MAYER · BROWN

Business Prize

Mayer Brown, in association with the College of Europe, is proud to publish Karolina B. Wojtal's thesis entitled "Ownership Unbundling in the Railway Industry - A Critical Evaluation" winner of the Mayer Brown Legal Business Prize 2008 for best thesis concerning the impact of EU law on business.

COLLEGE OF EUROPE
BRUGES CAMPUS
LAW DEPARTMENT

College of Europe
Collège d'Europe

Ownership Unbundling in the Railway Industry

- A critical Evaluation -

Supervisor: Prof. Damien Geradin

Thesis presented by
Karolina B. Wojtal
for the
Degree of Master of European Studies

Academic Year 2007-2008

Statutory Declaration

I hereby declare that this thesis has been written by myself without any external unauthorised help, that it has been neither presented to any institution for evaluation nor previously published in its entirety or in parts. Any parts, words or ideas, of the thesis, however limited, and including tables, graphs, maps etc., which are quoted from or based on other sources, have been acknowledged as such without exception.

Moreover, I have also taken note and accepted the College rules with regard to plagiarism (Section 4.2 of the College study regulations).

Abstract

This paper provides a systematic overview of the current discussion about vertical separation in the railway sector. Based on an examination of the legal and economic cornerstones which takes into account the specifics of the railway industry, a careful analysis of the benefits and drawbacks of ownership unbundling is conducted. Currently, there is no noteworthy intramodal competition present in the industry and rail faces intensive intermodal competition from road and air transportation. European legal requirements aim to increase the performance and competitiveness of rail by fostering the opening and liberalization of the market while still leaving broad freedom to the Member States, which results in a very heterogeneous European Rail Market. At its core, the European legal requirements try to ensure a non-discriminatory access to the rail infrastructure for all willing market participants. However, the problem in practice is a chronic violation of access rights of potential competitors by the incumbent. While the regulation of access in general as well as that of access fees is seen as a necessary prerequisite, they do not seem to be sufficient as a stand alone measure to enhance competition in the market. The analysis shows that the approach of vertical separation can be seen as a very promising complementary measure, i.e. as a "third pillar" besides the regulation of access to the infrastructure and access fees. With regard to Art. 95 EC as the legal basis to introduce ownership unbundling in the context of the European railway industry, the author takes the view that Art. 295 EC does not hinder the Community to act on the basis of the internal market harmonisation competence. While examining the negative impact which vertical separation might have from an economic, regulatory and competition law point of view, aspects such as multiple costs, loss of synergy effects and uncertainty concerning the ability to ensure technical and coordination reliability in a separated environment were identified. On the other hand, it could be shown that ownership unbundling is expected to have a very positive impact on the competitive situation in the railway industry. This view is especially supported by aspects of prevention of information asymmetries, reduction of regulation need, loss of all incentives to discriminate against independent service providers and withdrawal of the possibility to abuse market power ("leveraging"). Possible alternatives to vertical separation, like open access to the infrastructure, are proven to be insufficient and nearly effectless when introduced as a stand alone solution. Based on this reasoning, we conclude that in order to make the railway market accessible to noteworthy intramodal competition, further measures are imperatively needed and ownership unbundling is seen as a potential way to increase competition in the railway sector. Given the set of persisting discrimination problems and conscious of the fact

that ownership unbundling constitutes a drastic transformation of the internal structure of an undertaking and a significant intervention in the market, this paper shows that vertical separation with its benefits is the key remedy to ultimately introduce substantial competition in the railway industry.

Keywords

Ownership unbundling

Railway industry

Unbundling

Vertical separation

Economic nature of railway transport

Intramodal competition

Intermodal competition

Table of Contents

List of Figures

List of Abbreviations

Art.	Article
CER	Community of European Railway and Infrastructure Companies
EC	European Commission
ECMT	European Conference of Ministers of Transport
EEC	European Economic Community
e.g.	for example
ERA	European Railway Agency
EU	European Union
i.e.	that is
ISO	Independent System Operator
lit.	letter
Prof.	Professor
SGEI	Service of General Economic Interest
SNCF	Société Nationale des Chemins de fer Français
TGV	train à grande vitesse

1 Introduction

For the last two decades, the railway industry has been composed of monopolistic, vertically integrated and state-owned operators.[1] Due to this monopolistic structure, most of the operators were unable to meet the demand coming from their clients in an adequate manner, for example just-in-time delivery of goods, and to face the challenges of intermodal competition.[2] The result has been a steadily decreasing market share since the 1960´s[3] in the total transportation market.[4] Figure 1 illustrates this development in a graphical way, based on the example of the Passenger transport market.

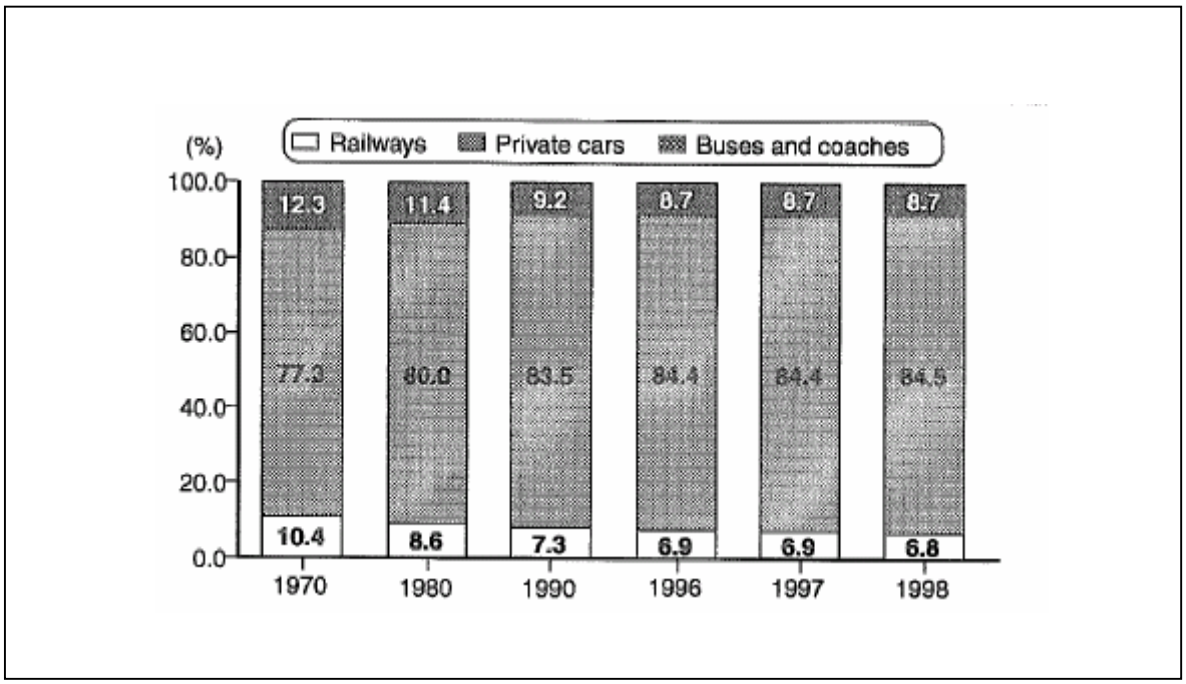

Figure 1: Share of Passenger transport market

(in: V. PROFILLIDIS, *Separation of Railway Infrastructure and Operations*, Japan Railway and Transport Review, No 29, December 2001, p. 19-23, at: p. 19)

[1] G. ABERLE, *Rail Policy and Rail Subsidies – An endless history with weak results*, in: European conference of Ministers of Transport (ECMT), *Fifty years of transport policy: successes, failures and new challenges*, Paris, 2003, p. 19-24, at p. 19.
[2] G. ABERLE, supra note 1, p. 20.
[3] European Conference of Ministers of Transport (ECMT), *Statistical trends in transport 1970-2002*, Paris, 2002; G. MARLOT, *La déréglementation du transport ferroviaire européen*, in: Les services publics à l´heure de la concurrence – Regards sur l´actualité, No 306, 2004, p. 59-71, at: p. 59.
[4] A. EISENKOPF, *Opening the Rail Freight Market in Europe – an Economic assessment*, in: Intereconomics, November/December 2006, p. 292-295, at: p. 292.

Another alarming fact is that most of the railway operators have to be subsidised with considerable payments by the State in order to keep them running at all.[5]

The partial opening of the rail market by introducing open access to the infrastructure has led to the entrance of new competitors and slightly reduced prices in parts of the European rail market. Nevertheless, most national markets remain unaffected by competitive pressure with a market share of 100 % of the former state monopolist or even 70 % in the most liberalised markets like the United Kingdom[6] and Sweden.[7] And even in those markets where there are a large number of new entrants, their market share remains more then moderate.[8] Intramodal competition is virtually inexistent.

The aim of the liberalisation to guarantee an efficient and non-discriminatory access to the network is absent so far to the desired extent. "Deutsche Bahn AG" for example, the German incumbent, demonstrably constrains potential competitors from entering the market[9] by practising tariff squeeze-out, by refusing to sell elder rolling stock to competitors which could still be used or at least updated[10], or by refusing to incorporate services offered by competitors into their time schedules.

As reality teaches us, open access to the infrastructure is a prerequisite for competition, but not sufficient in itself. Enabling free access to the infrastructure network by regulatory measures is important, but can only be considered as a first, albeit indispensable, step. Even well elaborated access regulation and a powerful regulation authority[11] cannot achieve its aims when faced with a vertically integrated and dominant incumbent. As long as the former monopolists are able to control the access to the infrastructure no real competition is imaginable.

---

[5] A. EISENKOPF, supra note 4, p. 292.
[6] G. MATHIEU, *La réforme des chemins de fer britanniques: quelle privatisation ? Quel bilan?*, in: Transports, No 413, 2002, p. 149-169, at: p. 165.
[7] A. EISENKOPF, supra note 4, p. 293.
[8] A. EISENKOPF, supra note 4, p. 293.
[9] J.-M.TROUILLE, *Les services publics face à la concurrence: une comparaison franco-allemande*, Revue des questions allemandes, No 4, 2004, p. 34-43, at: p. 41.
[10] H. LINK, *Rail Restructuring in Germany – 8 Years later*, in: Japan Railway & Transport Review, No 34, 2003, p. 42-49, at: p. 48.
[11] A. EISENKOPF, supra note 4, p. 295.

Against the background of persisting problems which new entrants face in regard to network access[12], alternative measures have to be considered to foster competition in the railway sector.

In the electricity sector, which faces comparable problems to the railway sector due to the fact of also being a natural monopoly, EU energy commissioner Andris Piebalgs suggested in September 2007 to separate the production from the distribution level. In the commission's belief, vertical separation is a key measure to introduce competition in the sector. Although the railway sector is still at the beginning phase of its liberalisation process, it is not entirely excluded that the Commission will also abandon its reservations concerning this industry and will finally propose the same type of measures. The insufficient implementation of the directives in the different Member States shows that the legislative framework has to be strengthened and extended in order to enhance market integration and cross border trade within the Union.

Vertical separation is considered to be an attractive solution to open a sector which partially exhibits the traits of a natural monopoly, but one should not forget that the separation of the infrastructure from the operations is a fundamental and drastic intervention into the incumbent's internal structure.

The paper aims at taking on the current discussion about vertical separation in the electricity industry and to transfer it to the railway sector. The analysis will carefully take into account the specifics of the railway sector as a genuinely unique industry.

The paper basically consists of two major building blocks: firstly, a framework outlining and examining the existing legal and economic cornerstones of the topic serving as a solid foundation for an in-depth-analysis (2.) and, secondly, the actual analysis including a comparison of the pros and cons of ownership unbundling in the railway sector leading to an overall evaluation of the topic by the author (3.). By following this approach, the author tries to answer the key question whether ownership unbundling seems to be a reasonable alternative for the railway sector in order to ensure an adequate extent of intramodal competition.

Based on the research approach taken, the paper aims at contributing to the overall understanding of the current situation as well as potential next steps in the railway sector in the light of the ongoing discussion regarding intramodal competition. The detailed analysis

---

[12] I. DEWALD/C. KUHN/H. LEISTER, *Erfahrungen von Connex auf dem Netz der DB AG*, Eisenbahntechnische Rundschau, No 7/8, 2001, p. 409-417, at: p. 411-415.

of the benefits and drawbacks leads to an evaluation of the question whether ownership unbundling can be seen as an outstanding opportunity to introduce more competition in this industry or whether it should be considered to be a blind alley.

2 Framework of Legal and Economic Cornerstones

2.1 The Legal Framework for Unbundling of Railways on the European Level

From the very beginning, the European legislator has been conscious of the fact that the missing separation between infrastructure and the service level could hinder competition in the markets for rail services. But against the background of mainly fiscal interests of the Member States, there has been a certain reluctance to stipulate that there has to be a compulsory separation between the infrastructure and the service level, and how it should be concretely shaped. European secondary law illustrates a compromise between the desired regulatory policy goal and the conflicting interests of the Member States.

The Community directives aim to increase the performance of the European railways, to unburden national budgets from subsidy payments and to promote the shift of future traffic volume from the road to the tracks. The main obstacles for a single railway market between Member States were of a legal, technical and also regulatory nature.

Directive 91/440/EEC[13] was the first Community attempt to open and liberalise the rail market. It pursued the aim to increase efficiency[14] of European railways and to facilitate the integration of national railway markets by ensuring network access.

A Commissions White Paper in 1996[15] marked a further step towards a revitalisation of the railway industry, supplemented by a White Paper on Transport Policy in 2001.[16] The liberalisation of the rail service markets in the Member States and the development of a common European railway area formed the core objectives to be reached. In 2001 the "First Railway Package" was issued. It includes four directives on railway licensing, capacity allocation, interoperability of railway systems[17] and on the development of European

---

[13] Council Directive 91/440/EEC, OJ L 237, 24.8.1991, p. 25-28; C. SALQUE, *Intégration du marché européen des transports ferroviaires et nouvelle stratégie des entreprises ferroviaires historiques européennes*, in: Revue du Droit de l´Union Européenne, 1/2006, p. 51-109.

[14] A. JENSEN/P. STELLING, *On the Effectiveness of Vertical and Horizontal Measures in Railway Deregulation*, p. 2.

[15] Commission White Paper, 30.07.1996, *A strategy for revitalising the Community's railways*, COM(96) 421 final.

[16] A. EISENKOPF, supra note 4, p. 292; Commission White Paper, 12.09.2001, *European transport policy for 2010: time to decide*, COM(2001) 370 final; G. JARZEMBOWSKI, *European Transport Policy in a Broader Perspective*, in: Intereconomics, September/October 2007, p. 281-284, at: p. 282; C. SALQUE, Politique européenne des transports: examen à mi-parcours du Livre blanc sur les transports de 2001, in: Les Petites affiches, No 23, 2007, p. 5-8.

[17] A. EISENKOPF, supra note 4, p. 295; W. KUNZ, *Grundlagen des europäischen Eisenbahnrechts*, in: EI-Eisenbahningenieur, 10/2003, p. 68-73, at: p. 70/73.

railways. To ensure non-discriminatory access, directives 2001/12[18] and 2001/14[19] require at least the separation of accounts and the independence of the network operator from the railway services, as well as the creation of independent bodies for train path allocation and the levying of infrastructure user fees. The latter are not allowed to offer rail services themselves.

The "Second Railway Package" from 2004 contains instructions on rail safety (directive 2004/49/EC[20]) and interoperability (directive 2004/50/EC[21]), and establishes a European Railway Agency (ERA) which is supposed to improve interoperability between European railways (regulation 881/2004[22]). The main accomplishment of this package was the free access to infrastructure for international rail freight services and to the infrastructure of every Member State without legal or practical barriers by January 2006.

Meanwhile, also a "Third Railway Package" was proposed by the Commission and adopted by the Parliament and the Council in 2007. It includes directive 2007/58/EC[23] on the introduction of open access rights for international rail passenger services including cabotage by 2010, directive 2007/59/EC[24] on the certification of train drivers operating locomotives and trains on the railway system in the Community as well as a regulation on rail passengers' rights and obligations[25].

Although directive 2001/12/EG contains the obligation to ensure independence of the infrastructure from the entity which provides the transport services, Community law does not prescribe the way in which the Member States should achieve this aim. The concrete design is left to the Member States which have the choice between organizational and ownership measures. It is surprising to discover that while some Member States did not even transpose the minimum requirements of the directive (Greece, Ireland), others went far beyond the minimum exigencies (Great Britain, Sweden).[26]

---

[18] Directive 2001/12/EC, OJ L 075, 15.03.2001, p.1 -25.
[19] Directive 2001/14/EC, OJ L 75, 15.3.2001, p. 29-46.
[20] Directive 2004/49/EC,OJ L 164, 30.4.2004, p. 44-113.
[21] Directive 2004/50/EC, OJ L 164, 30.4.2004, p. 114-163.
[22] Regulation (EC) No 881/2004, OJ L 164, 30.4.2004, p. 1-43.
[23] Directive 2007/58/EC, OJ L 315, 3.12.2007, p. 44-50.
[24] Directive 2007/59/EC, OJ L 315, 3.12.2007, p. 51-78.
[25] Commission Communication, *Poursuivre l´intégration du système ferroviaire européen: le troisième paquet ferroviaire*, COM (2004) 140 final; C. PHILIP, *Le troisième paquet ferroviaire: étape ultime de la bataille du rail en Europe?*, Documents d´information de l´Assemblée Nationale Française, Novembre 2004, Délégation pour l´ Union Européenne.
[26] C. SALQUE, *Rapport de la Commission sur la mise en oeuvre du premier paquet ferroviaire: une réforme nécessaire mais inachevée*, in: Les Petites affiches, 2007, No 9, p. 8-13, at: p. 11; C. KNILL/D. LEHMKUHL,

2.2 Solution Potential of Unbundling

To prevent discrimination, cross subsidies and other forms of distortion of competition, different forms of unbundling are imaginable: unbundling of accounts (2.2.1), department unbundling (2.2.2), legal unbundling (2.2.3), management unbundling (2.2.4) and ownership unbundling (2.2.5). In the following, these different manifestations with their pro competitive impacts are illustrated.

2.2.1 Unbundling of Accounts

Unbundling of accounts necessitates that an undertaking should establish a separate annual balance sheet for every business operating area, as if these activities on different levels of value creation would be performed by legally independent undertakings ("virtual structural separation").[27] Separate accounting forces the vertically integrated undertaking to produce a proper allocation of its fixed and variable costs. Thus transparency will be enhanced. This leads to a better comparability of the fees, which the integrated operator asks of both, its competitors and its own in-house service.[28] Consequently, the possibility to shift costs into the "section" of infrastructure costs, to be able to artificially increase the costs for network access charges, will be prevented. Therefore, unbundling of accounts can be seen to be the basis for a proper calculation of network access charges, which will be geared to competition analogous prices.[29] Furthermore, cross subsidies and other distortions of competition can be detected much more easily in the annual balance sheet.[30]

An Alternative Route of European Integration: The Community´s Railways Policy, in : West European Politics, No 1, 2000, p. 65-88, at: p. 65 ; C. SALQUE, supra note 13, p. 56-57.

[27] J. KÜHLING, *Sektorspezifische Regulierung in den Netzwirtschaften - Typologie Wirtschaftsverwaltungsrecht*, Munich, 2004, p. 339/344; N. ANGENENDT, *Entflechtungsvorgaben in Netzwerkindustrien*, in: Netzwirtschaften und Recht, 2007, p. 134-135; I. LIPPERT, *Öffentliche Dienstleistungen unter EU-Einfluss: Liberalisierung, Privatisierung, Restrukturierung, Regulierung*, Berlin, 2005, p. 62.

[28] J. KÜHLING, supra note 27, p. 86/339; F. SÄCKER, *Der Independent System Operator – Ein neues institutionelles Design für Netzbetreiber*, Frankfurt on the Main, 2007, p. 53; C. KOENIG/J. KÜHLING/W. RASBACH, *Das energierechtliche Unbundling-Regime*, in: Recht der Energiewirtschaft, 2003, p. 221-223.

[29] F. SÄCKER, supra note 28, p. 53/88/89; K. HOLTHOFF-FRANK, in: M. GEPPERT/H.-J. PIEPENBROCK/R. SCHÜTZ/F. SCHUSTER, *Beck TKG-Kommentar*, Munich, 2006; J. DANNISCHEWSKI, *Unbundling im Energierecht – Konzept und Funktion von Entflechtungsmaßnahmen*, Baden-Baden, 2003, p. 62.

[30] T. VOLZ, *Das Unbundling in der britischen und deutschen Energiewirtschaft*, Frankfurt on the Main, 2006, p. 23.

2.2.2 Department Unbundling (including Information Unbundling)

Department unbundling provides an in-house allocation of every business activity into separated business areas, that is to say, the different areas have to be organised in unconnected business departments. However, the diverse activities stay legally within the corporate group and do not have to be divested into subsidiaries. Consequently, all these activities continue to be subject to the managerial authority of the corporate group ("pseudo structural separation").[31] In most of the cases, department unbundling will be supplemented by information unbundling.[32] These information barriers oblige integrated undertakings to use information, which could be used to discriminate, separately. Figuratively speaking, so called „Chinese Walls" are installed between the different fields of activities within the undertaking. The aim is to prevent an advance of information resulting from the operation of the network for the integrated undertaking, as compared to its competitors.[33] This manifestation of unbundling serves the purpose of not only being able to detect and control discriminatory behaviour like the unbundling of accounts, but also to actively prevent such discrimination.[34]

2.2.3 Legal Unbundling

Legal unbundling demands that the different business departments are run by independent undertakings, which are separated under corporate law.[35] Integrated undertakings are obliged to divest their network in separated companies, which do not necessarily have to become the owner of the network.[36] It is sufficient that the network company operates the network in the framework of a contractual agreement, e.g. a leasing or renting contract.[37] Since these legally

---

[31] T. VOLZ, supra note 30, p. 23; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 28, p. 221/223.
[32] J. KÜHLING, supra note 27, p. 351; T. VOLZ, supra note 30, p. 23.
[33] C. KOENIG/J. KÜHLING/W. RASBACH, supra note 28, p. 221-222; J. KÜHLING, supra note 27, p. 351; C. KOENIG/M. SCHELLBERG/K. SCHREIBER, *Unbundling-Regulierung im Eisenbahnsektor*, in: Wirtschaft und Wettbewerb, 2007, p. 981/989.
[34] T. VOLZ, supra note 30, p. 23.
[35] N. ANGENENDT, supra note 27, p. 134-135; A. SCHÖNBORN, *Konzernzugehörigkeit contra Unbundling – ein unlösbarer Konflikt?*, in: F. SÄCKER/W. VON COLBE, *Wettbewerbsfördernde Anreizregulierung*, Frankfurt on the Main, 2007, p. 37-52, at: p. 39; F. HÖFFLER/S. KRANZ, *Legal Unbundling: A „golden mean" between vertical integration and vertical separation?*, 2007.
[36] C. KOENIG/J. KÜHLING/W. RASBACH, supra note 28, p. 221/223; W. BRITSCH, in: PricewaterhouseCoopers, *Entflechtung und Regulierung in der deutschen Energiewirtschaft – Praxishandbuch zum Energiewirtschaftsgesetz*, Munich, 2007, p. 18; M. SCHMIDT-PREUß, *Der Wandel der Energiewirtschaft vor dem Hintergrund der europäischen Eigentumsordnung*, in: Zeitschrift Europarecht, 2006, p. 463-488, at: p. 463/483.
[37] C. KOENIG/M. SCHELLBERG/K. SCHREIBER, supra note 33, p. 981/988; W. BRITSCH, supra note 36, p. 18; M. SCHMIDT-PREUß, supra note 36, p. 463/483.

independent companies possess a separate accounting, the financial relations between them are presented in a very transparent way.[38] In addition, by unhinging the network, the influence of the incumbent on the network is made, at the very least, more difficult. The splitting into several entities enhances transparency and is supposed to diminish the incentives to practice cross subsidies and discrimination.[39] Nonetheless, legal independence should not be confused with economic independence: not all the incentives to discriminate can be eliminated via legal unbundling.[40]

2.2.4 Management Unbundling

Because in the framework of the corporate group structure there is still the possibility that the parent company can exercise entrepreneurial influence on the network, management unbundling is designed to prevent this possibility.[41] The integrated undertaking has to assure that there is a real independence of their network operator with regard to its organisation and powers of decision.[42] The different departments become independent without the obligation to be unhinged out of the corporate group. It is the aim, by increasing the autonomy of the network operator, to minimize the incentives, inter alia, to discriminate and to proceed cross subsidies.[43]

2.2.5 Ownership Unbundling

The notion of ownership unbundling encompasses two different basic models:[44] full vertical separation and the Independent System Operator Model (ISO-Model).

---

[38] N. ANGENENDT, supra note 27, p. 134-135; T. VOLZ, supra note 30, p. 24.
[39] C. KOENIG/J. KÜHLING/W. RASBACH, *Energierecht*, Frankfurt on the Main, 2006, p. 118; T. VOLZ, supra note 30, p. 23-24.
[40] N. ANGENENDT, supra note 27, p. 134-135; A. SCHÖNBORN, supra note 35, p. 39.
[41] M. SCHMIDT-PREUß, supra note 36, p. 463/482; E. STAEBE, *Unbundling-Vorgaben für vertikal integrierte Infrastrukturbetreiber als Kern eines „allgemeinen Regulierungsrechts"? (Teil1)*, in: Infrastrukturrecht 2006, p. 204-224, at: p. 204.
[42] C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 118; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 28, p. 221/227; G. KNIEPS/G. BRUNEKREEFT, *Zwischen Regulierung und Wettbewerb – Netzsektoren in Deutschland*, Heidelberg, 2000, p. 33.
[43] K.-P. WIEDMANN/M. LANGERFELDT, *Verschärftes Unbundling in der deutschen Energiewirtschaft (Teil 2) – Herausforderung und Chance zur aktiven Reorganisation für deutsche Versorger*, Energiewirtschaftliche Tagesfragen, 2004, p. 248-254, at: p. 158/162; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 28, p. 221/227.
[44] J. BAUR/K. PRITZSCHE/S. SIMON, *Unbundling in der Energiewirtschaft – Ein Praxishandbuch*, Berlin, 2006, p. 26; B. HOLZNAGEL/P. SCHUMACHER, *Großer Eingriff, k(l)eine Wirkung – Die Pläne der Kommission zur eigentumsrechtlichen Entflechtung der Energienetzbetreiber*, in: Netzwirtschaft und Recht, 2007, p. 96-103, at: p. 96/99.

- The full vertical separation is the most radical version of ownership unbundling and is characterized by the complete loss of infrastructure ownership.[45] By completely separating the network from the service level, full independence of every part of the undertaking is reached ("real structural separation").[46] As soon as the identity of interests and ownership between the network and the other departments of the undertaking are removed, all incentives to discriminate in favour of the formerly integrated parts of the undertaking are eliminated.[47] Cross subsidies in particular are not conceivable any more: from an economic point of view there will never be an interest to give financial support to an external undertaking.[48] Full vertical separation can be implemented in two different ways: the state nationalises the infrastructure network or transfers the ownership to a third party by expropriating the incumbent formally. It is also conceivable to oblige the integrated undertaking to carry out a compulsory alienation.[49]

Figure 2 on the next page illustrates the complete separation between infrastructure and services which is a model that is in place in countries such as Great Britain and Sweden.

- Under the Independent System Operator Model (ISO), the vertical integrated undertaking can remain the owner of the infrastructure network, provided that it entrusts the operating of the network to another undertaking or body which is fully independent.[50] However, it can also be challenged whether the classification of the ISO-Model as one basic model of ownership unbundling is correct because there is a significant analogy to management unbundling.[51]

---

[45] J. BAUR/K. PRITZSCHE/S. KLAUER, *Ownership Unbundling – Wesen und Vereinbarkeit mit Europarecht und Verfassungsrecht*, Baden-Baden, 2006, p. 36.
[46] B. HOLZNAGEL/P. SCHUMACHER, supra note 44, p. 96-97; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 119; J.-C. PIELOW/E. EHLERS, *Rechtsfragen zum Ownership Unbundling*, Infrastrukturrecht, 2007, p. 259-265, at: p. 259-260.
[47] C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 119; F. SÄCKER, supra note 28, p. 90; G. KNIEPS/G. BRUNEKREEFT, supra note 42, p. 41.
[48] J. DANNISCHEWSKI, supra note 29, p. 184.
[49] [49] J. BAUR/K. PRITZSCHE/S. KLAUER, supra note 45, p. 29/36; B. HOLZNAGEL/P. SCHUMACHER, supra note 44, p. 96/99.
[50] C. KAHLE, *Die Eigentumsrechtliche Entflechtung (Ownership Unbundling) der Energieversorgungsnetze aus europarechtlicher und verfassungsrechtlicher Sicht*, in: Recht der Energiewirtschaft, 2007, p. 293-299, at: p. 293/296; S. STORR, *Die Vorschläge der EU-Kommission zur Verschärfung der Unbundling Vorschriften im Energiesektor*, in: Europäische Zeitschrift für Wirtschaftsrecht, 2007, p. 232-237, at: p. 232/234.
[51] S. STORR, supra note 50, p. 232/234.

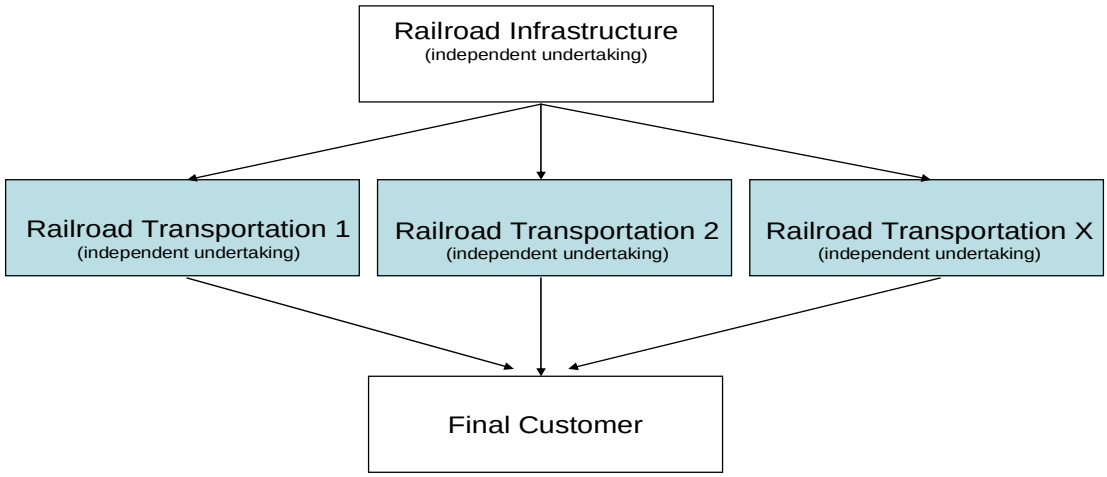

Figure 2: The separated model

(in: Community of European Railway and Infrastructure Companies (CER), *Reforming Europe's Railways – An assessment of progress*, Eurailpress, Hamburg, 2005, p.17.)

2.3 The Rationale behind Ownership Unbundling

If an industry consists of consecutive levels where every level is characterised by competitive structures and no economies of scale, vertical integration, which can be defined as the situation in which two or more separable production levels belong to the same economic entity, will not pose competition problems.[52] The concerned entities will consider continuously whether it is still economically beneficial for them to stay vertically integrated or if separation into distinct entities has larger benefits. This behaviour is known under the notion of the "make or buy"-decision process. The relevant factors of decision making have been highlighted by the transaction costs theory.[53] It can be said that in general the result will be economically reasonable, because whatever organisational model they choose, they have

[52] J. KRUSE, *Vertikale Integration als Wettbewerbsproblem*, in: J. KRUSE/K. STOCKMANN/L. VOLLMER, *Wettbewerbspolitik im Spannungsfeld nationaler und internationaler Kartellrechtsordnungen*, Festschrift für Ingo Schmidt, Baden-Baden, 1997, p. 247.

[53] O. WILLIAMSON, *Transaction Cost Economics*, in: R. SCHMALENSEE/R. WILLIG, *Handbook of Industrial Organization*, Volume I, 1989, p. 135-179; R. BLAIR/D. KASERMAN, *Law and Economics of Vertical Integration and Control*, New York, 1983, p. 13.

to persist in a competitive surrounding to avoid that they will be eliminated from the market.[54]

However, if one of the levels possesses a (quasi-)monopolistic structure, this economic assessment changes fundamentally. In this situation, it can be reckoned that the integrated undertaking will discriminate against its competitors concerning the conditions of the monopolistic service, to hinder or impede their access to the market and therewith to restrain competition. In this case it may be that the market power of the vertical integrated undertaking will be passed on to the level where there has been a competitive environment so far ("leverage effect").[55] Under these circumstances, it can no longer be presumed that this vertical integration simply reflects the corresponding efficiency advantages. Unlike in competitive market structures, where there can be adjustments in both directions – vertical integration and vertical disintegration – in dominant positions we observe a kind of "ratchet-effect", i.e. there may be further vertical integration but no disintegration. The reason for this effect lies in the fact that in this environment the competitive pressure is considerably reduced.[56]

One of the main aims of the Treaty establishing the European Community is to guarantee the free flow of goods, services, persons and capital. National monopolies are the direct opposite of this Single European Market concept[57], because they lead to a partitioning of the market.[58] However, national monopolies can find their justification in the efficiencies of so called "natural monopolies". Natural monopolies are "markets where a single supplier can serve the market with cheaper costs than multiple suppliers are able to".[59] From an economic point of view it would be improvident to duplicate the network infrastructure in consideration of the diminishing costs of the existing network ("subadditivity of networks"[60]). There are other industries, like for example telecommunications, where due to

---

[54] R. COASE, *The Nature of the Firm*, in: Economica, Volume 4, 1937, p. 386-405.
[55] W. SHEPHERD, *The Economics of Industrial Organization*, Englewood Cliffs, 1997; *Commission Green Paper on Vertical Restraints in EC Competition Policy*, COM (96) 721 final, 22.01.1997.
[56] J. KRUSE, supra note 52, p. 248.
[57] C. KIRCHNER, *Legal instruments for Liberalising European Rail Freight Markets from 2007*, in: Intereconomics, November/December 2006, p. 295-298, at: p. 296.
[58] D. GERADIN, *Twenty years of liberalization of network industries in the European Union: Where do we go now?*, November 2006, available at SSRN: http://ssrn.com/abstract=946796, p. 3.
[59] G. KNIEPS, *Wettbewerbsökonomie*, Berlin, 2001; for the economic side: S. ARENDT, *Creating Competition in the Railway Industry – Strategies, Concepts, Methods*, Saarbrücken, 2007, p. 6-7; F. LÉVÊQUE, *Économie de la réglementation*, Paris, 2004, p. 8.
[60] C. KIRCHNER, supra note 57, p. 296; J. KRUSE, supra note 52, p. 253; W. BAUMOL, *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, in: American Economic Review, No 5, 1977, p. 810-822.

increasing demand and technological innovations, the duplication of the network is feasible or even no longer necessary (e.g. satellite transmission). Increasing demand can relativise the economic assessment if copying the network were profitable because the capacity of the existing network would have to be expanded anyway.[61] This is not the case for the railway industry where also the time period needed to duplicate and the aspects of city and regional planning are of considerable importance and hindrance.[62] Hence we are confronted with a real dilemma: the goal of the Treaty contravenes with the economically reasonable concept of natural monopolies.[63] As the creation of a European overreaching monopoly fails because of the absence of Community competences, a possible resort could be a differing treatment of the infrastructure level and the operating level. There is consensus that competition at the infrastructure level is not feasible, whereas it is perfectly possible to compete on the downstream market of services.[64] Therefore, the resort out of the above mentioned dilemma is to allocate the ownership of the network and the supply of rail services in vertically separated economic entities.

2.4 Legal Basis to introduce Ownership Unbundling/Significance of Art. 295 EC

The very idea of applying competition law rules to the transport sector has been contested for a long time. The adversaries have argued that the wording of Article 70 EC ("The objectives of this Treaty shall, in matters governed by this article, be pursued by Member States within the framework of a common transport policy") excludes the application of the general provisions of the Treaty and therefore also the application of Articles 81 and 82 EC. This point of view has been dismissed by the ECJ in four leading decisions in 1974[65], 1986[66], 1989[67] and 1994[68]. The competition rules are fully applicable to the transport sector and therefore also to the railway industry.

---

[61] J. KRUSE, supra note 52, p. 254.
[62] J. KRUSE, supra note 52, p. 255.
[63] C. KIRCHNER, supra note 57, p. 296; W. WEISS, *Europarecht und Privatisierung*, in: Archiv des öffentlichen Rechts, 2003, p. 91-133, at: p. 100; Case C-260/89, „*ERT*", ECR [1991] I-02925.
[64] C. KIRCHNER, supra note 57, p. 296; J. KRUSE, supra note 52, p. 252; S. DAVIES/C. WADDAMS PRICE, *Does Ownership Unbundling Matter? Evidence from UK Energy Markets*, in: Intereconomics, November/December 2007, p. 297-305, at: p. 297; J. BAUR/K. PRITZSCHE/S. SIMON, supra note 44, p. 60.
[65] Case C-167/73, „*French Seaman*", ECR [1996] I-01307.
[66] Case C-209/84, „*Criminal proceedings against Lucas Asjes and others*", ECR [1986] 1425.
[67] Case C-66/86, „*Ahmed Saeed*", ECR [1989] 803.
[68] Case T-229/94, „*Deutsche Bahn v. Commission*", ECR [1997] II-01689.

Since the first steps of liberalisation, there has been a vivid discussion about if, and, if applicable, to what extent, the Community is entitled to act in the field of ownership unbundling. Because of the principle of attribution of competences, this is a crucial question.

So far, ownership unbundling can only be introduced as a structural remedy by using Article 7 (1) of the modernisation regulation 1/2003[69]. By the reform of the European anti-trust enforcement law, the Commission is given the power to impose structural remedies in order to stop infringements of Art. 81 or 82 of the Treaty. Ownership unbundling, as the most severe structural remedy imaginable, falls under this provision. Therefore it is possible to introduce ownership unbundling by an anti-trust decision of the European Commission.

But it is also imaginable that in the future, ownership unbundling will be introduced by a Community directive on the basis of the internal market harmonisation competence in Art. 95 EC. In this regard, there are vivid discussions about whether Art. 295 EC hinders the Community to act on the basis of Art. 95 EC to introduce ownership unbundling.

The wording of Art. 295 EC ("This Treaty shall in no way prejudice the rules in Member States governing the system of property ownership.") can induce one to conclude that this provision opposes interferences of property.[70] Yet such an interpretation produces a misconception of the function of this provision in the Treaty. The Treaty contains an array of provisions which refer to the status of the owner and of the property in a Member State and which allow interferences of the Community in the exercise of the right of property (e.g. Art. 4 I, Art. 98, Art. 3 lit. g EC).[71] It can be deduced from this fact that Art. 295 EC does not contain an individual guarantee of property. This article rather aims to ensure that it remains up to the Member States to configure the system of property ownership (e.g. socialisation or privatisation). The provision of Art. 295 EC does not protect against Community interventions unless it is planned to fundamentally reform the whole system of property ownership of a Member State, touching to the social structure and the economic constitution.[72] Art. 295 EC would only be infringed if Community law would prescribe that, e.g., Member States are obliged to transmit the ownership of the infrastructure to a private

[69] Council Regulation (EC) No 1/2003, OJ L 1, 4.1.2003, p. 1-25.
[70] M. SCHÜTTE, *Richtlinienvorschlag für Elektrizität im Rahmen des EWG-Vertrages*, in: Energiewirtschaftliche Tagesfragen, 1992, p. 261.
[71] R. RIEGEL, *Die Einwirkung des europäischen Gemeinschaftsrechts auf die Eigentumsordnung der Mitgliedsstaaten*, in: Recht der internationalen Wirtschaft, 1979, p. 744-745.
[72] RENGELING, *Grundrechtschutz in der Europäischen Gemeinschaft*, p. 42.

entity or vice versa to the State. As long as this decision is left to the Member States, ownership unbundling can be introduced by the Community.[73]

2.5 The Economic Nature of Railway Transport

Typically, network industries exhibit vertically related sub-levels which are highly complementary to each other. In the railway industry, a distinction can be made between two different levels: downstream, the transport services of goods and passengers (network service level) and upstream the network infrastructure.[74] Although is a huge number of network industries (electronic communications, postal services, energy, etc.), the railway industry shows certain unique characteristics which distinguishes it fundamentally from other sectors.[75] The understanding of these differences which are outlined in the following is crucial for further analysis.

2.5.1 A Flexible Means of Transport

From a technological point of view, the railroad sector did not evolve as fast as, e.g., electronic communications or electricity over the last century. [76] However, the rail industry plays an essential role in a market economy (production, distribution and consumption) and particularly in a common market.[77] It has to meet a variety of demands: movement of goods and persons, different types of freight and passenger transport (high-speed trains, short and long distance, regional services, etc.). Furthermore, there are big fluctuations in passenger traffic during the year and the week. Carriage of goods can be considered to be more regular over the year and the day, because goods can travel every day of the year, during the day or during the night. Therefore, we can say that rail activity has a multi product nature.[78]

---

[73] S. McMICHAEL/D. LAURIE, *A quantum leap forward?*, in: Competition Law Insight, March 2007, p. 3-4, at: p. 4.
[74] G. KNIEPS, *Privatization of Network Industries in Germany: A Disaggregated approach*, Discussion Paper Nr. 100, Institut für Verkehrswissenschaft und Regionalpolitik, Freiburg University, 2004.
[75] P. SEABRIGHT, *The Economics of Passenger Rail Transport – A survey*, IDEI Report # 1 on Passenger Rail Transport, 2003.
[76] R. KÜNNEKE/M. FINGER, *Technology Matters: The cases of the Liberalization of Electricity and Railways*, in: Competition and Regulation in Network Industries, 2007, Volume 8, p. 303-335, at: p. 308.
[77] J. AUSSANT/R. FORNASIER, *La politique commune des transports*, in : Commentaire Mégret, *Libre circulation des personnes, des services et des capitaux*, Brussels, 1990.
[78] L. DI PIETRANTONIO/J. PELKMANS, *The ERG economics of EU railway reform*, in: Journal of network industries, 2004, No 3-4, p. 295-346, at: p. 305.

2.5.2 One-way and two-way Networks

Railway networks (just like telephone and road) are classified as two-way networks. If another component (in the case of railroads: tracks or a station) is added, every user of the network profits from this enlargement. In principle, the network has become more valuable for all the users because they can (theoretically) also use the new tracks or the new station now ("network externality"). This conclusion is subject to the condition that the network can cope with the additional shipments caused by the new node. Most components of the network possess complementary elements between most components of the network ("reciprocity"). Also, particular users identify themselves with particular nodes in the network. Therefore, it can be said that composite goods that share a component are not substitutable.

Unlike the railway industry, energy and banking networks for example, are considered to be one-way networks. If two components of this network are combined in a new way, this does not lead to the generation of a composite good for which there is demand. Furthermore, these one-way networks do not hold the characteristic of reciprocity. This means, that a customer is not identified with a specific network node. Thus goods in one-way networks which share the same components are closer substitutes with composite goods.

2.5.3 Internal and External Costs

Understanding the costs of railway transport is crucial for the overall evaluation of ownership unbundling. We have to distinguish between the costs for the provider of the transport service and the consumer of this service. In some transport modes, like for example in automobile transport, these two burdens are bared by one and the same person. In others like in the railway industry, they are incumbent on different persons. Some costs which are caused by the supply of a service are born by the provider of the service and retrieved upon the final consumer. We call these costs internal transportation costs.

Other costs are neither born by the provider of the service nor by the final consumer and are in the end not covered by the transaction between the provider and the consumer. These costs are called external transportation costs (e.g. noise, traffic congestion, damages, environmental costs, accidents, insurances). They can be born by other persons, categories of

persons or the whole undertaking.[79] The operator passes on these costs to his consumers via ticket prices or other hires. But it is very possible that the operator is not able to recover the full amount of these costs or that the costs are not covered by the person who profits from the service (corresponds to the nature of external costs).

In comparison to other modes of transport, rail transport has minor external costs. The average external costs per passenger for road transport are 84 %, for aviation transport 14 % and for rail transport only 2 %.[80] But the railway industry has a disadvantageous situation concerning their internal costs in comparison to their competitors in other transport sectors, when considering the infrastructure. In most of the European countries, the roads have been constructed by the State and are supported and administrated by the State. In the end, the road infrastructure is financed entirely by the tax payers.[81] There are only a few examples in Europe where a road charge has to be paid. Rail operators are obliged to bear the costs of the infrastructure on their own and additionally, because of their obligation to provide a service of general economic interest, they are inhibited to transfer them to their consumers completely. Of course, also in the railway sector the State contributes to the infrastructure, but this industry has always been treated like a "stepchild" and this has led to underfunding. This situation is aggravated by the fact that it is much more expensive to support one kilometre of rail track than one kilometre of road. This has led to a considerable underdevelopment of the rail infrastructure. To conclude, we can say that a big part of the cost effectiveness of other modes of transport (especially road transport) is not included in the calculation of their external costs. And although rail operators have to bear the costs for the infrastructure, because of their obligation to ensure a service of general economic interest, they cannot fully recoup these costs amongst their clients. For this reason, rail transport has a big disadvantage compared to other competing modes of transport. Furthermore, because of this huge variety of different inputs and outputs, it is very difficult to assign the different costs to a specific economic activity.

---

[79] F. DEHOUSSE/T. CATHERINE/P. VAN DEN BRULE, *Vers le marché unique des transports ferroviaires: les avantages et les dangers de la stratégie européenne*, in : Studia diplomatica, No 2, 2004, p. 11.

[80] European Environment Agency, Term 2002, 25 EU, *External costs of transportation*, 2003; Institut für Wirtschaftspolitik und Forschung, *External costs of transport – Accident, environmental and congestion costs in Western Europe*, Zurich, 2004.

[81] Commission Green Paper, *Towards Fair and Efficient Pricing in Transport Policy – Policy Options for Internalising the External Cost of Transport in the European Union*, COM (95) 691 final, 20.12.1995, § 3.4.1.

2.5.4 Fixed Costs and Variable Costs

The railway's cost structure is marked by considerably high fixed costs (around 90 %) and low variable costs. The former are caused by track and train station maintenance costs, construction costs, taxes, labour costs and depreciation.[82] The latter are constituted of, amongst others, fuel costs, equipment maintenance and non-administrative wages. In the railway sector an additional uncertainty of cost allocation comes from the fact that a high percentage of these costs are hardly attributable to one specific shipment (e.g. costs for signal maintenance, energy, wagons).

2.5.5 Economies of Scale

By profiting from operational efficiencies, production can be increased and therefore costs per unit are reduced when economies of scale are present. As we have already seen, the proportion of fixed costs is very high in rail operations. Because of this fact, we are in the presence of substantial economies of scale when it comes to the supply of rail services.[83]

2.5.6 Economies of Scope

The theory of economies of scope states that by diversifying the production into a number of different goods, an economic entity can diminish the average total cost of its production. Railway transportation profits from this effect because a whole variety of types of transportation can be provided with joint production and therefore joint costs. This leads to the conclusion, that it is much more inefficient to have produced each service by a different service provider than to gather them under the roof of a single producer.

2.5.7 Railway as a Natural Monopoly

A single supplier of railway services can offer its product at a lower price than multiple suppliers could. Therefore, supported by empirical studies[84], railroad infrastructure and transportation can be considered to be a natural monopoly.[85] From an economic point of

---

[82] V. PROFILLIDIS, *Separation of Railway Infrastructure and Operations*, in: Japan Railway and Transport Review, No 29, 2001, p. 19-23, at: p. 21.
[83] R. GÖNENC/M. MAHER/G. NICOLETTI, *The Implementation and the Effects of Regulatory Reform: Past Experience and Current Issues*, OECD Economic Studies, No 32, 2001/1; G. KNIEPS, supra note 59.
[84] R. BRÄUTIGAM, *Learning about Transportation Costs*, in: J. GOMEZ-IBANEZ/W. TYE/C. WINSTON, *Essays in Transportation Economics and Policy: A Handbook in Honour of John R. Meyer*, 1999, p. 57-98; J. SHIRES/J. PRESTON/C. BORGNOLO/M. PONTI, *Joint Report on the Rail Case Study*, European Commission, Brussels, 1999.
[85] S. ARENDT, supra note 59, p. 3; W. BAUMOL/J. PANZAR/R. WILLIG, *Contestable markets and the Theory of Industry Structure*, San Diego, 1982.

view, it is unreasonable to duplicate the system of rail tracks, at least until there are sufficient capacities to satisfy all demand. And even if the limits of capacity are actually reached, it has been economically demonstrated that it is more efficient and cheaper to "expand existing tracks instead of building new ones".[86]

Nevertheless, the sole fact that economies of scope and scale exist is not enough to consider a natural monopoly to be stable. A natural monopoly as such is even compatible with competition in a given market. The decisive question is: is the natural monopoly contestable and attackable?

The concept of contestable markets[87] is based on the assumption that monopolies are harmless if they are disciplined by potential competition. The concept specifies the conditions which make of a natural monopoly a (non-)durable one.

The basic prerequisites for a natural monopoly to be contestable are the non-existence of market entry and market exit barriers and an entry lag which is long enough.[88] If these requirements are fulfilled, the sole fact that there is potential competition results in the situation that the monopolist will not fix excessive prices. The reason lies in the fact that the abuse of market power would lead to the entrance of new competitors into the market, because there are no significant barriers to enter the market. If the market entry of the new competitor succeeds, the consumers will switch over to the new provider directly. If the monopolist needs more time to adapt his price policy when confronted with the new entrant than the new competitor needs in order to enter the market and sell his products (so called "entry lag"), the monopoly is contestable.

Because market exit is also free, the leaving of the monopolist does not lead to the dissipation of resources. Therefore, the sole fact that there is potential competition leads to the fact that the monopolist fixes prices which barely cover his costs. Thereby the market becomes increasingly unattractive for potential competitors. At the same time there is no need to regulate the natural monopoly, because the price level is not excessive. Hence, the monopolist is disciplined by the existence of potential competition.

If these three conditions are fulfilled, new competitors can enter the market by exercising the so called "hit-and-run strategy". This leads then to the conclusion that the

---

[86] S. ARENDT, supra note 59, p. 9.
[87] W. BAUMOL/J. PANZAR/R. WILLIG, supra note 85; F. LÉVÊQUE, supra note 59, p. 57.
[88] J. KRUSE, *Ökonomie der Monopolregulierung*, Munich, 1997, p. 297.

natural monopoly is contestable and attackable and therefore is exposed to competitive pressure.

2.5.8 Indivisibilities

While demand varies in small units, to meet this demand indivisible increments, like for example wagons, can only be added or removed entirely. This can result in excess capacity allocation, when "increases/decreases in supply exceed increases/decreases in demand."[89] This has to be kept in mind when accounting for the influence of investment decisions and the calculation of user prices. A single additional unit of transportation needed can be marginal where there are enough facilities, but can be striking if facilities are operating at full capacity. These indivisibilities evoke that rail has to be classified as a very capital intensive sector.[90]

2.5.9 A Service of General Economic Interest (SGEI)

Services of general economic interest are supported even in the case that the supply of a single operation is not profitable. It is the aim, that these services are available all over a given territory, in the same quality and for the same price. These services are one pillar of the Union's competitiveness in the world economy and influences the organization of the whole industry. After the so called industrial revolution in the 19th century, rail was the first mass transportation system ever. The focus did not lay that much on profitability but rather on coverage of the whole country and cheap prices. To this very day, rail serves as a geographical integration mechanism, helps to push economic development and ensures social and territorial cohesion.

2.5.10 An Essential Facility

Following the essential facilities doctrine[91], the rail infrastructure represents an essential facility with the additional characteristic of a monopolistic bottleneck.[92] As we have seen in section 2.5.7 of this paper, only the infrastructure represents a natural monopoly but not the

---

[89] J. CAMPOS/P. CANTOS, *Rail Transport Regulation*, Working paper prepared for the Economic Development of the World Bank, University of Valencia, 1999, p. 9; L. DI PIETRANTONIO/J. PELKMANS, supra note 78, p. 307; C. KIRCHNER, supra note 57, p. 296; J. KRUSE, supra note 52, p. 256.
[90] S. ARENDT, supra note 59, p. 3; J. CAMPOS/P. CANTOS, supra note 90, p. 3.
[91] Case C-7/73, "*Commercial Solvents*", [1974] ECR 223; Case C-27/76, "*United Brands*", [1978] ECR 207; Case C-311/84, "*Télémarketing*", [1985] ECR 3261; Commission Decision of 26.02.1992, "*British Midland v. Aer Lingus*", OJ L 96, [1992], p. 34-45; Commission Decision of 21.12.1993, "*Port of Rødby*", OJ L 55, [1994], p. 52-57.
[92] A. BUSCHE, *How does the Community wish to revitalise its railways?*, in: Intereconomics, 2004, No 4, p. 213-221, at: p. 217.

service providing level of the rail sector. But to be able to offer rail services, potential competitors must be able to access the network. The vertically integrated incumbent can use its power over the network as a "bottleneck" to deny to potential competitors the possibility to enter the market.

2.5.11 Irreversibilities

Irreversibilities ("sunk costs") can be defined as purchased production factors and executed investments which, after the exit of the market, cannot be used by other undertakings, for any other uses or only with extremely high obsolescences.[93] These irreversibilities constitute barriers to exit a market. At the same time their existence also has influence on the market entry: in the light of uncertain future market development, irreversibilities lead to a growing entrepreneurial risk. Therefore, potential competitors have to calculate whether they want to enter a market which they can only leave again under high losses.[94]

[93] J. KRUSE, supra note 89, p. 508.
[94] M. FRITSCH/T. WEIN, *Marktversagen infolge von Unteilbarkeiten*, in: Wirtschaftswissenschaftliches Studium, 1994, p. 338.

3 Benefits and Drawbacks of Ownership Unbundling in the Railway Industry

3.1 Drawbacks of Ownership Unbundling

Based on the overview of the legal and economic cornerstones above, it is apparent that there are potential benefits and drawbacks that can be expected from ownership unbundling. The possible negative consequences which may originate from ownership unbundling are outlined and evaluated in the following section.

3.1.1 Regulatory and Competition Law Reasons against Ownership Unbundling

3.1.1.1 Persisting Need for Regulation

Even vertical disintegration cannot substitute the regulation of network access charges because by separating the infrastructure from the services, only *one* of the motivations to charge elevated fees would be dispensed, squeezing possible competitors out of the market or even prevent them to enter it. For the separated network operator a second motivation persists: as much absorption as possible of the monopoly rate of return from the infrastructure.[95] In addition, it is not totally excluded that a vertically separated operator will not also discriminate between different undertakings in order to re-establish the former degree of integration via contractual agreements. Therefore, unbundling cannot be seen as the panacea for this problem, as some want to see it; the need for regulation persists.

3.1.1.2 Transparency

As it will be shown in the section on information asymmetries (3.2.1.2), one of the main problems for the regulator is the lack of unrestricted and unhampered access to internal economic information which is needed to fix adequate access charges to the infrastructure. A solution to this obstacle might be the increase of transparency through strict obligations to publish information and make it accessible to the regulator instead of introducing a measure such as ownership unbundling which can appear to be disproportionate to gain this information.

---

[95] J. DANNISCHEWSKI, supra note 29, p. 183; K. HEINE, *Governance-Probleme bei der erfolgreichen unternehmensinternen Umsetzung der Anreizregulierung*, in: F. SÄCKER/W. VON COLBE, supra note 35, p. 34.

3.1.1.3 Inefficient Entries

If a new competitor enters the market, the incumbent will suffer from revenue loss. Under normal circumstances, this deficit would reappear in turn as a revenue gain on the side of the new entrant. In the case of so called "inefficient entries", this is not the case. The possible revenue is lost for both the incumbent and the new competitor. This happens, when the quantity of demand and operations is not sufficiently large enough. This leads to the astonishing result that although competition is present in the market, neither the incumbent nor the new competitor can take profit from the competitive pressure.

3.1.1.4 Fusion Tendencies

It is also worth mentioning the danger that ownership unbundling may lead to the reduction of financial barriers which might have impeded mergers to occur so far. The foregoing can have as a consequence that competitors on the service level will opt for further consolidation through mergers.[96] So in the end the market could considerably reduce competitive pressure again.

3.1.1.5 Intermodal Competition

In the transport market, the competitiveness of a mode of transport depends on the costs and on the speed of travel. Concerning short distance travel, rail faces intensive competition from cars, which are cheaper and, most importantly, faster. Long distance travel with rail also competes intensively with automobile transport but even more so with (low-cost) air carriers.[97] It is questionable whether rail should be additionally exposed to further competitive pressure from intramodal competition.

3.1.2 Economic Reasons against Ownership Unbundling

3.1.2.1 Synergy Effects

The gravest argument against ownership unbundling is the loss of economies of scale and scope.[98] Vertical integration has the effect that there are cost savings derived from the joint

---

[96] S. DAVIES/C. WADDAMS PRICE, supra note 64, p. 300.
[97] G. MARLOT, *La déréglementation du transport ferroviaire européen*, in: Les services publics à l´heure de la concurrence – Regards sur l´actualité, No 306, 2004, p. 59-71, at: p. 59; Deutsche Bank Research, *Schienenverkehr in Europe: Marktöffnung als Chance – Beiträge zur europäischen Integration*, EU-Monitor, No 39, 17.10.2006, p. 10.
[98] S. DAVIES/C. WADDAMS PRICE, supra note 64, p. 302.

operations of tracks and services. These benefits consist most notably in better coordination between the infrastructure and the service level, in decreasing average costs per unit[99] and in productivity improvements.[100] The answer to the question of the concrete degree of these economies of scope is an empirical question which cannot be answered in a general way.[101] Finally, separation also impedes financial synergies between the infrastructure and the service level.

3.1.2.2 Multiple Costs

With regard to multiple costs there are basically four facets to be considered, i.e. transactional costs, coordination and transactional costs, external costs and double marginalization:

- *Transitional Costs:* Integrated railway undertakings are very complex structures, which have grown over the centuries. To introduce ownership unbundling, comprehensive changes and adjustments within the incumbent will have to be carried out. It is necessary to separate the infrastructure management from the operations inter alia on the level of the premises, the level of the employees and on the corporate level, all of which provokes costs. The state of complete ownership unbundling will only be reached after a long transitional period during which business operations will not be able to operate in an optimal way. These substantial macroeconomic costs have to be taken into account imperatively.
- *Coordination Costs and Transaction Costs:* Another key argument is that under ownership unbundling, the network operator has to establish economic relations with his own former service provider as well as with all new entrants in the market via contractual relations. The costs which arise in conjunction with the initiation, agreement, implementation, control and enforcement of these complex contracts, weigh heavily in a cost-benefit analysis. [102] There can be situations where it is particularly cumbersome to carry out close contracts between different levels of the

[99] J. KRUSE, supra note 52, p. 251.
[100] O. WILLIAMSON, *Markets and Hierarchies: Analysis and antitrust implications*, New York, 1975; O. WILLIAMSON, *Transaction cost economics: The governance of contractual relations*, in: Journal of Law and Economics, Volume 22, p. 233-261; O. WILLIAMSON, supra note 53, p. 135-179.
[101] J. KRUSE, supra note 52, p. 251.
[102] T. EHRMANN/K.-H. HARTWIG/T. MARNER/ H. SCHMALE, *Investitionsanreize im Schienenverkehr – Eine experimentelle Untersuchung*, in: Internationales Verkehrswesen, No 58, 09/2006, p. 398-404, at: p. 399.

industry.[103] Integrating these parts of the industry can be much more efficient. Ownership unbundling causes considerable on-off costs of contract renegotiation. Transaction costs are for example: co-ordination of financing and investments as well as of research and development, of time schedules, of allocation of routes and control of the operating procedure.

- *External Costs:* Moreover, if the aim of ownership unbundling is to stimulate the emergence of a large number of new entrants on the service level, we also have to take into account that this can evoke additional external costs, if for example delayed shipments of undertaking A disorders the schedule of undertaking B. In the case of an integrated railway company these costs emerge as well, but they are internalized. In a separated environment, this will lead, inter alia, to damage claims of undertaking B against undertaking A.
- *Double Marginalization:* The double mark-up problem describes the phenomenon, that when there is imperfect competition on two consecutive levels of production, each level will add a profit margin on the product. Therefore vertical separation can even lead to higher prices, if a second mark-up is imposed on the service provider, besides the one which is already included in the access charge to cover common and fixed costs of the infrastructure.[104] Having said this, double marginalization also leads to a reduction of incentives to invest for the network vertically separated operator because "it reduces its profits from additional investment".[105] It comes to excessive contraction of demand, if the impact on the earnings in the upstream market is not taken into account for the decisions of the downstream market. Vertical integration can eliminate the double marginalization, resulting in both higher profits and lower prices.

3.1.2.3 Capital Market Potential and Financial Strength

Unbundling undermines the financial strength of the integrated incumbent[106] . A separated undertaking will have many more difficulties obtaining the same low capital costs on the

[103] S. DAVIES/C. WADDAMS PRICE, supra note 64, p. 298.
[104] J. HAUCAP, *The Costs and Benefits of Ownership Unbundling*, Intereconomics, November/December 2007, p. 301-305, at: p. 303; F. BOLLE/Y. BREITMOSER, *On the Allocative Efficiency of Ownership Unbundling*, Discussion Paper No 255, European University Viadrina, Frankfurt on the Oder, 2006.
[105] F. HÖFFLER/S. KRANZ, *Legal Unbundling : A Golden Mean between Vertical Integration and Vertical Separation ?*, Working Paper, WHU Otto Beisheim School of Management, 2007.
[106] S. DAVIES/C. WADDAMS PRICE, supra note 64, p. 304.

capital market then an integrated one, because in general the network will serve as collateral for financing operations.[107]

Furthermore, the integrated model gets a much better rating by the rating agencies. These agencies have already announced that their assessment of an undertaking will be negatively affected when the network becomes disintegrated.[108] The reason lies, inter alia, in the hundreds of millions of Euros, coming from the State and, in the end, from the tax payers, which are transferred to the integrated incumbent without the obligation to repay and without interests.

3.1.2.4 Investments

Following experimental studies, investment incentives are higher when there is vertical integrated.[109] The reason lies in the fact that investments which a disintegrated network operator executes are also beneficial for his competitors on the service level. The inducement to invest in the reliability of the network is reduced considerably[110], because by investing, the separated incumbent does not ensure exclusively its own reliability but the one of a rival service provider too. An integrated company has a double incentive to transact investments in the infrastructure.

3.1.2.5 Welfare Effects

Furthermore, the fraction of the service costs compared with the total costs is very low in the railway sector, so the welfare gains are likely to stay marginal. While some researchers have come to the conclusion that welfare effects would even be influenced negatively (CEO research institute[111]), even those who are more optimistic, say that positive welfare effects are only probable, if a whole bundle of complex conditions are met (CPB research institute[112]).

---

[107] M. MULDER/V. SHESTALOVA/G. ZWART, *Vertical Separation of the Dutch Energy Distribution Industry: an Economic Assessment of the Political Debate*, in: Intereconomics, November/December 2007, p. 305-310, at: p. 307.
[108] M. MULDER/V. SHESTALOVA/G. ZWART, supra note 107, p. 308.
[109] T. EHRMANN/K.-H. HARTWIG/T. MARNER/ H. SCHMALE, supra note 103, p. 403.
[110] C. Kahle, *Die Eigentumsrechtliche Entflechtung der Energieversorgungsnetze*, in: Recht der Energiewirtschaft, No 10/11, 2007, p. 293-299, at: p. 296.
[111] SEO, *De Welvaartseffecten van het splitsingsvoorstel – een overkoepelend beeld*, Amsterdam, 2006.
[112] M. MULDER/V. SHESTALOVA/M. LIJESEN, *Vertical separation of the energy-distribution industry: An assessment of several options for unbundling*, CPB Document 84, The Hague, 2005.

3.1.2.6 Diverging Interests

Moreover, it is a rare occurrence when the infrastructure provider's and the service provider's investment schemes are congruent. Train lines which might be classified to be profitable by the service provider, can be seen as too costly to maintain by the infrastructure owner. This will lead to costly and longbreathed negotiations or even lawsuits. Other coordination problems are accrued: within the vertically integrated incumbent there is a clear hierarchical build up with clear decision making processes. In a disintegrated environment, many diverging interests have to be respected and the decision making becomes much more difficult and inefficient. Ownership unbundling complicates the coordination of train and infrastructure operations.

3.1.3 Technical reasons against Ownership Unbundling

3.1.3.1 System Complexity

The railway industry is a cross-linked system which necessitates the complex interplay of different elements.[113] The immense need for technical coherence is often neglected. There is a variety of possible interface problems, for example: longer trains need longer platforms at the stations. If this is not guaranteed, the operator will not invest in new trains. These interfaces complicate the coordination of train and infrastructure operations. Another good example is the development of the TGV by the French SNCF. Even for the vertically integrated SNCF it took over 15 years (1964-1982) to develop the first TGV suitable for series production.[114] It is hardly imaginable how such technological innovations, which are needed for the railway to be able to compete with other modes of transport, can be developed in a fragmented structure of the industry.

3.1.4 Other reasons

3.1.4.1 Planning and Know How

Railway services differ considerably from other modes of transport while the traffic planning is a very complex venture. The driver of a train cannot freely choose the route he takes or the time he wants to undertake the shipment. Every shipment has to be fixed by allocating a slot

[113] R. KOPICKI/L. THOMPSON, *Best Methods of Railway Restructuring and Privatization*, CFS Discussion Paper Series, Number 111, 1995, p. 12.
[114] T. EHRMANN/K.-H. HARTWIG/T. MARNER/ H. SCHMALE, supra note 103, p. 398.

in the timetable. So not only from a technical, but also from an organisational point of view, infrastructure and services form an entity which necessitates a high level of coordination and which have to be planed together to perform optimally. Even today, delays of a few minutes on one rail line result in the perturbance of the timetable for a whole region. Is it hard to imagine how this task can be achieved in a vertically separated environment.

Additionally, integration preserves the vital knowledge accumulation within a single structure. Know how about how to run such a complex system like railways is one of the main resources and would get lost by separating.

3.1.4.2 Client's Interests and Security

Because of a lack of investments and opportunistic decision making by the service providers[115], ownership unbundling may reduce considerably the overall performance of the railway and lead to consumer frustration and a declining attractiveness of rail as a mode of transport. As a result of the high number of parties which have to be coordinated, the reliability of services may decrease, tickets may not be interchangeable if there are no agreements between the service providers, and there may be no connecting trains and no common timetable information system for all the providers.

An even more serious concern has to be added: more interfaces may lead to more accidents. Great Britain had to go through this painful experience.[116] The core problem is that it becomes very difficult to attribute responsibility amongst the infrastructure and service operators.[117] Because the responsibility is fragmented, none of the parties involved really feels responsible and it becomes much more complex to survey the system.

3.1.4.3 Legal Uncertainty

One should also not forget, that it is illusionary to believe that the incumbents, forced to separate vertically, will accept this decision without resistance. It is easy to foresee that the companies will initiate proceedings before their national courts and then before the European courts. In consideration of the average time period a case is pending on the national and European level, the benefits of ownership unbundling will not deploy their effects very soon.

---

[115] M. MULDER/V. SHESTALOVA/M. LIJESEN, supra note 112, p. 83.
[116] J. GOMEZ-IBANEZ/G. DE RUS, *Competition in the Railway Industry – An International Comparative Analysis*, Transport Economics Management and Policy, Cheltham, 2006, p. 69.
[117] T. EHRMANN, *Vor- und Nachteile der vertikalen (Des-)Integration der Deutschen Bahn AG unter besonderer Berücksichtigung der Kapitalmarktauswirkungen*, *D*iscussion paper Nr. 8, 2003.

This in turn will lead to considerable legal uncertainty and would deter investments[118] during this time period, to the overall disadvantage of the economy.

3.2 Benefits of Ownership Unbundling

In those countries, like for example Germany, where open access to the infrastructure has been introduced, there was hope that the market power of the incumbent would be challenged and intramodal competition would arise. It cannot be denied that there are even a large number of new competitors[119], but it is also true that they are faced with persistent discriminatory behaviour from the vertically integrated incumbent.

Against this background, this chapter gives an overview of the possible positive regulatory and competition law (3.2.1), economic (3.2.2) and technical (3.2.3) implications that ownership unbundling is expected to have in the railway industry, following the same logic as under 3.1.

3.2.1 Regulatory and Competition Law Incentives of Ownership Unbundling

In the following, the positive implications of various regulatory and competition law incentives of ownership unbundling are outlined and evaluated.

3.2.1.1 Network Access Charges

From very early on it has been recognized that to open a sector to competition, it is not enough to confront a former monopolist with competition by removing exclusive rights and to trust in the market powers for the rest.[120] It is rather necessary to give a real chance to new entrants to enter the market. The granting of non discriminatory access[121] to the network and non discriminatory competition on the market is decisive from a regulatory and competition law point of view.[122] A non discriminatory access includes that all providers of a certain service are able to use the infrastructure in the same conditions. There has to be a level

---

[118] J. HAUCAP, supra note 104, p. 304.
[119] I. DEWALD/C. KUHN/H. LEISTER, supra note 12.
[120] J. KÜHLING, supra note 27, p. 1; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 21.
[121] F. SÄCKER, supra note 28, p. 71; J. KÜHLING, supra note 27, p. 1; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 21.
[122] C. KOENIG, *Zu guter Letzt … geht es um das Diskriminierungspotential vertikal integrierter Netzbetreiber*, in: Netzwirtschaft und Recht, 2006, p. 88; E. BEISHEIM/H. EDELMANN, *Unbundling, Handlungsspielräume und Optionen für die Entflechtung von EVU*, Frankfurt on the Main, 2006, p. 26.

playing field for all service providers.[123] This is particularly important between newcomers and the vertically integrated incumbent ("avoidance of vertical foreclosure").[124] The decisive factor concerning the regulation of the network is the access charges; if they are fixed at a level which is much too high, competition on the downstream market will be excluded. Therefore, regulation of the access fees is needed.[125] The problem is that for the incumbent it is irrelevant at which level the network access charges are fixed. For the vertically integrated entity is makes no difference if they are too high or if they are too low because the network access charges simply represent internal transfer prices between the different departments within the same company. This phenomenon can be illustrated figuratively with the so called "right pocket, left pocket"-paradoxon: Even if the incumbent charges his own service operator too much, which his service operator then pays, it will reappear as a profit position on the balance sheet of the network operator. In the end this money is only transferred from one part of the incumbent to another and competition on the market is distorted.[126] But as long as the vertically integrated incumbent asks the same access charges from its own service provider and from the other competitors, there is no way to act against this by using competition law.[127]

Finally, the resort to precede an economic comparison examination to fix appropriate access charges is essentially impossible because only one rail infrastructure exists. Even if on an international level there are comparable networks, it can be presumed that there are also only regulated prices, not competitive prices.

3.2.1.2 Information Asymmetries

Another fundamental problem when it comes to the regulation of vertically integrated network industries is the asymmetric allocation of information between all the parties involved: the regulator, the regulated incumbent and new competitors. Because of the vertical integration of the incumbent, the assessment of the correct amount of access charges turns out to be a virtually insolvable task. This is so because the regulator has to rely on the

---

[123] G. GÜRTLICH, *Railway Infrastructure charges in the Context of the Liberalization of the Rail Market*, in: H. HANDLER/C. BURGER, *Competition and competitiveness in a new economy*, Austrian Ministry for Economic Affairs and Labour, 2002, p. 137-146, at: p. 138; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 21.
[124] J. KRUSE, supra note 52, p. 247.
[125] J. DANNISCHEWSKI, supra note 29, p. 183-184.
[126] A. BRENCK, *Intramodal Competition and the Reform of the German Railway System: Problems, Policy Options, Results*, in: P. WELFENS/G. YARROW/R. GRINBERG/C. GRAACK, *Towards Competition in Network Industries*, Berlin, 1999, p. 499-517, at: p. 499.
[127] K. HOLTHOFF-FRANK, supra note 29, § 24 para 11.

data the integrated incumbent provides him with. Not only the determination of the network access charges is made impossible, but also the prevention of other potential discriminatory measures, like e.g. quality differences in supply. For example, the annual report of the "Deutsche Bahn AG" is so intransparent that even external experts are not able to retrace the internal settling of the access charges paid by third parties. The incumbent will process the allocation of costs in such a way that most of the fixed costs will be allocated to the network. By doing this, he can carry on claiming excessive network access charges from his competitors. Especially the high proportions of costs, which are hardly attributable to one specific shipment, represent a serious concern. These asymmetries of information result in the absence of the necessary transparency to be able to accomplish the regulatory task in an adequate way.

3.2.1.3 Formal Flank of Regulation

As illustrated, if there is vertical integration between the network and the services level, a satisfying control of non discriminatory network access is very hard to put into effect.[128] Therefore, regulation of access to the network and regulation of access fees alone are not sufficient to enhance competition in network industries.[129] For this reason, unbundling in all its manifestations, and especially ownership unbundling, is discussed in the context of installing competition on the railway market. Unbundling constitutes the "formal flank" of the regulation of access as well as the regulation of access fees.[130] For this reason, unbundling rules can be seen as the "third pillar" along with regulation of access to the infrastructure and the regulation of access charges.[131]

3.2.1.4 Abuse of Market Power

Furthermore, there are serious doubts if an integrated undertaking can ensure non-discriminatory access to the infrastructure without using its potential to abuse market

[128] J. KRUSE, supra note 52, p. 257-258.
[129] C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 22; J. KÜHLING, supra note 27, p. 339.
[130] N. ANGENENDT, supra note 27, p. 134; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 28, p. 221; K. HOLTHOFF-FRANK, supra note 29, § 24 para 1.
[131] J. KRUSE, supra note 52, p. 256; C. KOENIG/J. KÜHLING/W. RASBACH, supra note 39, p. 116; J. KÜHLING/G. HERMEIER, *Innovationsoffenheit des Unbundling-Regimes? – Die Einführung neuer Strukturen im grenzüberschreitenden Stromhandel als Bewährungsprobe*, in: Zeitschrift für neues Energierecht, 2006, p. 27-25, at: p. 27.

power.[132] On one hand, the integrated company has to generate profit like every other economic entity, on the other hand it has to offer non-discriminatory access to competitors.[133] A monopolistic structure simply has no interest in promoting entry of new competitors into the market. In principle, every desired and imaginable discrimination can be realized via the access charges pricing system and the control over the network.[134] By introducing ownership unbundling, the operator of the infrastructure looses the incentives to discriminate against independent service providers.

3.2.1.5 Leveraging

Basically, even if regulation can circumvent that the regulated owner of the monopolistic infrastructure receives privilege over the provider of the service, the integrated incumbent has on the one hand an interest in increasing the price of the monopoly product and on the other hand to lower the price on the downstream market. In doing so, the integrated company raises the costs for competitors in the downstream market and the attractiveness of its own downstream service provider. The incumbent uses its market power on one market (infrastructure) to infringe Art. 82 EC on another market, where he does not have necessarily market power too ("leveraging"). In a situation where the incumbent is also able to use its monopoly power concerning the network on the downstream market, the relative company has both the impetus and the ability to distort upcoming competition.[135]

3.2.1.6 Chinese Walls

Additionally, giving preferential treatment by providing sensitive information about the network to the affiliated service provider is one of the most effective means to put the own operator in a considerably more advantageous position than the competitors (see also section 2.2.2 on department unbundling). "Chinese walls" have proved to be a nice theoretical concept, but are inoperable in practice and out of touch with reality, not to mention incredibly difficult to put into practice.[136] Bo Bylund, the Director General of Banverket, the Swedish infrastructure operator, once said: "Chinese walls didn't work in China, and they

---

[132] Kommission Verkehrsinfrastrukturfinanzierung (« Pällmann-Kommission »), final report, 05.09.2000, p. 48; J. KRUSE, supra note 52, p. 257.
[133] J. HAUCAP, supra note 104, p. 302.
[134] F. BERSCHIN, *Zur Trennung von Netz und Betrieb der Deutschen Bahn AG aufgrund des europäischen Eisenbahnpakets*, in: Deutsches Verwaltungsblatt, 2002, p. 1079-1086, at: p. 1080.
[135] S. DAVIES/C. WADDAMS PRICE, supra note 64, p. 298.
[136] F. BERSCHIN, supra note 135, p. 1085.

won't work in railways".[137] One may not forget that in most cases, even where there has been a separation of fields of activity within the same undertaking, former colleagues are now working on both sides of the wall: is it really possible to avoid personal contact and professional exchange between them? Ownership unbundling is the best "Chinese wall", because it removes every imaginable incentive to support an economic entity which is independent.

3.2.1.7 Cross Subsidies

An anti-competitive effect can also emanate from cross subsidies[138]. Cross subsidies imply that the profits coming from the market with a monopolistic structure are used to finance offers on the competitive market at a reduced rate. These cross subsidies only constitute a problem for competition if an undertaking is active on a monopoly market as well as on competitive markets. Thus, undertakings which are active on the subsidized market will be squeezed out by offers which cannot be attributed to higher efficiency or productivity.[139] If, in addition, the monopoly position of the incumbent is not assailable, the anti-competitive cross subsidy cannot be disciplined by the market powers, like potential market entries for example.[140] A central problem is the proof of cross subsidies within an integrated undertaking if the accounting for the network and the accounting for the services are not separated.[141] Moreover, if there is a high portion of overall costs within an integrated undertaking, there are wide scopes to itemize the costs and therefore only limited possibilities to identify cross subsidies.[142] Cross subsidies prevent all firms from starting at the same level playing field.

3.2.1.8 Reduction of Regulation Need

By not separating the incumbent vertically, the need for regulation is very high, especially in the area of infrastructure access and access charge calculation. This regulation has to be

---

[137] O. STEHMANN/G. ZELLHOFER, *Dominant Rail Undertakings under European Competition Policy*, in: European Law Journal, No 3, 2004, p. 327-353, at: p. 346.
[138] D. GERADIN, *L'Ouverture à la Concurrence des Entreprises de Réseau: Analyse des Principaux Débats du Processus de Libéralisation*, in: Cahiers de Droit Européen, 1999/1-2, p. 13-48, at: p. 33.
[139] D. PLATT, *Quersubventionierung im Wettbewerbsrecht der Europäischen Union*, Munich, 2005, p. 26; J. DANNISCHEWSKI, supra note 29, p. 62.
[140] K. HELD, *Quersubventionierung auf dem Postdienstleistungsmarkt*, Frankfurt on the Main, 2005, p. 106; K. HOLTHOFF-FRANK, supra note 29, § 24 para 11.
[141] J. KRUSE, supra note 52, p. 258; K. HELD, supra note 141, p. 106.
[142] C. KOENIG/M. SCHELLBERG/K. SCHREIBER, supra note 33, p. 981; J. KRUSE, supra note 52, p. 257.

classified as highly burdensome and intrusive for the incumbent[143]. Competition cannot substitute regulation in full, but by introducing vertical separation, the inevitable regulatory interventions can be limited to the regulation of the railway infrastructure.[144] The accounting which has to be verified by the regulator is limited to the costs which incur on the network level and therefore the costs are much easier to analyze and to evaluate. In addition, the concentration on the infrastructure reduces the need for information. Regulation becomes easier because it is not necessary to survey a single and powerful undertaking with no reliable information provided by it, but rather to observe the structure of the market as a whole. Ownership unbundling leads to a better response to regulatory incentives of the market.

3.2.1.9 Innovation and Investment Encouragement

Competitive pressure will force the service operators and the infrastructure operator to offer better services at lower prices and thereby respond better to user's needs.[145] Ownership unbundling will lead to the development of customer-orientated, innovative services and will overcome the innovation weakness of the railway industry. [146] This in turn leads to the set of investment incentives and enhances the possibilities to attract private investors for the rail network. [147]

3.2.1.10 Better Comparability

Finally, ownership unbundling would enable to put the railway on an equal footing with road and air transport, its main competitors. Separation will lead to a better comparability between the different modes of transport concerning the social costs (e.g. environmental costs, subsidies, etc.), infrastructure planning and the tariff system.

---

[143] The World Bank Group, Public Policy for the Private Sector, *Competition in Network Industries – Where and How?*, 1997.
[144] S. ARENDT, supra note 59, p. 1.
[145] L. DI PIETRANTONIO/J. PELKMANS, supra note 78, p. 321.
[146] A. EISENKOPF, supra note 4, p. 294; J. KWOKA, *Vertical Economies in electric power: evidence on integration and its alternatives*, in: International Journal of Industrial Organization, No 5, 2002, p. 653-671.
[147] W. HOHLEFELDER/T. KÄSTNER, *Regulierung und Kapitalmarktfähigkeit von Energieinvestitionen*, Wirtschaft und Verwaltung, 2/2005, p. 66-74, at: p. 66/69.

3.2.2 Economic benefits of Ownership Unbundling

In addition to an evaluation of regulatory and competition law incentives of ownership unbundling an assessment from an economic point of view seems to be important.

3.2.2.1 Efficiency Gains and Public Savings

Because there is no pressure to rationalize, monopolistic inefficiencies[148] appear in the form of excessive costs.[149] Ownership unbundling leads to cost efficiencies by forcing the network operator to specialize in the field of his primary activity.[150] Furthermore, the capital generated by the network is not used for purposes other than the network activities and therefore improves network quality[151].

Finally, by proceeding ownership unbundling, public authorities would be given an exit option to abandon their economic activities in the field of providing the rail service, without also being forced to sell the politically sensitive infrastructure network.[152]

3.2.2.2 Economies of Scale and Scope

Economies of scope, which seem to be the strongest argument against ownership unbundling, arise between the network and the service activities (so called "headquarter services" like IT services, call centers, billing systems, marketing, common personnel and housing, legal costs, etc.). These cost savings cannot be neglected, but even today integrated firms outsource these functions already. These points of cooperation can also be reached in the same way, or even more efficiently, by concluding contracts. Our whole economy is based on contractual arrangements; therefore the question is why this form of cooperation should not work in the railway sector too? Consequently, the relevance of economies of scope should not be overrated.

Furthermore, it can be said that the loss of economies of scope can be compensated by far by the advantages which competitive efficiency on separated levels brings about. Inter

---

[148] C. WINSTON, *Economic Deregulation: Days of Reckoning for Microeconomists*, in: Journal of Economic Literature, Volume 31, 1993, p. 1263-1289; K. BUTTON/T. WEYMAN-LONES, *X-Inefficiencies and Regulatory Regime Shift in the UK*, in: Journal of Evolutionary Economics, No 3, 1996, p. 269-284; S. SPELTHAHN, *Privatisierung natürlicher Monopole*, Wiesbaden, 1994.
[149] See figure in: J. KRUSE, supra note 52, p. 249.
[150] OECD, *The benefits and costs of structural separation*, Working party No 2 on Competition and Regulation, DAFFE/COMP/WP2(2003)2, 10.01.2003.
[151] S. DAVIES/C. WADDAMS PRICE, supra note 64, p. 298.
[152] M. MULDER/V. SHESTALOVA/G. ZWART, supra note 107, 305.

alia, ownership unbundling improves network quality because more independent financing and management of the infrastructure is made possible.[153]

3.2.3 Technical Benefits of Ownership Unbundling

3.2.3.1 Unilateral Fixing of Technical Standards

The railway sector is a highly technical network industry. By determining the technical standards unilaterally, so that only his own service operator can comply with them, the incumbent can exclude all other competitors. Furthermore, vertically integrated undertakings have no interest in developing specific parts of the network from which new potential competitors would benefit in particular.[154]

3.2.4 Compact Evaluation

All in all, the outlined examples for regulatory, competition law, economic and technical advantages show the existence of substantial benefits if one were to pursue a respective unbundling approach. Ownership unbundling allows for a conflict resolution between price regulation and non-pricing discrimination potential. A separation would avoid any incentives for the incumbent regarding potential discriminatory activities.

[153] European Conference of Ministers of Transport (ECMT), *Rail restructuring in Europe*, Paris, 1998, p. 11.
[154] C. SALQUE, supra note 13.

4 Conclusion

We have elucidated that at present, we are faced with a considerable disfunctioning of the European railway market with its vertically integrated incumbents. After having examined the economic nature and legal background of the railway industry, which is essential for a substantiated assessment of ownership unbundling, we have seen, that rail is a unique industry with a wide range of particular aspects which have to be taken into account. There is no noteworthy intramodal competition present and rail faces intensive intermodal competition from road and air transportation.

European legal requirements aim to increase the performance and competitiveness of rail by fostering the opening and liberalisation of the market while still leaving broad freedom to the Member States. The result is a very heterogeneous European rail market. At its core, the European legal requirements basically try to ensure a non-discriminatory access to the rail infrastructure for all willing market participants. However, the problem in practice is a chronicle violation of access rights of potential competitors by the incumbent. While the regulation of access in general as well as of access fees is seen as a necessary prerequisite, it seem to be not sufficient as stand alone measure to enhance competition in the market.

Therefore, the approach of vertical separation can be seen to be a very promising complementary measure, a “third pillar” besides the regulation of access to the infrastructure and access fees. As outlined in this paper, two different legal foundations are imaginable to introduce ownership unbundling in the context of the European railway industry. Art. 7 (1) of the modernization regulation 1/2003 enables the Commission to introduce vertical separation as a structural remedy, while it would also be possible to introduce ownership unbundling by using the internal market harmonisation competence in Art. 95 EC. Contrary to some voices in the literature, the author takes the view that Art. 295 EC does not hinder the Community to act on this legal basis.

While examining the negative impact vertical separation is supposed to have from an economic, regulatory and competition law point of view, we identified negative implications such as multiple costs, loss of synergy effects, financial weakening of the undertaking as well as uncertainty concerning the ability to ensure technical and coordination reliability in a separated environment.

On the other hand, it has been shown that ownership unbundling is expected to have a positive impact on the competitive situation in the railway industry. First, vertical

separation prevents the occurrence of information asymmetries between the regulator and the regulated. This in turn leads to the ability to fix the access charges at an appropriate level and to detect cross subsidies as well as to a reduction of regulation need. Second, by separating, the incumbent looses all incentives to discriminate against independent service providers and withdraws the possibility for the incumbent to use its market power on the infrastructure market to abuse this power on the downstream market ("leveraging"). Third, ownership unbundling will permit a better comparability between the different modes of transport concerning their real social cost structure, to the development of new customer-oriented services and to investment incentives which will attract new private investors. Finally, the whole industry will benefit from efficiency gains due to competitive pressure.

The foregoing findings highlight the controversial nature of vertical separation. To decide on the solution potential of ownership unbundling the assets and drawbacks must be carefully weighted against each other. Given the set of persisting discrimination problems and conscious of the fact that ownership unbundling constitutes a drastic transformation of the internal structure of an undertaking and a significant intervention in the market, the author takes the view that a severe measure as vertical separation with its benefits is the key remedy to ultimately introduce substantial competition in the railway industry.

One could be tempted to believe that it might not be very reasonable to open the railway market to intramodal competition while already today, railway undertakings face acrimonious intermodal competition from other modes of transport, especially road and air. However, this approach would not do justice to the potential railway has. The railway with its centrally located stations for passenger transport and its lower transport times for long distance freight transport is definitely able to compete with cars, trucks and planes. This is especially true in times of CO_2 -emission restrictions, overcrowded roads and increasingly time-consuming security checks at the airport.

Alternatives to vertical separation, like open access to the infrastructure, have proved to be insufficient and nearly effectless when introduced as a stand alone solution. To make the railway market accessible to noteworthy intramodal competition, further measures are imperatively needed.

It cannot be denied that vertical separation will cause irreversible costs due to the loss of economies of scope and scale, but these costs will be compensated by the expected efficiency gains. Furthermore, the collateral benefits prevail the financial costs and are expected to initiate a broad positive development of the industry: more intramodal

competition leads to cost and quality pressure for the incumbent, which leads to decreasing prices, which leads to a higher capacity utilization, which leads to more economies of density, and so on and so forth.

The vertically integrated incumbents throughout Europe had enough time to prove that they are best positioned to face intermodal competition and that their structure will not be harmful to intramodal competition, but they failed. If there is the political will to strengthen rail in Europe, a completely new structure is required which could then lead to a Copernican revolution in the railway sector.

Bibliography

Books

- AUSSANT, J./FORNASIER, R., *La politique commune des transports*, in: Commentaire Mégret, *Libre circulation des personnes, des services et des capitaux*, Brussels/Belgium, 1990
- BAUMOL, W./PANZAR, J./WILLIG, R., *Contestable markets and the Theory of Industry Structure*, Hartcourt Brace Jovanovich, San Diego/USA, 1982
- BAUR, J./PRITZSCHE, K./KLAUER, S., *Ownership Unbundling – Wesen und Vereinbarkeit mit Europarecht und Verfassungsrecht*, Baden-Baden/Germany, 2006
- BAUR, J./PRITZSCHE, K./SIMON, S., *Unbundling in der Energiewirtschaft – Ein Praxishandbuch*, Cologne/Germany, 2006
- BEISHEIM, C./EDELMANN, H., *Unbundling – Handlungsspielräume und Optionen für die Entflechtung von EVU*, Frankfurt on the Main/Germany, 2006
- BLAIR, R./KASERMAN, D., *Law and Economics of Vertical Integration and Control*, New York/USA, 1983
- DANNISCHEWSKI, J., *Unbundling im Energierecht – Konzept und Funktion von Entflechtungsmaßnahmen*, Baden-Baden/Germany, 2003
- European Conference of Ministers of Transport (ECMT), *Rail restructuring in Europe*, OECD Publishing, Paris/France, 1998
- European Conference of Ministers of Transport (ECMT), *Statistical trends in transport 1970-2002*, Paris, 2002
- GABEL, D./WEIMAN, D., *Opening networks to competition*, New York/USA, 1998
- GEPPERT, M./PIEPENBROCK, H.-J./Schütz, R./Schuster, F., *Beck TKG-Kommentar*, Munich/Germany, 2006
- GOMEZ-IBANEZ, J./DE RUS, G., *Competition in the Railway Industry – An International Comparative Analysis – Transport Economics, Management and Policy*, Cheltham/UK, 2006
- HELD, K., *Quersubventionierung auf dem Postdienstleistungsmarkt*, Frankfurt on the Main/Germany, 2005
- KNIEPS, G., *Wettbewerbsökonomie*, Berlin/Germany, 2001
- KNIEPS, G./BRUNEKREEFT, G., Z*wischen Regulierung und Wettbewerb – Netzsektoren in Deutschland*, Heidelberg/Germany, 2000
- KOENIG, C./KÜHLING, J./RASBACH, W., *Energierecht*, Frankfurt on the Main/Germany, 2006
- KRUSE, J., *Ökonomie der Monopolregulierung*, Göttingen/Germany, 1997
- KÜHLING, J., *Sektorspezifische Regulierung in den Netzwirtschaften*, Typologie Wirtschaftsverwaltungsrecht, Munich/Germany, 2004
- LEVEQUE, F., *Économie de la réglementation*, Collection Repères, Paris, La découverte, 2004

- LIPPERT, I., Öffent*liche Dienstleistungen unter EU-Einfluss: Liberalisierung, Privatisierung, Restrukturierung, Regulierung,* Berlin/Germany, 2005
- PricewaterhouseCoopers, *Entflechtung und Regulierung in der deutschen Energiewirtschaft – Praxishandbuch zum Energiewirtschaftsgesetz*, Munich/Germany, 2007
- SÄCKER, F., *Der Independent System Operator – Ein neues institutionelles Design für Netzbetreiber*, Frankfurt on the Main/Germany, 2007
- SÄCKER, F./VON COLBE, W., *Wettbewerbsfördernde Anreizregulierung*, Frankfurt on the Main/Germany, 2007
- SCHÖNBORN, A., *Konzernzugehörigkeit contra Unbundling – ein unlösbarer Konflikt?*, in: SÄCKER, F./VON COLBE, W., *Wettbewerbsfördernde Anreizregulierung*, Frankfurt on the Main/Germany, 2007, p. 37-52
- SHEPHERD, W., *The Economics of Industrial Organization*, Englewood Cliffs/UK, 1997
- SPELTHAHN, S., *Privatisierung natürlicher Monopole*, Wiesbaden/Germany, 1994
- VOLZ, T., *Das Unbundling in der britischen und deutschen Energiewirtschaft*, Frankfurt on the Main/Germany, 2006

Articles

- ABERLE, G., *Rail Policy and Rail Subsidies – An endless history with weak results*, in: European Conference of Ministers of Transport (ECMT), *Fifty years of transport policy: successes, failures and new challenges*, Paris, 2003, p.19-24
- ANGENENDT, N., *Entflechtungsvorgaben in Netzwerkindustrien*, in: Netzwirtschaften und Recht, 2007, p. 134-139
- BAUMOL, W., *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, in: American Economic Review, No 5, 1977, p. 810-822
- BERSCHIN, F., *Zur Trennung von Netz und Betrieb der Deutschen Bahn AG aufgrund des europäischen Eisenbahnpakets*, in: Deutsches Verwaltungsblatt, 2002, p. 1079-1086
- BOLLE, F./BREITMOSER, Y., *On the Allocative Efficiency of Ownership Unbundling*, Discussion Paper No 255, European University Viadrina, Frankfurt on the Oder/Germany, 2006
- BRÄUTIGAM, R., *Learning about Transportation Costs*, in: J. GOMEZ-IBANEZ/W. TYE/C. WINSTON, *Essays in Transportation Economics and Policy: A Handbook in Honour of John R. Meyer*, 1999, p. 57-98
- BRENCK, A., *Intramodal Competition and the Reform of the German Railway System: Problems, Policy Options, Results*, in: Welfens, P./Yarrow, G./Grinberg, R./Graack, C., *Towards Competion in Network Industries*, Berlin/Germany, 1999, p. 499-517
- BUSCHE, A., *How does the Community wish to revitalise its railways?*, in: Intereconomics, 2004, Volume 39, No 4, p. 213-221

- BUTTON, K./WEYMAN-LONES, T., *X-Inefficiencies and Regulatory Regime Shift in the UK*, in: Journal of Evolutionary Economics, Volume 3, 1996, p. 269-284
- CAMPOS, J./CANTOS, P., *Rail Transport Regulation*, Working paper prepared for the Economic Development of the World Bank, University of Valencia, 1999, p. 3
- CAMPOS, J./CANTOS, P., *Recent changes in the global rail industry: facing the challenge of increased flexibility*, in: European Transport, No 29, 2005, p. 1-21
- COASE, R., *The Nature of the Firm*, in: Economica, Volume 4, 1937, p. 386-405
- DAVIES, S./WADDAMS PRICE, C., *Does Ownership Unbundling Matter? Evidence from UK Energy Markets*, in: Intereconomics, November/December 2007, p. 297-305
- DEHOUSSE, F./CATHERINE, T./VAN DEN BRULE, P., *Vers le marché unique des transports ferroviaires: les avantages et les dangers de la stratégie européenne*, in: Studia diplomatica, No 2, 2004, p. 11
- Deutsche Bank Research, *Schienenverkehr in Europe: Marktöffnung als Chance, Beiträge zur europäischen Integration*, EU-Monitor, No 39, 17.10.2006
- DEWALD, I./KUHN, C./LEISTER, H., *Erfahrungen von Connex auf dem Netz der DB AG*, Eisenbahntechnische Rundschau, Heft 7/8, 2001, p. 409-417
- DI PIETRANTONIO, L./PELKMANS, J., *The ERG economics of EU railway reform*, in: Journal of network industries, 2004, Volume 5, No 3-4, p. 295-346
- EHRMANN, T., *Vor- und Nachteile der vertikalen (Des-)Integration der Deutschen Bahn AG unter besonderer Berücksichtigung der Kapitalmarktauswirkungen*, discussion paper Nr. 8, 2003
- EHRMANN, T./HARTWIG, K.-H./MARNER, T./SCHMALE, H., *Investitionsanreize im Schienenverkehr – Eine experimentelle Untersuchung*, in: Internationales Verkehrswesen, No 58, 09/2006, p. 398-404
- EISENKOPF, A., *Opening the Rail Freight Market in Europe – an Economic assessment*, in: Intereconomics, November/December 2006, p. 292-295
- European Environment Agency, *Term 2002 – 25 EU – External costs of transportation*, 2003
- FRITSCH, M./WEIN, T., *Marktversagen infolge von Unteilbarkeiten*, in: Wirtschaftswissenschaftliches Studium, 1994, p. 338
- GERADIN, D., *L'Ouverture à la Concurrence des Entreprises de Réseau: Analyse des Principaux Débats du Processus de Libéralisation*, in: Cahiers de Droit Européen, 1999/1-2, p. 13-48
- GERADIN, D., *Twenty years of liberalization of network industries in the European Union: Where do we go now?*, available at SSRN: http://ssrn.com/abstract=946796, November 2006
- GÖNENC, R./MAHER, M./NICOLETTI, G., *The Implementation and the Effects of Regulatory Reform: Past Experience and Current Issues, available at* http://www.sourceoecd.org/10.1787/413754754615
- GÜRTLICH, G., *Railway Infrastructure charges in the Context of the Liberalization of the Rail Market*, in: HANDLER, H./BURGER, C., *Competition and competitiveness in a new economy*, Austrian Ministry for Economic Affairs and Labour, Vienna/Austria, 2002

- HAUCAP, J., *The Costs and Benefits of Ownership Unbundling*, in: Intereconomics, November/December 2007, p. 301-305
- HÖFFLER, F./KRANZ, S., *Legal Unbundling: A „golden mean" between vertical integration and vertical separation?*, Working Paper, WHU Otto Beisheim School of Management, 2007
- HOHLEFELDER, W./KÄSTNER, T., *Regulierung und Kapitalmarktfähigkeit von Energieinvestitionen*, in: Wirtschaft und Verwaltung, 2/2005, p.66- 74
- HOLZNAGEL, B./SCHUMACHER, P., *Großer Eingriff, k(l)eine Wirkung – Die Pläne der Kommission zur eigentumsrechtlichen Entflechtung der Energienetzbetreiber*, in: Netzwirtschaften und Recht, 2007, p. 96-103
- Institut für Wirtschaftspolitik und Forschung, *External costs of transport – Accident, environmental and congestion costs in Western Europe*, Zurich, 2004.
- JARZEMBOWSKI, G., *European Transport Policy in a Broader Perspective*, in: Intereconomics, September/October 2007, p. 281-284
- JENSEN, A./STELLING, P., *On the Effectiveness of Vertical and Horizontal Measures in Railway Deregulation*, 2005, p. 2
- KAHLE, C., *Die Eigentumsrechtliche Entflechtung der Energieversorgungsnetze*, in: Recht der Energiewirtschaft , No 10/11, 2007, p. 293-299
- KIRCHNER, C., *Legal instruments for Liberalising European Rail Freight Markets from 2007*, in: Intereconomics, November/December 2006, 295-298
- KNIEPS, G., *Privatization of Network Industries in Germany: A Disaggregated approach*, Discussion Paper Nr. 100, Institut für Verkehrswissenschaft und Regionalpolitik, Freiburg University, 2004
- KNILL, C./LEHMKUHL, D., *An Alternative Route of European Integration: The Community´s Railways Policy*, in: West European Politics, Volume 23, No 1, 2000, p. 65-88
- KOENIG, C./KÜHLING, J./Rasbach, W., *Das energierechtliche Unbundling-Regime*, in: Recht der Energiewirtschaft, 2003, p. 221-248
- KOENIG, C./SCHELLBERG, M./SCHREIBER, K., *Unbundling-Regulierung im Eisenbahnsektor*, in: Wirtschaft und Wettbewerb, 2007, p. 981-994
- KOENIG, C., *Zu guter Letzt … geht es um das Diskriminierungspotential vertikal integrierter Netzbetreiber*, in: Netzwirtschaften und Recht, 2006, p. 88
- Kommission Verkehrsinfrastrukturfinanzierung (« Pällmann-Kommission »), final Report, 05.09.2000
- KOPICKI, R./THOMPSON, L., *Best Methods of Railway Restructuring and Privatization*, in: CFS Discussion Paper Series, Number 111, 1995
- KRUSE, J., *Vertikale Integration als Wettbewerbsproblem*, in: KRUSE, J./STOCKMANN, K./VOLLMER L., *Wettbewerbspolitik im Spannungsfeld nationaler und internationaler Kartellrechtsordnungen*, Festschrift für Ingo Schmidt, Baden-Baden/Germany, 1997

- KÜHLING, J./HERMEIER, G., *Innovationsoffenheit des Unbundling-Regimes? – Die Einführung neuer Strukturen im grenzüberschreitenden Stromhandel als Bewährungsprobe*, in: Zeitschrift für Neues Energierecht, 2006, p. 27-25
- KÜNNEKE, R./FINGER, M., *Technology Matters: The cases of the Liberalization of Electricity and Railways*, in: Competition and Regulation in Network Industries, Volume 8, 2007, p. 303-335
- KUNZ, W., *Grundlagen des europäischen Eisenbahnrechts*, in: EI-Eisenbahningenieur, 10/2003, p. 68-73
- KWOKA, J., *Vertical Economies in electric power: evidence on integration and its alternatives*, in: International Journal of Industrial Organization, Volume 20, No 5, 2002, p. 653-671
- LINK, H., *Rail Restructuring in Germany – 8 Years later*, in: Japan Railway & Transport Review, No 34, 2003, p. 42-49
- MALMENDIER, B./SCHENDEL, J., *Unbundling Germany's energy networks*, in: Journal of Energy and Natural Resources Law, Volume 24, No 3, 2006, p. 362-383
- MARLOT, G., *La déréglementation du transport ferroviaire européen*, in: Les services publics à l´heure de la concurrence – Regards sur l´actualité, No 306, 2004, p. 59-71
- MATHIEU, G., *La réforme des chemins de fer britanniques: quelle privatisation ? Quel bilan?*, in: Transports, No 413, 2002, p. 149-169
- McMICHAEL, S./LAURIE, D., *A quantum leap forward?*, in: Competition Law Insight, 2007, p. 3-4
- Monopolkommission, *Ökonomische Risiken und rechtliche Probleme einer eigentumsrechtlichen Entflechtung*, Sondergutachten No 49, 01.11.2007, in: Wirtschaft und Wettbewerb, No 12, p. 1308-1312
- MULDER, M./SHESTALOVA, V./LIJESEN, M., *Vertical separation of the energy-distribution industry: An assessment of several options for unbundling*, CPB Document 84, The Hague, 2005
- MULDER, M./SHESTALOVA, V./ZWART, G., *Vertical Separation of the Dutch Energy Distribution Industry: an Economic Assessment of the Political Debate*, in: Intereconomics, November/December 2007, p. 305-310
- OECD, *The benefits and costs of structural separation*, Working party No 2 on Competition and Regulation, DAFFE/COMP/WP2(2003)2, 10.01.2003
- PANZAR, J., WILLIG, R., *Free entry and the sustainability of natural monopoly*, in: Bell Journal of Economics, 8, 1977, p. 1-22
- PHILIP, C., *Le troisième paquet ferroviaire: étape ultime de la bataille du rail en Europe ?*, in: Documents d´information de l´Assemblée Nationale Française, Novembre 2004, Délégation pour l´Union Européenne
- PIELOW, J.-C./EHLERS, E., *Rechtsfragen zum Ownership Unbundling*, in: Infrastrukturrecht, 2007, p. 259-265
- PLATT, D., *Quersubventionierung im Wettbewerbsrecht der Europäischen Union*, Munich, 2005

- PROFILLIDIS, V., *Separation of Railway Infrastructure and Operations*, in: Japan Railway and Transport Review, No 29, December 2001, p. 19-23
- The World Bank Group, Public Policy for the Private Sector, *Competition in Network Industries – Where and How?*, 1997
- RENGELING, H.-W., *Grundrechtschutz in der Europäischen Gemeinschaft*, Munich/Germany, 1997
- RIEGEL, R., *Die Einwirkung des europäischen Gemeinschaftsrechts auf die Eigentumsordnung der Mitgliedsstaaten*, in: Recht der internationalen Wirtschaft, 1979, p. 744-745
- SALQUE, C., *Intégration du marché européen des transports ferroviaires et nouvelle stratégie des entreprises ferroviaires historiques européennes*, in: Revue du Droit de l´Union Européenne, 1/2006, p. 51-109
- SALQUE, C., *Politique européenne des transports: examen à mi-parcours du Livre blanc sur les transports de 2001*, in: Les Petites affiches, No 23, 2007, p. 5-8
- SALQUE, C., *Rapport de la Commission sur la mise en oeuvre du premier paquet ferroviaire: une réforme nécessaire mais inachevée*, in: Les Petites affiches, No 9, 2007, p. 8-13
- SCHMIDT-PREUß, M., *Der Wandel der Energiewirtschaft vor dem Hintergrund der europäischen Eigentumsordnung*, in: Zeitschrift für Europarecht, 2006, p. 463-488
- SCHÜTTE, M., *Richtlinienvorschlag für Elektrizität im Rahmen des EWG-Vertrages*, in: Energiewirtschaftliche Tagesfragen, 1992, p. 261
- SEABRIGHT, P., *The Economics of Passenger Rail Transport – A survey*, IDEI Report # 1 on Passenger Rail Transport, 2003
- SEO, *De Welvaartseffecten van het splitsingsvoorstel – een overkoepelend beeld*, Amsterdam, 2006
- SHIRES, J./PRESTON, J./BORGNOLO, C./Ponti M., *Joint Report on the Rail Case Study*, European Commission, Brussels, 1999
- STAEBE, E., *Unbundling-Vorgaben für vertikal integrierte Infrastrukturbetreiber als Kern eines „allgemeinen Regulierungsrechts“? (Teil1)*, in: Infrastrukturrecht, 2006, p. 204-224
- STEHMANN, O./ZELLHOFER, G., *Dominant Rail Undertakings under European Competition Policy*, in: European Law Journal, Volume 10, No 3, May 2004, p. 327-353
- STORR, S., *Die Vorschläge der EU-Kommission zur Verschärfung der Unbundling Vorschriften im Energiesektor*, in: Europäische Zeitschrift für Wirtschaftsrecht, 2007, p. 232-237
- TROUILLE, J.-M., *Les services publics face à la concurrence: une comparaison franco-allemande*, in: Revue des questions allemandes, 2004, No 4, p. 34-43
- WEISS, W., *Europarecht und Privatisierung*, in: Archiv des öffentlichen Rechts, 2003, p. 91-133
- WIEDMANN, K.-P./LANGERFELDT, M., *Verschärftes Unbundling in der deutschen Energiewirtschaft (Teil 2) – Herausforderung und Chance zur aktiven Reorganisation für deutsche Versorger*, in: Energiewirtschaftliche Tagesfragen, 2004, p. 248-254

- WILLIAMSON, O., *Markets and Hierarchies: Analysis and antitrust implications*, New York/USA, 1975
- WILLIAMSON, O., Transaction Cost Economics, in: SCHMALENSEE, R./WILLIG, R., *Handbook of Industrial Organization*, Volume I, 1989, p. 135-179
- WILLIAMSON, O., *Transaction Cost Economics: The governance of contractual relations*, in: Journal of Law and Economics, Volume 22, 1979, p. 233-261
- WINSTON, C., *Economic Deregulation: Days of Reckoning for Microeconomists*, in: Journal of Economic Literature, Volume 31, 1993 p. 1263-1289

Case Law and Commission Decisions

- Case C-260/89, „*ERT*“, ECR [1991] I-02925
- Case C-167/73, „*French Seaman*”, ECR [1996] I-01307
- Case C-209/84, „*Criminal proceedings against Lucas Asjes and others*”, ECR [1986] 1425
- Case C-66/86, „*Ahmed Saeed*”, ECR [1989] 803
- Case T-229/94, „*Deutsche Bahn v. Commission*“, ECR [1997] II-01689
- Case C-7/73, “*Commercial Solvents*”, [1974] ECR 223
- Case C-27/76, “*United Brands*”, [1978] ECR 207
- Case C-311/84, “*Télémarketing*”, [1985] ECR 3261
- 92/213/EEC: Commission Decision of 26 February 1992 relating to a procedure pursuant to Articles 85 and 86 of the EEC Treaty (“*British Midland v. Aer Lingus*”), OJ L 96, 10.4.1992, p. 34-45
- 94/119/EC: Commission Decision of 21 December 1993 concerning a refusal to grant access to the facilities of the ”*Port of Rødby”* (Denmark), OJ L 55, 26.2.1994, p. 52-57

Legislation, Official Documents

- Commission Communication, *Poursuivre l´intégration du système ferroviaire européen : le troisième paquet ferroviaire*, COM (2004) 140 final, 3.3.2004
- Commission Green Paper, *Towards Fair and Efficient Pricing in Transport Policy – Policy Options for Internalising the External Cost of Transport in the European Union*, COM (95) 691 final, 20.12.1995
- Commission Green Paper, *Vertical Restraints in EC Competition Policy*, COM (96) 721 final, 22.1.1997
- Commission White Paper, *A strategy for revitalising the Community's railways*, COM(96) 421 final, 30.7.1996
- Commission White Paper, *European transport policy for 2010: time to decide*, COM(2001) 370 final, 12.9.2001

- Directive 2001/12/EC of the European Parliament and of the Council of 26 February 2001 amending Council Directive 91/440/EEC on the development of the Community's railways, OJ L 075, 15.3.2001, p. 1-25
- Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification, OJ L 75, 15.3.2001, p. 29-46
- Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive), OJ L 164, 30.4.2004, p. 44-113
- Directive 2004/50/EC of the European Parliament and of the Council of 29 April 2004 amending Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system, OJ L 164, 30.4.2004, p. 114-163
- Directive 2007/58/EC of the European Parliament and of the Council of 23 October 2007 amending Council Directive 91/440/EEC on the development of the Community’s railways and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure, OJ L 315, 3.12.2007, p. 44-50
- Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community, OJ L 315, 3.12.2007, p. 51-78
- Directive 91/440/EEC of 29 July 1991 on the development of the Community's railways, OJ L 237, 24.8.1991, p. 25-28
- Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty, OJ L 1, 4.1.2003, p. 1-25
- Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency (Agency Regulation), OJ L 164, 30.4.2004, p. 1-43

Mayer Brown offices

Bangkok Beijing Berlin Brussels Charlotte Chicago
Cologne Frankfurt Guangzhou Hanoi Ho Chi Minh City
Hong Kong Houston London Los Angeles New York
Palo Alto Paris São Paulo Shanghai Washington DC

11 Pilgrim Street
London EC4V 6RW
T +44 (0)20 7248 4282

31st Floor, 30 St Mary Axe
London EC3A 8EP
T +44 (0)20 7398 4600

mayerbrown.com
E london@mayerbrown.com

July 2008