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# **The Different Role of Mandatory Access in German Regulation of Railroads and Telecommunications**

**by Günter Knieps**

**Discussion Paper**

**Institut für Verkehrswissenschaft und Regionalpolitik**

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## **Abstract:**

Network services can be provided efficiently in competitive markets, if non-discriminatory access to the complementary infrastructure capacities is guaranteed. The sector-symmetric application of the disaggregated regulatory approach to railways and telecommunications reveals the different role of mandatory access. Whereas in telecommunications only the local loop may create a remaining regulatory problem, mandatory access has to be guaranteed with respect to the railway infrastructure as a whole. In spite of the large phasing-out potentials of sector-specific regulation in telecommunications, this sector is still under the burden of overregulation. In contrast, in the railway sector mandatory access has been introduced only recently.

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## 1. Introduction

Since the privatization and liberalization of network industries, sector-specific regulation of network access is gaining increasing relevance. Networks are typically characterized by different (sub)-parts which strongly complement each other. A large spectrum of different historically grown organizational and institutional structures can be observed, which solve the relevant coordination problems in institutionally different ways. For example, an increasing trend towards vertical disintegration of railroad systems (mainly in European countries) can be observed. The traditional vertically integrated railroad systems are gradually opening to allow access for alternative service suppliers on European railroad networks. Moreover, a strong tendency towards vertical disintegration within telecommunications networks can be observed, including service competition and competing network carriers.

The reform of European network industries strongly promotes the competitive supply of network services. Free entry of service companies is expected to improve the quality and variety of network services as well as provide incentives for a more cost-efficient production of network services. Vertical integration with one monolithic enterprise is no longer considered as the adequate organizational form of network industries. Instead, the current EU policy is to separate the supply of network services from the provision of infrastructure at least with respect to book-keeping. Whereas the markets for network services and the market for infrastructure capacities are complementary, they are considered as different. The provider of network services may or may not be the owner of the infrastructure. If the provider of network services is not the owner of the infrastructure, he obviously needs non-discriminatory access to the complementary infrastructure capacities.

The design of network access is still an important area of future institutional reform in network industries. The telecommunications industry became the precursor for detailed mandatory access regulation; in the meantime, statutory designs for sector-specific regulation have also been developed for the electricity and gas sector, and for the railway sector. In Germany, the competences of the

new regulatory authorities are bundled within the newly established Federal Network Agency, the former Agency for Telecommunication and Postal Regulation. In this context, the design and implementation of a consistent, analytically founded regulatory approach becomes topical, in order to guarantee a proper application of regulatory instruments.

The chosen case studies (telecommunications and railroad systems) not only point out the importance of variety and search for competitive network services but also the proper division of labour between unregulated and mandatory access to network infrastructures. It is shown that the problem of non-discriminatory access has to be solved with respect to the railway infrastructure as a whole, whereas in telecommunications only the local loop may create a remaining regulatory problem.

## **2. Negotiated versus mandatory network access**

It is an important difference whether network access is a result of private negotiations or mandatory with a corresponding set of regulations. Private bargaining, the reference point in a competitive economy, is also valid for network industries. Only if the bargaining process for access conditions is disturbed by market power may regulatory interventions be justified. Nevertheless, public policies in network industries, in particular mandatory access, should avoid the danger of creating incentives to form inefficient networks (Spulber, Yoo, 2005, pp. 677 f.). The proper role of mandatory access strongly varies in different network industries, depending on the occurrence of network-specific market power.

### **2.1 The reference point of private bargaining**

Active and potential competition fulfils the function of mitigating market power guaranteeing non-discriminatory access. It can be expected that private bargaining of access conditions between the competitive network providers will lead to economically efficient solutions. Strategic behaviour which systemati-

cally disturbs the competition process can be excluded, because every bargaining partner can easily be substituted by an alternative (potential) network carrier.

Private bargaining solutions for access conditions among competitive network carriers are not only beneficial for the carriers themselves, but in particular improve the market performance of the network services provided to the customers. Independent of the market size of the carriers involved, inefficient suppliers of network services are rapidly confronted with strongly decreasing market shares due to the strong pressure of alternative (potential) network service providers. Government regulation of such private bargaining processes would artificially disturb the bargaining process and automatically lead to inferior solutions. In particular, the market driven endogenous search for service networks with different quality characteristics, including transborder oriented service networks, would be disturbed.

## **2.2 The impact of network-specific market power on bargaining**

It is necessary to differentiate between those areas in which active and potential competition can work and other areas, where a natural monopoly situation in combination with irreversible costs (monopolistic bottlenecks) exists (e.g. Knieps, 1997, pp. 327 f.). Sunk costs are no longer decision relevant for the incumbent monopoly, whereas the potential entrant is confronted with the decision whether to build network infrastructure and thus spend the irreversible costs. The incumbent firms therefore have lower decision relevant costs than the potential entrants. This creates scope for strategic behaviour of the incumbent firms, so that inefficient production and monopoly profits will not necessarily result in market entry. Mandatory access is only justified in monopolistic bottleneck areas. In all other cases, the existence of active and potential competition will lead to efficient bargaining.

In contrast to competitive networks, market power involved in network infrastructures fundamentally disturbs private bargaining on network access. One extreme alternative could be (vertical) foreclosure of competitors on a comple-

mentary service market. Such a tying can be used as a method of price discrimination, enabling a monopolist to earn higher profits (e.g. Posner, 1976, pp. 171-184). Another way of abusing market power within the bargaining process on access conditions is to provide insufficient network access quality or demand excessive access charges.

### **3. Mandatory access in the German telecommunications sector**

#### **3.1 The period of over-regulation**

Similar to other European countries, German telecommunications policy has been strongly influenced by asymmetric market power regulation with an intrinsic bias against incumbent carriers. As a consequence, excessive regulation due to an oversized regulatory basis occurred. The specification of the regulatory basis is not explicitly founded on the identification of network-specific market power. Instead, classification as a dominant firm as laid down in competition law is chosen as the central precondition to justify sector-specific regulation. For example, the provision of long-distance telecommunications infrastructure and voice telephony services by a carrier classified as dominant on those markets has been considered non-competitive, although active and potential competition in itself is sufficient to discipline market power. A necessary requirement for future regulatory reform is the application of a symmetrical regulatory approach, focussing on network-specific market power based on monopolistic bottlenecks with no intrinsic bias towards any firm or technology.

It is to be expected that for the near future the period of over-regulation will continue. Due to the unspecific regulatory obligations of the EU Directives<sup>1</sup> a large scope of discretionary power of the European Commission in defining the

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<sup>1</sup> See in particular: Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ L108/33, 24. 4. 2002. Directive 2002/19/EC of the European Parliament and of the Council on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), OJ L108/7, 24.4. 2002.

regulatory basis is indicated, including the interaction between the European Commission and national regulators. This increasing complexity of EU regulation is resulting in a tangle of contradictory decisions and statements, involving also new markets such as interactive cable television, Internet etc. (Knieps, 2005, pp. 80 f.)

## **3.2 The phasing-out potentials**

### **3.2.1 Competitive, long-distance networks**

Although some markets for long-distance telecommunications services in Germany may be characterized by economies of scale and scope, there is nevertheless competition (e.g. Sidak, Engel, Knieps (eds.), 2001). Inefficient suppliers are replaced by less expensive ones because there is free market entry. Even when the incumbent's market share is high, inefficient production or services not geared to market requirements will soon lead to a considerable loss in market share, as customers are not tied to a specific supplier and can react without delay to price cuts on the market. There is thus no regulatory need for disciplining the market power of alternative network providers.

Since overall free entry has become possible, the performance of the German long-distance telecommunications market has markedly improved. Germany exhibits a large number of service providers who have increased the scope of their services, and the country has seen the entry of several network carriers, which has notably lowered prices for all services.

The market for long-distance transmission capacity is also competitive (Laffont, Tirole, 2000, p. 98). A larger number of carriers possess their own fibre optic networks. These competitive long-distance networks are also used as input for the provision of Internet backbone capacity. Thus, the possibility exists to lease transmission capacity from several alternative network infrastructure providers.

### **3.2.2 Increasing competition within the local loop**

Local network competition started with business customers in urban centres where the preferred access technology was optical fibre. However, after licences for point-to-multipoint microwave systems were granted by the state, the wireless local loop has also been gaining in importance in Germany. Platform competition, where alternative ISPs have complete control of all aspects of their networks and their corresponding services, has effectively claimed a stake in the market. Consequently, ever since the comprehensive opening of the telecommunications market, the pressure of innovation has increased in local networks as well. The competition has led to considerable variety in technological platforms (e.g. optical fibre, wireless networks, CATV networks and satellite technology), as well as an increase in product variety.

In addition, because of these rapid developments, the local loop facilities in larger cities and agglomerations in Germany are increasingly losing their status as monopolistic bottlenecks. Although it is not possible at this point to predict exactly how long it will take for network-specific market power in the local loop to disappear completely, the development of alternative access networks indicates that the potential for phasing out sector-specific regulation in telecommunications should arise in the near future.

## **4. Mandatory access in the German railroad sector**

### **4.1 The forgotten concept of mandatory access in Prussia**

In Germany the perspective of separate network layers in railroad industries has been a well established concept from the very beginning. The Prussian railway law of 1838 already provided the legal framework for regulating railways in such a way that the advantages of competition could have been exploited. The major argument in favour of a competitive supply of railway services on the same track has been that it enables the supplier of the best transportation serv-



ices to use the best route instead of forcing him to build unnecessary tracks with subsequent inefficient cost duplication.

During the initial phase of railway construction competition among lines, based on competing alternative routes for railway services, became important. Therefore, the Prussian railway law prescribing mandatory access was not applied. But as soon as the competition among lines weakened, it became urgent to introduce efficient regulatory instruments. Due to the increasingly denser network any further entry would have meant a greater waste of capital. From the perspective of the theory of regulation a long-lasting natural monopoly in combination with irreversible cost occurred.

Around 1870 it was already clear that, if efficient regulation was lacking, this system would lead to an abuse of market power. It is interesting to note that the term “natural monopoly” had already been coined at that time. According to Sax (1879), the monopoly is in the nature of the railway and thus must be regulated.<sup>2</sup> However, since the nationalisation of Prussia’s railways from 1879 onwards – including tracks and services – was considered a substitute for access regulation, the disaggregated regulatory framework of the Prussian railway law was never implemented (Fremdling, Knieps, 1993).

## **4.2 The period of negotiated third party access**

A major goal of the German railroad reform in 1994 has been the entry deregulation of train services in the context of the liberalisation of European transportation markets. Accounting separation between service level and infrastructure level was considered a necessary precondition to guarantee non-discriminatory access to the tracks for all providers of train services. The German railway company (Deutsche Bahn / DB) is obliged to provide access to the tracks of the service providers on a non-discriminatory basis. Access charges have to be paid by all users of the infrastructure.

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<sup>2</sup> „Das Monopol liegt in der Natur der Eisenbahn, tritt daher in allen Fällen gleich ein und muss eben reguliert werden“ (Sax, 1879, p. 148).

DB issued its first access pricing system on July 1, 1994, consisting of separate catalogues of prices and conditions for access to its tracks for passenger transport and for freight transport. Its major characteristics were quantity rebates, based on the total amount of train kilometres undertaken on the track network of DB. Its successor, the second access pricing system, was issued by DB in June 1998. This revised rail track tariff system featured a two-tier level of charges. After paying a lump sum fee obtaining an “InfraCard”, the track user was charged a lower variable price or, on the other hand, without using this card, he was charged higher rates according to the actual services made use of. Within each demand group, rail track users were treated on equal terms. The third access pricing system, issued by DB in 2001, was characterised by a linear tariff without volume discounts or optional “InfraCard”. Instead elements of product differentiation in the form of different categories of track capacities were offered.

The access charges of DB have so far been unregulated. The newly founded railway-agency only had the task of settling conflicts between DB and third parties which arose in the context of access conditions and access charges. Earlier critics of DB access charge policy already indicated that the overall level of the access charges would be too high.

So far the revisions of the access charge system of DB have only taken place in reaction to public debate. In particular, the accusation that quantity discounts or non-linear tariffs would be unilaterally in favour of the position of DB as dominant supplier of rail transportation services and that therefore conditions of equal access to the tracks would be disturbed has led to the introduction of linear access charges, which are obviously inadequate to attract more traffic to the railway systems.

Active competition on the German railroad market is focussed on commodity transportation within Germany as well as local passenger transportation. Entry into cross-border transportation can rarely be observed; cabotage on foreign networks within other EU countries does rarely exist. Competitive subscriptions

for subsidies for local passenger transportation take place only to a limited (although growing) extent.

Since the reform of the railway sector there has been almost no entry of commercial long distance and interregional passenger operators in the German rail market. More entry can be observed in the German rail freight market. Although Railion (a DB subsidiary) is still the dominant operator for freight, there are other private operators emerging in specific freight markets.

### **4.3 Introduction of mandatory access**

Issues of non-discriminatory access to railway infrastructure – including the question of track-access charges – have increasingly come under consideration by the German Cartel office. Sector-specific regulation of the German railroad sector has been introduced only recently. In the meantime a new Rail Infrastructure Utilisation Regulation has been passed in Germany.<sup>3</sup> Based on the new EU Rail Directives,<sup>4</sup> a set of detailed requirements has been specified in order to improve the transparency of the principles and criteria for the allocation of track capacities as well as the principles of access tariffs. Negotiations concerning the level of infrastructure charges will in the future only be permitted, if they are carried out under the supervision of the Federal Network Agency.

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<sup>3</sup> Verordnung zum Erlass und zur Änderung eisenbahnrechtlicher Vorschriften vom 3. Juni 2005, Bundesgesetzblatt Jahrgang 2005, Teil I Nr. 32, ausgegeben zu Bonn am 13. Juni 2005, S. 1566-1577.

<sup>4</sup> The Rail Infrastructure Package contains 3 Directives: 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 L75/1, 15. 3. 2001; Directive 2001/13/EC of the European Parliament and of the Council of 26 February 2001 amending Council Directive 95/18/EC on the licensing of railway undertakings, OJ L 75/26, 15. 3. 2001; 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 75/29, 15. 3. 2001.

The major goal of these new railway regulations in Germany is to stimulate active competition on the railroad service markets. Competition on the tracks is of particular importance, because a dense and extensive rail infrastructure network – owned by DB – already exists and thus competition among tracks – owned by different companies – is of no practical relevance.<sup>5</sup> Newcomers' entry onto the market for rail services broadens the range of services offered extensively as well as widening consumers' choices in terms of price and service quality. Opportunities for new entrants include the detection and exploitation of new train service networks, such as the development of a Europe-wide express service for passengers and goods based on a high-performance, computer-assisted logistics system. Mandatory access requirements to tracks are based on the intramodal perspective of train service companies; the decisive factor is the need for complementary service providers to have non-discriminatory access to the monopolistic railway infrastructure.

However, the existence of monopolistic bottleneck facilities does not necessarily guarantee that there will be long-term monopoly profits. Firstly, there is the possibility of the “necessary case”, where even unregulated providers of railway infrastructures are unable to meet their costs. Secondly, intermodal competition by trucks, cars etc. can limit to some extent a track infrastructure provider's profit potential.

Ex ante regulation of access charges to railroad tracks should not lead to over-regulation. The reference point for the regulation of access charges should be the coverage of the full costs in order to guarantee the viability of the facilities. As a consequence, it is not anti-competitive for the established firm to not only cover the incremental costs but also to raise market driven mark ups in order to cover its total costs (e.g. Baumol, Sidak, 1994, p. 102).

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<sup>5</sup> In contrast, in the U.S. rail-to-rail competition among railroad companies owning different tracks as a substitute for rate regulation gained attention since the Coal Rate Guidelines in 1985 (Coal Rate Guidelines Nationwide, 1 I.C.C.2d 520 (1985), aff'd sub nom. Consolidated Rail Corp. v. United States, 812 F. 2d 1444 (3d Cir. 1987). For further details see Baumol, Sidak (1994, p. 44).

It is important to differentiate between the price level, where price cap regulation may be justified in order to avoid excessive profits, and the pricing structure, which must remain unregulated. Regulators should neither be allowed to prescribe pricing rules that focus on tariff structures within monopolistic bottlenecks, nor to forbid per se the implementation of non-linear tariffs. Price cap regulation in the monopolistic bottleneck areas and accounting separation are sufficient for disciplining the remaining market power and ensuring non-discriminatory access. Detailed input regulation contradicts the spirit of a price cap regulation. Not only in the markets for rail services, but also in the monopolistic bottleneck areas pricing structures should be flexible and the result of endogenous market processes. The welfare-increasing effects of price differentiation should not be impeded by asymmetrical regulatory intervention.

## **5. Conclusions**

Due to the absence of sunk cost rail services as well as telecommunications services are competitive. While competition plays an important role for telecommunications infrastructure, railway infrastructure will continue to be a monopolistic bottleneck in the foreseeable future. As a consequence, forward-looking perspectives regarding the potential for the phasing out of sector-specific regulation remain quite different for telecommunications as compared to the railroad sector.

Network services can be provided efficiently in competitive markets, if non-discriminatory access to the complementary infrastructure capacities is guaranteed. The sector-symmetric application of the disaggregated regulatory approach to railways and telecommunications, respectively, reveals the different role of mandatory access. Whereas in telecommunications only the local loop may create a remaining regulatory problem, mandatory access has to be guaranteed with respect to the railway infrastructure as a whole. In spite of the large phasing-out potentials of sector-specific regulation in telecommunications, this sector is still under the burden of overregulation. In contrast, in the railway sector mandatory access has been introduced only recently. The really challenging task for the

newly founded German Federal Network Agency is to exploit the potentials of negotiated network access, to apply mandatory access only to those parts of the networks where network-specific market power still exists, and to resist the temptations of overregulation by heavy-handed supervision of firms.

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