%														
Change	%	3.8%	2.1%	5.6%	0.3%	6.6%	7.6%														
Emissions reductions																					
CO ₂ emissions	million tonnes	-0.1	0.0	0.0	0.0	0.0	0.0														
CO ₂ emissions value	€ million	-3.0	0.0	-2.3	0.0	-0.2	-0.5														

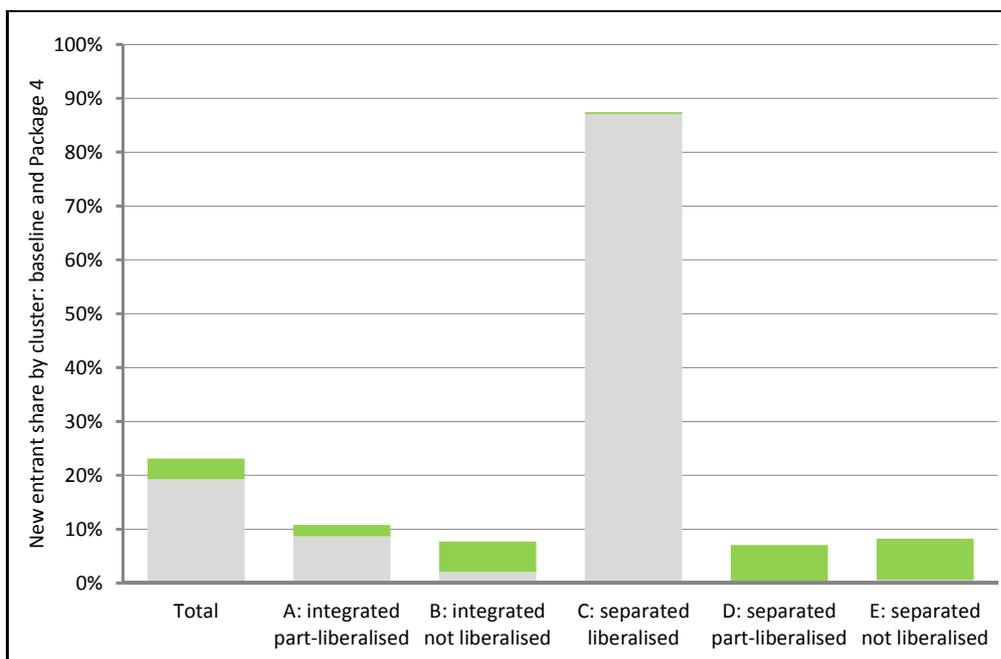
Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

FIGURE 7.6 PACKAGE 4: MARKET SHARE BY SECTOR



Key: grey bar = baseline, green bar = additional market share in longer term with package 4

FIGURE 7.7 PACKAGE 4: MARKET SHARE BY CLUSTER

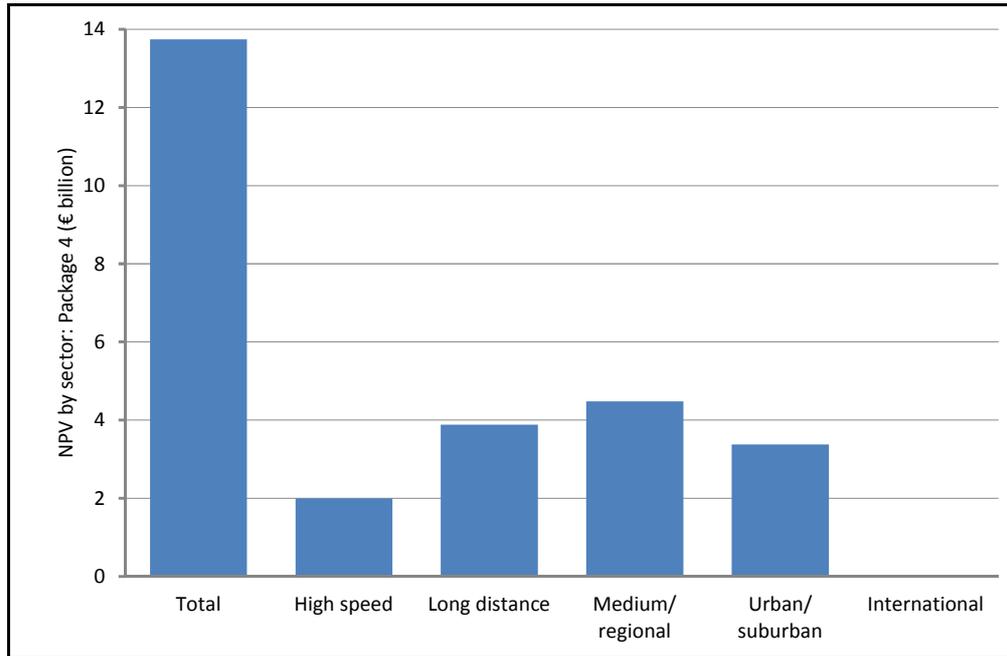


Key: grey bar = baseline, green bar = additional market share in longer term with package 4

7.303 There is little scope to increase new entrant market share in domestic passenger markets in cluster C, which is dominated by Great Britain, where new entrant market share is already effectively 100%. Elsewhere, package 4 can contribute to increases in market share through:

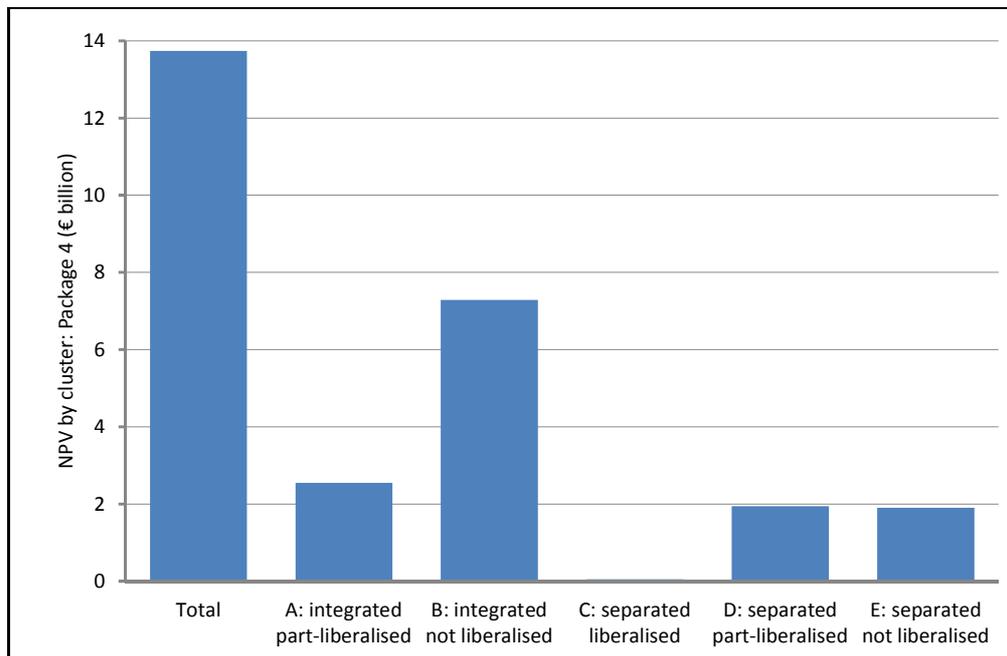
- Open access, in high speed, long distance and medium/regional sectors
- Compulsory competitive tendering, in all market sectors

FIGURE 7.8 PACKAGE 4: FINANCIAL NPV BY SECTOR



Note: NPV = change in revenue - change in operating costs - change in capital investment
 NPV excludes transaction and enforcement costs: see text

FIGURE 7.9 PACKAGE 4: FINANCIAL NPV BY CLUSTER



Note: NPV = change in revenue - change in operating costs - change in capital investment
 NPV excludes transaction and enforcement costs: see text

7.304 There is little scope to generate further benefits in cluster C, which is dominated by Great Britain in which all PSC services are domestic and have been competitively tendered since 1997.

Quantitative Impact Assessment results: combined, focus on cost savings

- 7.305 Table 7.19 repeats the detailed definition of the combined option including unbundling option U2 and market opening package 4. In this scenario we assumed that Competent Authorities would focus on cost savings, taking all the reductions in PSC tender costs as cash savings and not reinvesting any of the savings in higher quality or capacity.
- 7.306 In practice we would expect that tenderers would still provide some improvements in quality as part of their competitive bid. Nonetheless, this scenario represents the upper limit of the financial NPV which could be achieved by Competent Authorities if their objectives for compulsory competitive tendering were purely to improve their finances.

TABLE 7.19 COMBINED OPTION DEFINITION

Category	Detailed specification
Unbundling (option U2)	Infrastructure Manager responsible for current essential functions, maintenance planning and investments Institutional separation for these functions
	Assets such as passenger stations and freight terminals as per baseline Improved conditions for access to facilities in passenger stations as per baseline Access to fares, ticketing, reservation and revenue systems according to baseline
Rolling stock (option RS4)	Ensure that the financial risk related to the residual value of rolling stock is not borne by the PSC operator
	Excludes specification of how this risk transfer is to be achieved
Ticketing (option T1)	Enabling clause allowing Member States or Railway Undertakings on a voluntary basis to establish national ticketing systems It is intended that this would not act as a barrier to fares reductions
	Excludes additional requirements guaranteeing ticket inter-availability
Competitive tendering for PSCs (option B1)	Mandatory competitive tendering above a “de minimis” threshold Negotiation permitted Maximum PSC sizes in train-kilometres per year or a share of the network PSC scope determined by criteria under control of Regulatory Body This Regulation would come into force in 2019
	Excludes any proposals to facilitate staff transfers We did not find or model any workable rules on maximum PSC size
Open access (option A1)	Open access is unrestricted, but Member States could limit access if the equilibrium of PSCs is affected
	Excludes revision of the existing infrastructure charging rules

Note: original definitions reproduced from Table 6.4 and Table 6.16 to Table 6.20

7.307 The results of combining unbundling option U2 and market opening package 4 are summarised by market sector in Table 7.20 and by cluster in Table 7.21, expressed as NPVs discounted to 2019.

TABLE 7.20 COMBINED OPTION, COST SAVING, BY SECTOR

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	High speed	Long distance	Medium/regional	Urban/suburban	International
Profits to incumbents and/or savings to public authorities	€ billion	23.62	3.16	6.64	7.65	5.59	0.58
Profits to new entrants	€ billion	0.21	0.11	0.08	0.00	0.00	0.02
Transaction and administration costs of PSCs and open access	€ billion	-0.40	Costs of PSC and open access cannot be allocated to market sectors				
Transaction and administration costs of unbundling	€ billion	-1.37					
Total NPV	€ billion	22.06					
Key indicators in medium term, indicatively to 2034 as 15 years after implementation							
Increase in annual revenue	€ billion	0.2	0.1	0.1	0.0	0.0	0.0
Increase in annual capex	€ billion	0.1	0.0	0.0	0.0	0.0	0.0
Increase in annual passenger-km	billion	1.4	0.9	0.5	0.0	0.0	0.1
From road	billion	0.4	0.2	0.2	0.0	0.0	0.0
From air	billion	0.3	0.3	0.1	0.0	0.0	0.0
New entry PSC train-km	million	298	11	91	118	78	1
New entry open access train-km	million	29	16	10	0	0	2
New entrant market share							
Baseline	%	19.3%	7.2%	16.6%	29.4%	22.1%	8.4%
Option U2 and package 4	%	25.6%	10.1%	23.8%	37.4%	30.1%	9.2%
Change	%	6.4%	2.9%	7.1%	8.0%	8.0%	0.8%
Emissions reductions							
CO ₂ emissions	million tonnes	-0.1	-0.1	0.0	0.0	0.0	0.0
CO ₂ emissions value	€ million	-5.7	-3.4	-1.9	0.0	0.0	-0.4

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

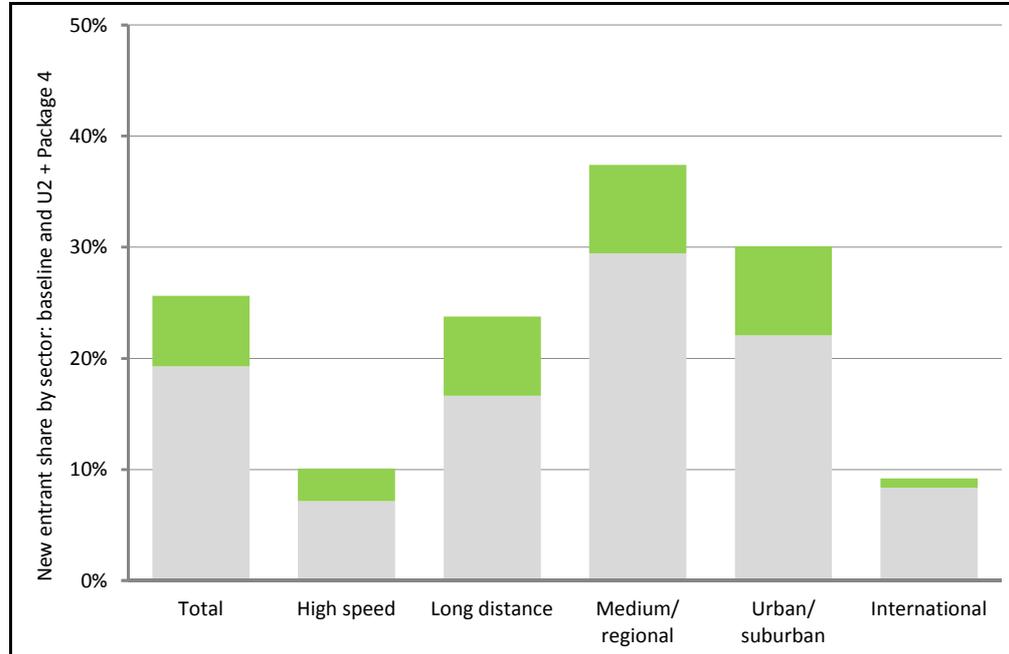
TABLE 7.21 COMBINED OPTION, COST SAVING, BY CLUSTER

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	AT	BE	EE	FR	HU	IE	LT	LU	LV	PL	GB	CZ	DK	NL	RO	SK	BU	EL	ES	FI	PO	
			DE	SE	DK	NL	RO	SK	SE	DK	NL	RO	SK	SE	DK	NL	RO	SK	SE	DK	NL	RO	SK	
			IT	SI	SE	NL	RO	SK	SE	DK	NL	RO	SK	SE	DK	NL	RO	SK	SE	DK	NL	RO	SK	
			A	B	C	D	E																	
Profits to incumbents and/or savings to public authorities	€ billion	23.62	6.59	10.74	0.14	2.98	3.17																	
Profits to new entrants	€ billion	0.21	0.20	0.18	0.00	0.00	-0.17																	
Transaction and administration costs of PSCs and open access	€ billion	-0.40	-0.02	-0.10	-0.17	-0.12	0.00																	
Transaction and administration costs of unbundling	€ billion	-1.37	Estimated unbundling costs are €0.7-2.0 billion but have not been identified by cluster																					
Total NPV	€ billion	22.06																						
Key indicators in medium term, indicatively to 2034 as 15 years after implementation																								
Increase in annual revenue	€ billion	0.2	0.0	0.1	0.0	0.0	0.0	0.0																
Increase in annual capex	€ billion	0.1	0.0	0.0	0.0	0.0	0.0	0.0																
Increase in annual passenger-km	billion	1.4	0.3	0.9	0.0	0.1	0.2																	
From road	billion	0.4	Not identified by cluster																					
From air	billion	0.3																						
New entry PSC train-km	million	298	81	93	5	51	69																	
New entry open access train-km	million	29	7	16	0	2	5																	
New entrant market share																								
Baseline	%	19.3%	8.7%	2.1%	87.1%	0.4%	0.6%																	
Option U2 and package 4	%	25.6%	13.7%	10.6%	87.6%	10.5%	12.0%																	
Change	%	6.4%	5.1%	8.5%	0.5%	10.1%	11.4%																	
Emissions reductions																								
CO ₂ emissions	million tonnes	-0.1	0.0	-0.1	0.0	0.0	0.0																	
CO ₂ emissions value	€ million	-5.7	-1.0	-3.7	0.0	-0.3	-0.7																	

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

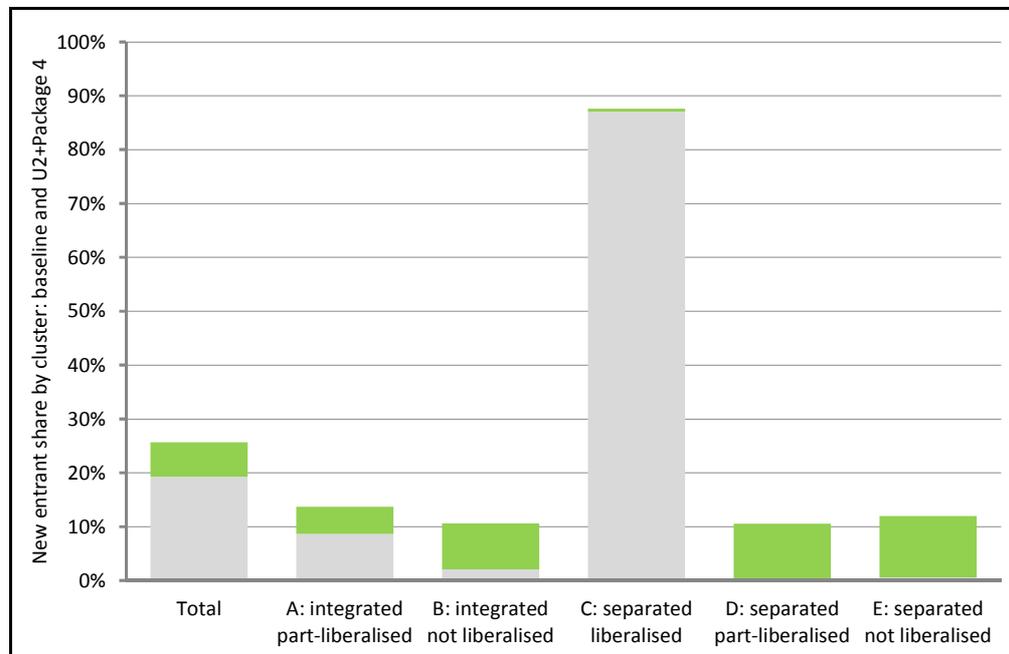
7.308 Figure 7.10 and Figure 7.11 show the estimated effect on new entrant market share of train-kilometres across Europe by market sector and by cluster. Overall new entrant market share increases from 19.3% to 25.6%, an increase of 6.4%.

FIGURE 7.10 COMBINED OPTION, COST SAVING: MARKET SHARE BY SECTOR



Key: grey bar = baseline, green bar = additional market share in longer term with U2+P4

FIGURE 7.11 COMBINED OPTION, COST SAVING: MARKET SHARE BY CLUSTER



Key: grey bar = baseline, green bar = additional market share in longer term with U2+P4

Quantitative Impact Assessment results: combined, focus on investment

- 7.309 Table 7.22 repeats the detailed definition of the combined option including unbundling option U2 and market opening package 4.
- 7.310 In this scenario we assumed that Competent Authorities would not focus on cost savings but would instead implicitly “reinvest” half the potential reductions in PSC tender costs by specifying higher quality or capacity in PSCs.

TABLE 7.22 COMBINED OPTION DEFINITION

Category	Detailed specification
Unbundling (option U2)	Infrastructure Manager responsible for current essential functions, maintenance planning and investments Institutional separation for these functions
	Excludes assets such as passenger stations and freight terminals Excludes improved conditions for access to facilities in passenger stations Excludes access to fares, ticketing, reservation and revenue systems
Rolling stock (option RS4)	Ensure that the financial risk related to the residual value of rolling stock is not borne by the PSC operator
	Excludes specification of how this risk transfer is to be achieved
Ticketing (option T1)	Enabling clause allowing Member States or Railway Undertakings on a voluntary basis to establish national ticketing systems It is intended that this would not act as a barrier to fares reductions
	Excludes additional requirements guaranteeing ticket inter-availability
Competitive tendering for PSCs (option B1)	Mandatory competitive tendering above a “de minimis” threshold Negotiation permitted Maximum PSC sizes in train-kilometres per year or a share of the network PSC scope determined by criteria under control of Regulatory Body This Regulation would come into force in 2019
	Excludes any proposals to facilitate staff transfers We did not find or model any workable rules on maximum PSC size
Open access (option A1)	Open access is unrestricted, but Member States could limit access if the equilibrium of PSCs is affected
	Excludes revision of the existing infrastructure charging rules

Note: original definitions reproduced from Table 6.4 and Table 6.16 to Table 6.20

- 7.311 The results of combining unbundling option U2 and market opening package 4 are summarised by market sector in Table 7.23 and by cluster in Table 7.24, expressed as NPVs discounted to 2019.
- 7.312 Figure 7.12 and Figure 7.13 show the estimated effect on new entrant market share of train-kilometres across Europe by market sector and by cluster.

TABLE 7.23 COMBINED OPTION, REINVESTMENT, BY SECTOR

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	High speed	Long distance	Medium/regional	Urban/suburban	International
Profits to incumbents and/or savings to public authorities	€ billion	18.85	3.06	5.40	5.63	4.22	0.54
Profits to new entrants	€ billion	0.21	0.11	0.08	0.00	0.00	0.02
Transaction and administration costs of PSCs and open access	€ billion	-0.40	Costs of PSC and open access cannot be allocated to market sectors				
Transaction and administration costs of unbundling	€ billion	-1.37					
Total NPV	€ billion	17.29					
Key indicators in medium term, indicatively to 2034 as 15 years after implementation							
Increase in annual revenue	€ billion	0.8	0.1	0.2	0.2	0.2	0.0
Increase in annual capex	€ billion	0.2	0.0	0.0	0.0	0.0	0.0
Increase in annual passenger-km	billion	8.2	1.1	2.4	2.7	1.9	0.1
From road	billion	3.4	0.2	0.9	1.4	0.9	0.0
From air	billion	0.7	0.3	0.3	0.0	0.0	0.0
New entry PSC train-km	million	309	11	94	123	81	1
New entry open access train-km	million	29	17	10	0	0	2
New entrant market share							
Baseline	%	19.3%	7.2%	16.6%	29.4%	22.1%	8.4%
Option U2 and package 4	%	25.5%	10.1%	23.7%	37.1%	29.9%	9.2%
Change	%	6.3%	2.9%	7.0%	7.7%	7.8%	0.8%
Emissions reductions							
CO ₂ emissions	million tonnes	-0.6	-0.1	-0.2	-0.2	-0.1	0.0
CO ₂ emissions value	€ million	-32.3	-4.3	-9.4	-10.8	-7.3	-0.4

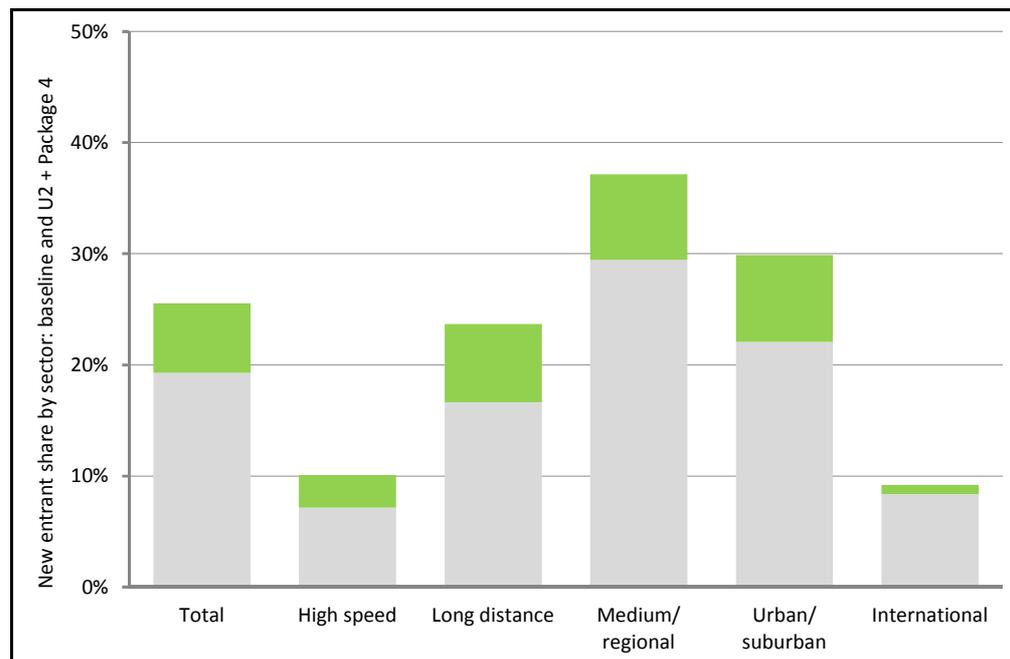
Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

TABLE 7.24 COMBINED OPTION, REINVESTMENT, BY CLUSTER

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unit	Total	AT	BE	EE	FR	HU	IE	LT	LU	LV	PL	GB	CZ	DK	NL	RO	SK	BU	EL	ES	FI	PO	
			DE	SE	DK	NL	RO	SK	FI	PO	RO	SK	BU	EL	ES	FI	PO	RO	SK	BU	EL	ES	FI	PO
			IT	SI	SE	NL	RO	SK	FI	PO	RO	SK	BU	EL	ES	FI	PO	RO	SK	BU	EL	ES	FI	PO
			A	B	C	D	E																	
Profits to incumbents and/or savings to public authorities	€ billion	18.85	5.38	8.75	0.12	2.30	2.30																	
Profits to new entrants	€ billion	0.21	0.20	0.18	0.00	0.00	-0.17																	
Transaction and administration costs of PSCs and open access	€ billion	-0.40	-0.02	-0.10	-0.17	-0.12	0.00																	
Transaction and administration costs of unbundling	€ billion	-1.37	Estimated unbundling costs are €0.7-2.0 billion but have not been identified by cluster																					
Total NPV	€ billion	17.29																						
Key indicators in medium term, indicatively to 2034 as 15 years after implementation																								
Increase in annual revenue	€ billion	0.8	0.2	0.4	0.0	0.1	0.1																	
Increase in annual capex	€ billion	0.2	0.0	0.1	0.0	0.0	0.1																	
Increase in annual passenger-km	billion	8.2	2.2	3.5	0.1	0.8	1.5																	
From road	billion	3.4	Not identified by cluster																					
From air	billion	0.7																						
New entry PSC train-km	million	309	84	96	5	53	71																	
New entry open access train-km	million	29	7	16	0	2	5																	
New entrant market share																								
Baseline	%	19.3%	8.7%	2.1%	87.1%	0.4%	0.6%																	
Option U2 and package 4	%	25.5%	13.8%	10.7%	87.5%	10.6%	12.1%																	
Change	%	6.3%	5.1%	8.6%	0.5%	10.2%	11.5%																	
Emissions reductions																								
CO ₂ emissions	million tonnes	-0.6	-0.2	-0.2	0.0	-0.1	-0.1																	
CO ₂ emissions value	€ million	-32.3	-8.8	-13.6	-0.4	-3.3	-6.0																	

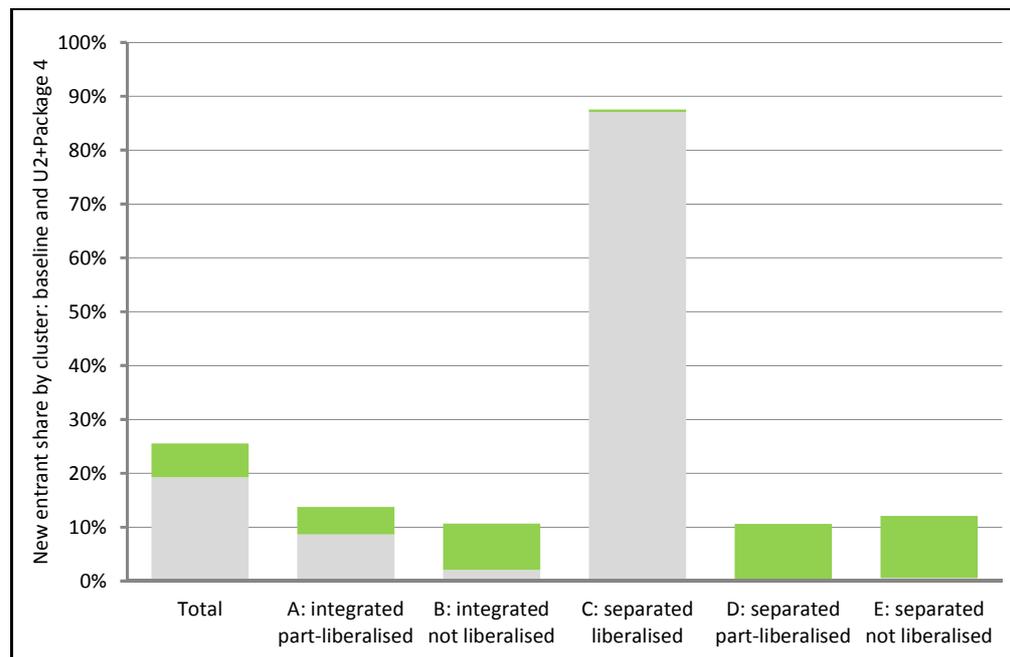
Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers
Analysis for passenger markets only, see paragraph 7.297 for discussion of freight

FIGURE 7.12 COMBINED OPTION, REINVESTMENT: MARKET SHARE BY SECTOR



Key: grey bar = baseline, green bar = additional market share in longer term with U2+P4

FIGURE 7.13 COMBINED OPTION, REINVESTMENT: MARKET SHARE BY CLUSTER



Key: grey bar = baseline, green bar = additional market share in longer term with U2+P4

- 7.313 We stress that, while the evidence suggests that competitive tendering has resulted in improvements to quality and capacity, and this has implicitly cost more than if these improvements had been foregone, the process by which this occurs is not transparent.
- 7.314 Competent Authorities do not normally commit to reinvest a proportion of cost savings. Instead they typically develop specifications for PSCs taking into account a number of factors including their estimates of what they can afford and what

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particular levels of quality and capacity will cost. However, even where this process has become highly developed in the form of detailed models of “affordability”, as in Great Britain, there is no explicit identification either of the savings which could be achieved relative to a theoretical base in the absence of competitive tendering or of the proportion of them which will be foregone to invest in quality and capacity.

- 7.315 While the effect of reinvesting some savings on the public finances can be estimated, the Commission’s Impact Assessment Guidelines do not provide a methodology for monetising benefits such as reduced crowding levels which would result from doing so.
- 7.316 The largely financial evaluation set out in Table 7.23 and Table 7.24 therefore ignores the economic benefits which Competent Authorities would implicitly obtain if they chose to reinvest some savings. In practice we would not expect Competent Authorities to reinvest some savings unless they valued the benefits more than the cash savings foregone.

Quantitative Impact Assessment results: conservative scenario

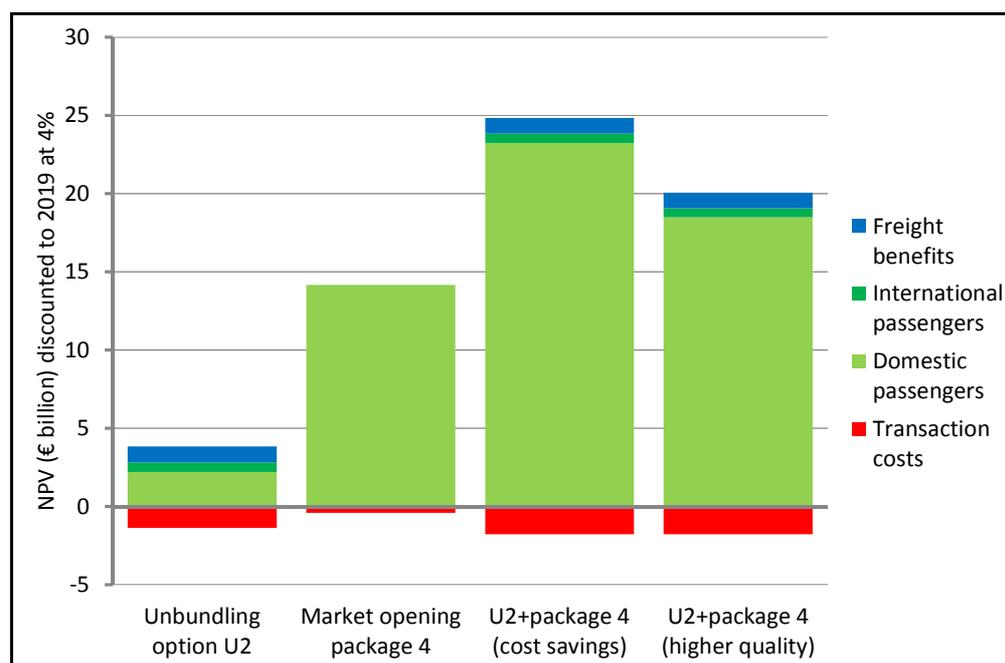
- 7.317 Table 7.25 and Figure 7.14 summarise the conservative scenario set out above including the estimated potential €1 billion NPV in freight markets from unbundling option U2, as described in 7.298.

TABLE 7.25 IMPACT ASSESSMENT: CONSERVATIVE SCENARIO ESTIMATES

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Transaction costs (mean estimate)	-1.37	-0.42	-1.77	-1.77
Domestic passenger benefits	2.21	14.16	23.23	18.50
International passenger benefits	0.62		0.60	0.56
Freight benefits	1.00		1.00	1.00
Total NPV	2.46	13.74	23.06	18.29

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers

FIGURE 7.14 IMPACT ASSESSMENT: SUMMARY OF CONSERVATIVE SCENARIO



Quantitative Impact Assessment: sensitivity tests

- 7.318 Throughout this report, we have identified the limited amount of robust data from which to quantify the effects of the proposed options and packages.
- 7.319 Following discussion with the Commission we carried out a number of sensitivity tests to investigate the effects of more optimistic or pessimistic assumptions than those set out in Table 7.11. These sensitivity tests are summarised in Table 7.26.

TABLE 7.26 SENSITIVITY TESTS

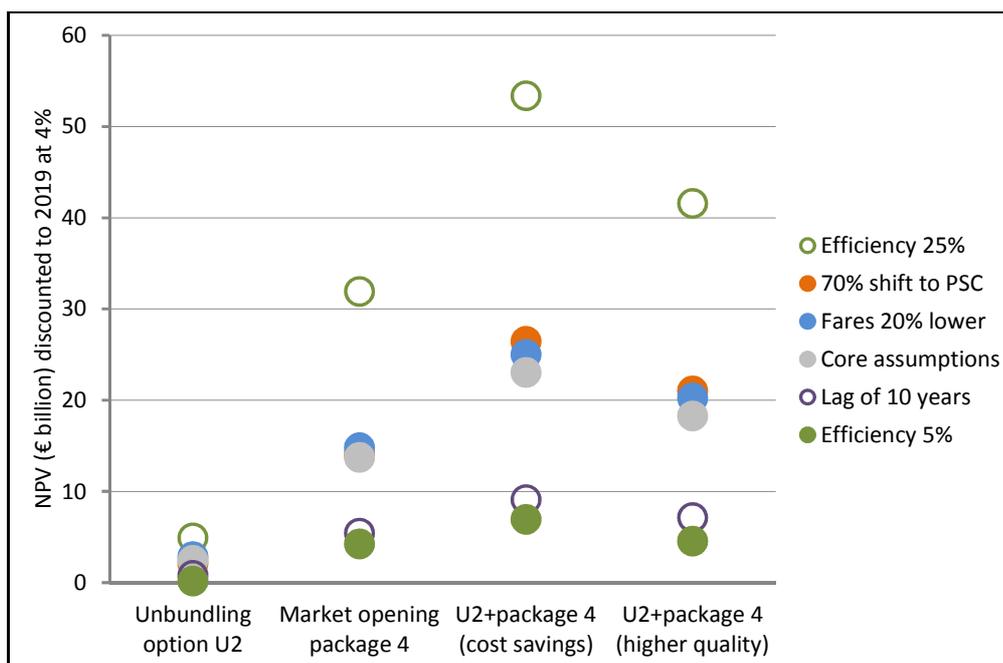
Issues	Test	Assumption
Incumbent response (7.245)	Fewer “commercial” services survive open access	70% of “commercial” services become unviable and subject to PSCs once open access develops.
Open access fares (7.249)	Lower fares offered by open access operators	Open access operator fares 20% below incumbent and pro rata increase in extra demand. No check that open access would remain viable or have sufficient capacity.
Timescales (7.284)	Slower impact of market entry	Ten year delay for competitive tendering, while existing contracts expire, and for open access entry
Efficiency gains (7.256, 7.258, 7.263)	Higher potential efficiency gains	“Commercial” and open access operators and effectively contestable PSCs become 25% more efficient.
	Lower potential efficiency gains	“Commercial” and open access operators and effectively contestable PSCs become 5% more efficient.

7.320 Table 7.27 and Figure 7.15 shows the results of these sensitivity tests.

TABLE 7.27 SENSITIVITY TESTS: RESULTS

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Higher potential efficiency gains	4.92	31.93	53.37	41.57
Fewer “commercial” services survive open access	2.15	14.01	26.46	21.03
Lower fares offered by open access operators	2.74	14.51	24.48	19.71
Conservative scenario	2.46	13.74	23.06	18.29
Slower impact of market entry	0.82	5.45	9.12	7.15
Lower potential efficiency gains	0.19	4.27	6.96	4.57

FIGURE 7.15 SENSITIVITY TESTS: RESULTS



7.321 If the effect of open access was that 70% of currently “commercial” services were converted to PSCs, estimated NPVs would rise slightly as shown by the red markers, primarily because of the greater assumed average efficiency improvements resulting from competitive tendering than from open access. We note that this assumption would imply a reduction in the “commercial” sector to 30% of its current size, and a corresponding increase in the size of the PSC sector.

7.322 If open access fares were 20%, rather than 5%, lower than those of incumbents and the additional generated demand and mode shift rose pro rata, estimated NPVs would rise slightly as shown by the blue markers. We stress that this assumption implies an increase not only of fares but also of frequency and quality, which

would not actually change, and hence overstates the effect of lower fares, but by an unknown amount. We made no allowance for the implication, on the limited financial data available, that open access services would not be viable and that the resulting demand might exceed their available capacity.

- 7.323 If the effects of market opening were delayed until after December 2029, through a combination of slow open access entry and Competent Authorities reletting existing PSCs on long contract just before legislation came into force in December 2019, estimated NPVs would fall to the level of the purple rings. In practice, it is probably not realistic to assume that all Member States would delay market opening in this way.
- 7.324 If “commercial” and open access operators and effectively contestable PSCs became 25% more efficient than at present following market opening, estimated NPVs would rise as shown by the green rings. We stress that this sensitivity test assumes high efficiency improvements throughout railway operations in all Member States, including those where stakeholders report that PSC providers are currently under-funded and hence already under high pressure to operate efficiently.
- 7.325 If “commercial” and open access operators and effectively contestable PSCs became 5% more efficient than at present following market opening, estimated NPVs would fall as shown by the green markers.
- 7.326 Taken together, these sensitivity tests suggest that the estimated NPVs of the packages are most sensitive to the assumed efficiencies resulting from competition from open access, in the “commercial” sector, and effective competitive tendering, in the PSC sector. As we set out above in 7.263 to 7.276, different interpretations of the available evidence lead to a wide range of different assumptions.

Quantitative Impact Assessment: optimistic scenario

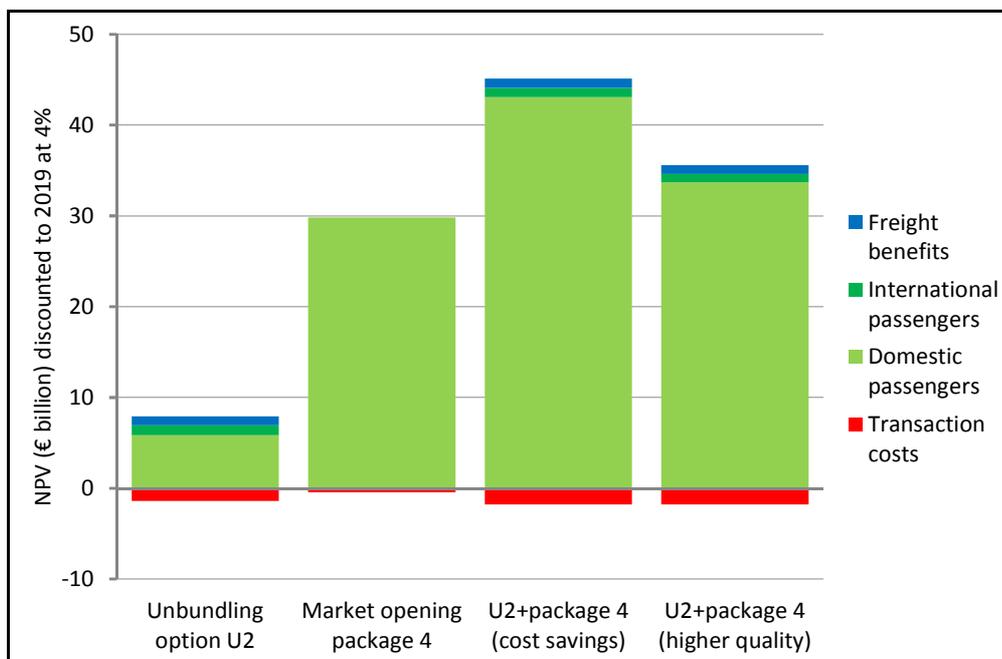
- 7.327 We agreed with the Commission to include an additional optimistic scenario based on assumptions provided by the Commission, set out in Table 7.12, to illustrate the effect of variations to the assumptions for the conservative scenario set out in Table 7.11.
- 7.328 In this optimistic scenario the share of new entrants’ passengers taken from the incumbent was reduced from 70% to 20%. We assumed the proportion of incumbents’ services that became 20% more efficient increased to 25% with option U2, 75% with package 4 and 90% with the combined option U2 and package 4. The results of the optimistic scenario are summarised in Table 7.28 and Figure 7.16.

TABLE 7.28 IMPACT ASSESSMENT: OPTIMISTIC SCENARIO ESTIMATES

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Transaction costs (mean estimate)	-1.37	-0.42	-1.77	-1.77
Domestic passenger benefits	5.86	29.85	43.07	33.71
International passenger benefits	1.07		1.05	0.89
Freight benefits	1.00		1.00	1.00
Total NPV	6.56	29.43	43.35	33.83

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers

FIGURE 7.16 MPACT ASSESSMENT: SUMMARY OF OPTIMISTIC SCENARIO

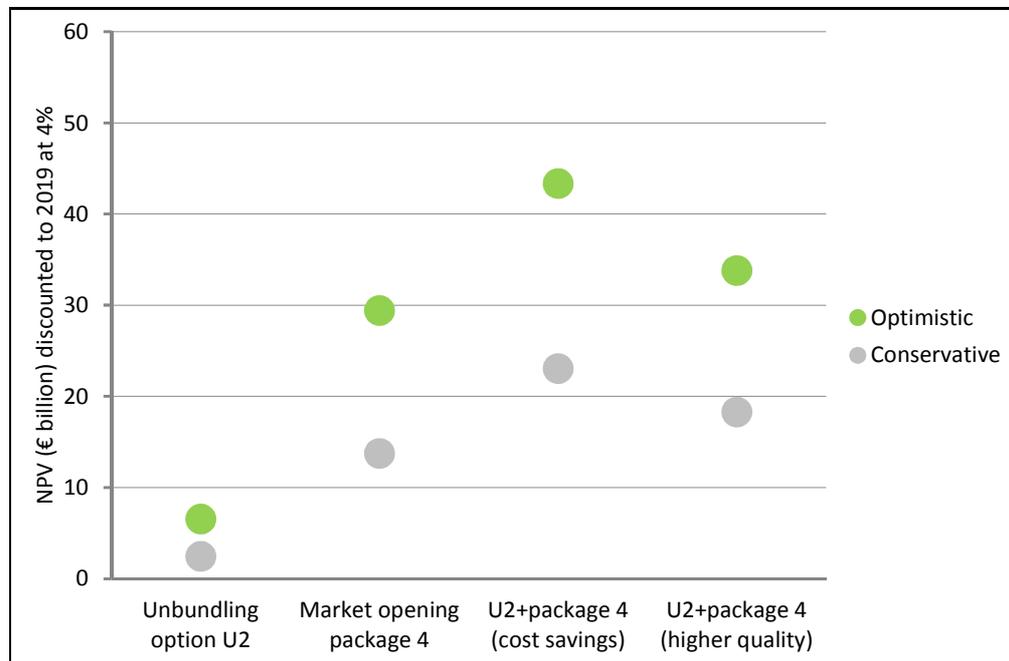


7.329 Table 7.29 and Figure 7.17 compare the results of the conservative and optimistic scenarios.

TABLE 7.29 IMPACT ASSESSMENT: COMPARISON OF SCENARIOS

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Optimistic scenario	6.56	29.43	43.35	33.82
Conservative scenario	2.46	13.74	23.06	18.29

FIGURE 7.17 IMPACT ASSESSMENT: COMPARISON OF SCENARIOS



Summary

- 7.330 Subject to the assumptions we have made, we consider that credible estimates of the financial impacts of the options and packages investigated for the conservative scenario are:
- Unbundling option U2, around €2.5 billion, including the effects on international passengers and freight. Implemented alone, option U2 would impose costs on Member States in clusters A and B which have not fully unbundled, but would only produce material benefits in domestic passenger markets in cluster A, comprising Austria, Germany and Italy, which are already at least partially-liberalised.
 - Domestic market opening package 4, around €14 billion.
 - Unbundling option U2 and market opening package 4A combined, including the effects on international passengers and freight:
 - €23 billion, with a focus on cost savings and with no reinvestment of savings in quality or capacity and hence no demand growth, mode shift or external benefits
 - €18 billion, with half the potential savings from competitive tendering “reinvested” in quality or capacity to create demand growth and mode shift
- 7.331 The assessment of the benefits for the optimistic scenario proposed by the Commission demonstrated an increase for which the same characteristics apply such that:
- Unbundling option U2 increases to €6.5 billion
 - Domestic market opening package 4 rises to €29 billion.
 - Unbundling option U2 and market opening package 4 combined, including the effects on international passengers and freight, result in:
 - €43 billion with a focus on cost savings
 - €34 billion with half the potential savings from competitive tendering “reinvested” in quality or capacity to create demand growth and mode shift
- 7.332 Sensitivity tests on the conservative scenario assumptions suggest that a wide range of outcomes are possible. All these results are subject to a wide range of uncertainty, and necessarily based on a number of assumptions regarding both the detailed definition of the packages and the responses of industry players, including not only Railway Undertakings but also Competent Authorities, as well as the more general uncertainty inherent in any market forecasts.

8 Conclusions

Introduction

8.1 The purpose of this study was to support the Commission in determining how best to secure market opening for domestic passenger services and to improve access to rail infrastructure. This initiative involves organising market opening and creating framework conditions that improve transparency and eliminate discriminatory behaviour, with a view to encouraging the development of high quality, customer focused and competitive rail services, particularly in domestic passenger markets. In principle, it could be achieved through a number of different policy options, each having different costs of implementation as well as economic, financial, environmental and other impacts.

8.2 In accordance with the Task Specification, the study has drawn on a range of research activities and analysis, in particular:

- Research into the current situation in the rail sector in different Member States
- A consultation exercise in which industry stakeholders were invited to offer views on problems and policy options for addressing them
- A detailed investigation of the key problem faced by the industry and the underlying drivers
- The definition of general, specific and operational objectives reflecting the problem analysis and guiding the development of detailed policy options
- A qualitative and quantitative Impact Assessment to identify appropriate policy options for implementation through further legislation

8.3 In the remainder of this Chapter, we set out our main findings and conclusions and briefly discuss the associated policy implications.

Problem definition and policy objectives

8.4 The key problem to be addressed through further policy measures, identified at the start of the study, is the relatively low share of rail in passenger and freight markets across the EU. Our analysis indicates that this problem can be linked to:

- Technical and administrative barriers relating to interoperability and safety (outside the scope of this study)
- Network barriers and bottlenecks resulting from the governance of rail infrastructure
- Legal barriers constraining the development of competition in passenger markets

8.5 We also concluded that competition was further constrained by the quality and capacity of rail infrastructure. This last issue raises questions about the adequacy of rail-sector financing, which are also outside the scope of the present study, but infrastructure constraints must nevertheless be taken into account in assessing the impact of different policy options on market opening and competition.

Conclusions

8.6 More specifically, our problem analysis highlighted:

- The relatively low and/or variable service quality of rail services in many Member States, and the dissatisfaction with some aspects of the service expressed by passengers through the Eurobarometer survey.
- Variable efficiency across the various national rail industries, at least when measured in terms of the intensity of use of rail infrastructure and rolling stock, recognising that high level comparisons of the kind undertaken cannot take account of the specific characteristics of individual networks and services.
- The relative strength and competitive advantage of incumbent rail operators and the slow development of competition in many Member States, partly the result of discriminatory behaviour of various kinds, particularly where Railway Undertakings and Infrastructure Managers are integrated.
- The presence of restrictive market access rules and/or licence requirements in some Member States, as well as the difficulties faced by new entrants in securing access to rolling stock, ticketing systems and other rail-related services needed to commence commercial operations.

8.7 Given these findings, we defined a general objective, together with supporting specific and operational objectives, providing a focus for the development of policy options for addressing the problem. Our general objective captures the need to “improve the competitiveness of the rail sector vis-à-vis other modes by improving the quality of services and enhancing its operational efficiency”, while highlighting the need to “enhance competition, eliminate market distortions and improve the structure of EU rail markets”. We consider that it will also be important for any future policy measures to meet a key supporting objective to “ensure that unbundling is applied in a consistent and transparent manner across Member States”, thereby improving transparency and removing the scope for discrimination in favour of incumbent rail operators.

Policy options

8.8 There are a wide range of policy options potentially available to address the problem and meet the objectives described above. Moreover, options can be applied in different combinations, resulting in an even greater number of possible packages of measures for analysis. However, in our view the key dimensions of policy for consideration are limited to:

- Whether institutional separation in relation to infrastructure management, in addition to decision-making and organisational separation, needs to be enforced, and how far separation arrangements are extended to infrastructure management functions other than capacity allocation and setting access charges
- How far legislative change can or should address the difficulties that new entrants frequently face in gaining access to skilled railway staff, rolling stock, and key rail-related services and facilities (such as ticketing and fares systems) often provided by incumbent Railway Undertakings rather than Infrastructure Managers

Conclusions

same time, we consider that it would not be appropriate to introduce prescriptive legislation in either of these areas, as Competent Authorities would need flexibility to implement the necessary changes in a way that took account of national market conditions.

- 8.15 We conclude that there is a case for further market opening, supported by further institutional reform in order to establish a framework for non-discriminatory access to EU rail markets.
- 8.16 In relation to the procurement of PSCs, we consider that the objective of enhancing competition and eliminating market distortions is best met through compulsory competitive tendering, subject to a de minimis threshold that would allow Competent Authorities to procure limited transport services without incurring the costs of a competition. It may also be appropriate to consider upper limits on the size of PSCs, to improve financial transparency and to help prevent competitive procurement processes from being foreclosed to all parties except the incumbent operator. However, any limits would need to be expressed in a way that allowed Competent Authorities to define economically and operationally coherent packages of services.
- 8.17 In our view, Member States and Competent Authorities must be permitted to protect the economic equilibrium of PSCs. In the absence of such protection, it is likely that PSC services could be undermined by open access in certain cases, since open access operators would be able to “cherry pick” the most commercially viable flows on which the funding of PSCs frequently depends. In addition, we consider that protection should be on the basis of a case-by-case review of the economics of PSC services. Legislation simply permitting open access on “routes” not covered by PSCs might leave few or no routes on which open access was permitted, and lead to the creation of PSCs with the deliberate objective of preventing open access.

Qualitative Impact Assessment

- 8.18 We carried out a qualitative Impact Assessment against a range of economic, quality and other factors, of options agreed in discussion with the Commission.
- 8.19 We identified the following as most likely to meet the policy objectives highlighted above:
- **Unbundling option U2:** full institutional separation, involving separate ownership of rail operations and infrastructure management and covering a wider range of infrastructure management functions including essential functions, maintenance planning and investments
 - **Market opening package 4:** compulsory competitive tendering (subject to a de minimis threshold and potentially a maximum contract size), open access (subject to an economic equilibrium test), requirements to relieve PSC operators of financial risk related to the residual value of rolling stock, and an enabling clause allowing the implementation of national ticketing arrangements
- 8.20 We subjected these measures, both separately and combined, to a quantitative Impact Assessment.

Quantitative Impact Assessment

- 8.21 We recognise that there is uncertainty over the level and timing of the impacts following any implementation of these policy options. As already noted, while there is experience of similar arrangements in some Member States, differences in regulatory and institutional arrangements as well as in geographic and demographic factors affecting rail markets make it difficult to identify robust modelling assumptions capable of supporting a quantitative analysis of pan-European effects.
- 8.22 In particular, we note that:
- In Germany, there has been some market opening in the form of competitive tendering of local services by Competent Authorities. There is evidence that this has resulted in significant lower contract prices but, given the focus on contracts for local services of limited size (below 5 million train-kilometres per year), this outcome need not necessarily apply to long distance and other services.
 - The rail sector in Great Britain demonstrates that competition for the market can become well-established and, while introducing some additional transaction costs, bring benefits in terms of innovation and service improvements. However, the current structure of the British rail sector is the result of a fundamental redesign of the governance, institutional and regulatory framework of a kind that could not be replicated in other Member States simply through EU-level legislation. Experience in Great Britain is therefore likely to be only a limited guide to the effects of implementing the policy options described above.
 - In Italy, the entry of NTV demonstrates that the introduction of commercial services on a significant scale can be possible where capacity is unconstrained and providing the entrant has access to, or at least can circumvent the need for, established ticketing systems. It also demonstrates that such entry can stimulate competition in fares, although the long run reduction in fares is not yet clear. Again, however, the experience is still limited to the high speed sector, and there is no comparable evidence of scope for commercial entry into urban and other rail markets in Italy traditionally served by the subsidised incumbent.
 - In the Czech Republic, institutional separation was soon followed by the entry of open access operators who have not reported significant discriminatory behaviour. However, the conditions necessary for entry, a profitable route with spare capacity, may not be widely found elsewhere.
 - While Sweden was the first Member State to introduce complete unbundling and competitive tendering for local and long distance services, in practice competition was introduced only gradually. More specifically, it was 10 years before an effective rolling stock leasing market began to develop and 20 years before all markets were open to competition. Lags of this kind reflect the particular institutional, market and other characteristics of a Member State, which cannot be easily captured in the modelling of impacts across the EU.

Conclusions

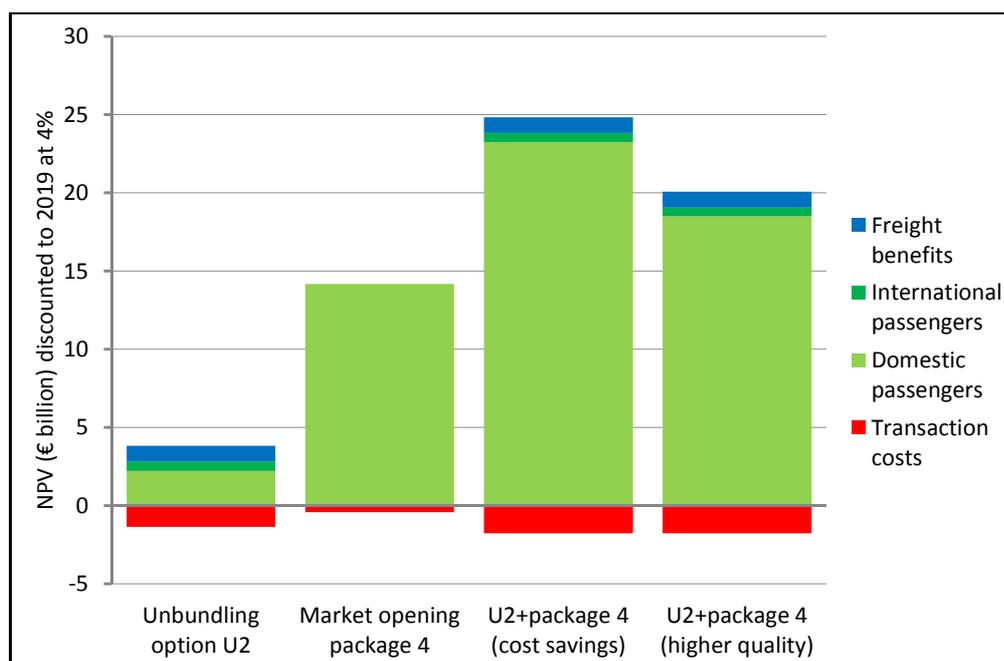
- 8.23 Against this background, we emphasise that in undertaking a quantitative assessment of policy options, we necessarily applied professional judgement as well as drawing on the available evidence in order to develop assumptions. Moreover, the results are sensitive to variations in the assumptions and must be qualified accordingly.
- 8.24 We have presented two scenarios - a conservative one and a more optimistic one - developed using a range of assumptions, applied in agreement with the Commission.
- 8.25 The results of the quantitative assessment reported in Table 7.25 and Figure 7.14, for the conservative scenario, including the estimated potential €1 billion NPV gain to freight from unbundling option U2, are reproduced as Table 8.1 and Figure 8.1.

TABLE 8.1 IMPACT ASSESSMENT: SUMMARY OF CONSERVATIVE SCENARIO

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Transaction costs (mean estimate)	-1.37	-0.42	-1.77	-1.77
Domestic passenger benefits	2.21	14.16	23.23	18.50
International passenger benefits	0.62		0.60	0.56
Freight benefits	1.00		1.00	1.00
Total NPV	2.46	13.74	23.06	18.29

Note: value in all shaded cells is zero, zeros elsewhere may represent small numbers

FIGURE 8.1 IMPACT ASSESSMENT: SUMMARY OF CONSERVATIVE SCENARIO

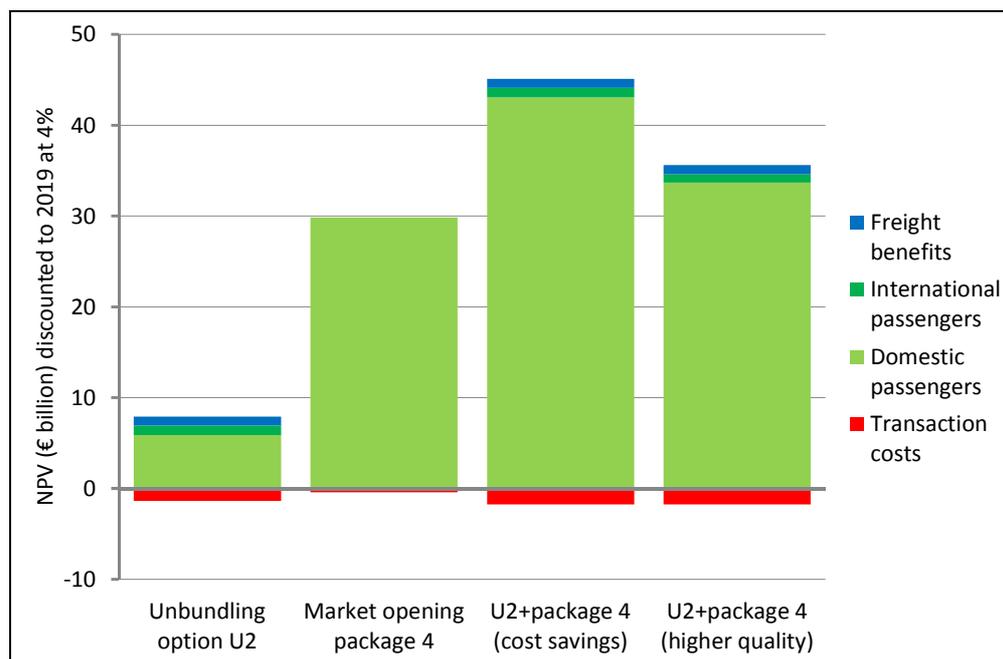


8.26 The results of the quantitative assessment reported in Table 7.12 for the optimistic scenario, including the estimated potential €1 billion NPV gain to freight from unbundling option U2, are reproduced as Table 8.2 and Figure 8.2.

TABLE 8.2 IMPACT ASSESSMENT: SUMMARY OF OPTIMISTIC SCENARIO

All changes are illustrative estimates NPVs to 2035, discounted at 4% to 2019	Unbundling option U2	Market opening package 4	U2+package 4 (cost savings)	U2+package 4 (higher quality)
Transaction costs (mean estimate)	-1.37	-0.42	-1.77	-1.77
Domestic passenger benefits	5.86	29.85	43.07	33.71
International passenger benefits	1.07		1.05	0.89
Freight benefits	1.00		1.00	1.00
Total NPV	6.56	29.43	43.35	33.83

FIGURE 8.2 IMPACT ASSESSMENT: SUMMARY OF OPTIMISTIC SCENARIO



Conclusions

- 8.27 The estimated range of benefits of further unbundling alone are small, with an NPV of between €2.5 billion and €6.5 billion over the 17 years from 2019, reflecting the fact that, in the absence of further market opening, the impacts would be largely limited to those Member States that have already introduced open access and/or some competitive tendering of PSCs. We also note that the range of values indicated by the sensitivity analysis, which is similarly wide in relative terms, suggests that implementation of option U2 in the conservative scenario could result in net disbenefits. This would be the case if any improvement in freight and passenger benefits were more than offset by an increase in transactions costs resulting from the particular approaches to implementation in the different Member States.
- 8.28 We estimate, based on the two scenarios presented, that further market opening in the form of package 4, as outlined above, would generate net financial savings with an NPV of between €14 billion and €29 billion over the 17 years from 2019, the year in which implementation of legislation is assumed to take effect. We consider that these benefits are significant in absolute terms when compared with total annual industry revenues across the EU. At the same time, the range of values implied by the sensitivity analysis is wide, and the NPV of savings could be less than €5 billion for the conservative scenario with relatively minor changes to our assumptions on the extent of open access, the scope for PSC cost savings, and the timescales over which the full effects of the Fourth Package develop.
- 8.29 We examined two illustrative scenarios for a combination of unbundling option U2 and market opening package 4. We estimated, based on the assumptions used in the assessment, that these could, if Competent Authorities focused on maximising the cost savings from competitive tendering, generate net financial savings with an NPV of between €23 billion and €43 billion over the 17 years from 2019. This option would bring few or no improvements in quality and capacity, and hence make little contribution to the objective of increasing rail's market share. As an alternative scenario, if Competent Authorities invested the equivalent of 50% of these savings in improving quality and/or capacity, the net financial savings would have an NPV of between €18 billion and €34 billion over the 17 years from 2019. The financial savings foregone, however, could be expected to buy at least equivalent economic benefits and an increase in rail's market share.
- 8.30 However, while this analysis has generated estimates of the impact of further legislation in order to inform the Commission's separate assessment of market opening and unbundling measures, it does not fully capture all of the effects that are likely to be observed in practice. Specifically, unbundling and the disaggregation of PSCs into smaller packages may bring benefits that cannot be easily quantified, such as greater transparency in the use of public funds, which can help to improve decision-making and the efficiency with which such funds are used.

Policy implications

- 8.31 In the light of these findings, we suggest that benefits to rail passengers and freight customers would be considerably greater if unbundling and market opening measures were both implemented as part of an integrated package of industry reforms.
- 8.32 At the same time, we note that the timing of the implementation of each element of the package requires careful consideration. In addition, we consider that if further reform is to be successful, it will be important to support it with additional industry initiatives that can be encouraged outside of the formal legislative framework.
- 8.33 Market opening will have the greatest chance of meeting the objectives set out earlier if it takes place within a relatively stable and well understood institutional and financial framework. Such a framework should provide for the fullest possible transparency of decision-making across the various infrastructure management functions, such that new entrants can be confident of progressing the introduction of services according to well-defined processes governing access and asset stewardship. Moreover we suggest, on the basis of experience in Great Britain and Sweden, that a minimum period of 18 months should be allowed for institutional changes to take effect and become established. This will ensure that Member States have time to introduce any necessary pan-industry processes and systems, which could be extensive, depending on the approach to implementation adopted in each case.
- 8.34 A well-established institutional framework will provide a stable platform for encouraging the development of competitive tendering for PSCs, which we would expect to take effect through a phased approach over a few five years. While the precise definition of the phasing would require further consideration, we note that it would need to recognise, inter alia:
- The need for potential bidders to prepare for, and respond to, a greater number of tendering opportunities
 - The need for Competent Authorities to determine their requirements for rail services in accordance with national, regional and local objectives, and to acquire the necessary skills in competitive procurement, bid evaluation and, at least in some cases, contract negotiation
 - The fact that some contracts, for example for the provision of services on relatively large and complex urban networks, will be more difficult and costly to procure than others and will therefore require more preparation time
 - The critical importance of identifying appropriate and available rolling stock prior to tendering, which will continue to present technical and operational challenges
 - The challenges of implementing ticketing and other systems to support operations, notwithstanding the impact of legislative provisions intended to facilitate the development of such systems at the national level

Conclusions

- 8.35 Moreover, it is particularly important that Competent Authorities have time to define and procure PSC services which are necessary but not provided under existing contracts.
- 8.36 Finally, as indicated above, we consider that some elements of package 4 would need to be actively supported through additional, industry-wide initiatives if they are to deliver the expected benefits. In particular, legislation to relieve PSC operators of financial risk related to the residual value of rolling stock, and to allow the introduction of national ticketing, while they will facilitate the development of markets and industry mechanisms supporting competition, will not guarantee that these become established within any given timescale. Hence, we propose that the Commission should actively promote the development and sharing of relevant learning and best practice from across the industry, drawing on established industry forums as appropriate.
- 8.37 More specifically, we suggest that the Commission should encourage the development of guidance to Competent Authorities and other stakeholders on issues such as:
- The conditions in which rolling stock leasing companies are prepared to invest in new rolling stock, taking account of experience throughout Europe to date
 - The mechanisms needed to underpin the non-discriminatory operation of national and other ticketing systems, taking account of the impact of smart ticket media and other new technology, and how such a system can operate alongside dedicated tickets issued by individual operators
 - The definition of economic equilibrium and how this should be applied in assessing an application for open access rights
 - The design and definition of packages of PSC services which meet Competent Authorities' needs, are operationally coherent and are attractive to bidders
- 8.38 Active participation in such initiatives by Railway Undertakings, Infrastructure Managers, Regulatory Bodies and other stakeholders would, in our view, help to build understanding of the measures required to support market opening at the national level and support the transition to a more competitive EU rail market.

CONTROL SHEET

Project/Proposal Name Further Action at European Level Regarding Market Opening for Domestic Passenger Transport by Rail and Ensuring Non-Discriminatory Access to Rail Infrastructure and Services

Document Title Final Report

Client Contract/Project No.

SDG Project/Proposal No. 22445901

ISSUE HISTORY

Issue No.	Date	Details
1	28 September 2012	Final Report to client
2	2 November 2012	Revisions to reflect Commission comments 12 October and discussions 17-24 October
3	26 November 2012	Added material on unbundling costs, draft material on a coordination body
4	30 November 2012	Revisions by the Commission

REVIEW

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