5. EXPERIENCE WITH COMPETITIVE TENDERING IN GERMANY

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SUMMARY

Introduction

The German railway sector was fundamentally reformed in 1994. The state-owned West German carrier, Deutsche Bundesbahn, was consolidated with the former East-German rail undertaking, restructured and re-established as a state-owned joint stock company. Aims of the reform were a more commercial orientation of the newly established Deutsche Bahn AG (DB) and the introduction of competition. In the rail freight market and the long-distance rail passenger market an open access regime was introduced.

Two years later, the regional and local rail passenger market was fundamentally changed. Responsibility for regional passenger rail transport and funds were transferred to the federal states. The intention was to use these funds for the creation of an attractive market segment, characterised by competitive tendering. Subsequently, the transport performance rose significantly, but competitive tendering played only a rather limited role in this development.

The focus of this paper is to provide background information on the German regional rail passenger market and the emergence and importance of competitive tendering. We try to shed some light on the hindrances to competition and on the parameters of successful tendering processes and contractual forms.

In the first chapter, we describe the German rail reform and the "regionalisation" as the background to the current situation. We also give an overview of the legal framework. In Chapter 2, the drivers and hindrances to competition for regional rail passenger services are described. Chapter 3 looks closer at the forms of competitively tendered contracts and their elements. Chapter 4 concludes.

1. Developments to 1996 and the Reform of Regional Rail Transport

From the middle of the 1960s until the late 1980s, the West-German national carrier Deutsche Bundesbahn lost a large part of its market share and suffered from a financial decline. Its market share (share of passenger-kilometres, p-km) decreased from 1960-1990 from 36% to 6.1% in passenger transport and from 56% in freight transport to 20.5% (share of tonne-kilometres) (BMVBW, 2003, Sections B5 and B6). Alongside these losses, the financial situation of the company became difficult. It had accumulated a deficit of approximately € 25.5 billon at the beginning of the 1990s, although the German federal government paid an amount of approximately € 7 billion per year for public service obligations and distortions of competition (Regierungskommission Bundesbahn, 1991, 10 et seq.). The situation exacerbated to a point that DB's revenues did not even suffice to cover its personnel costs.

Additionally, the necessary financial reorganisation of the former East-German carrier, Deutsche Reichsbahn, threatened the financial equilibrium further. The company was highly inefficient, its infrastructure and rolling stock was outdated and its personnel poorly trained for the requirements of a market economy.

Against this background, the federal German Government initiated a governmental commission on the railways in 1989. The aims which the RB had to pursue were defined as follows (Regierungskommission Bundesbahn, 1991, 4):

- Create a sustainable base for a positive development in respect of transport policy, regional policy, environmental policy, economy and public budget.
- Define relations and products, which can sustain competition in the long run.

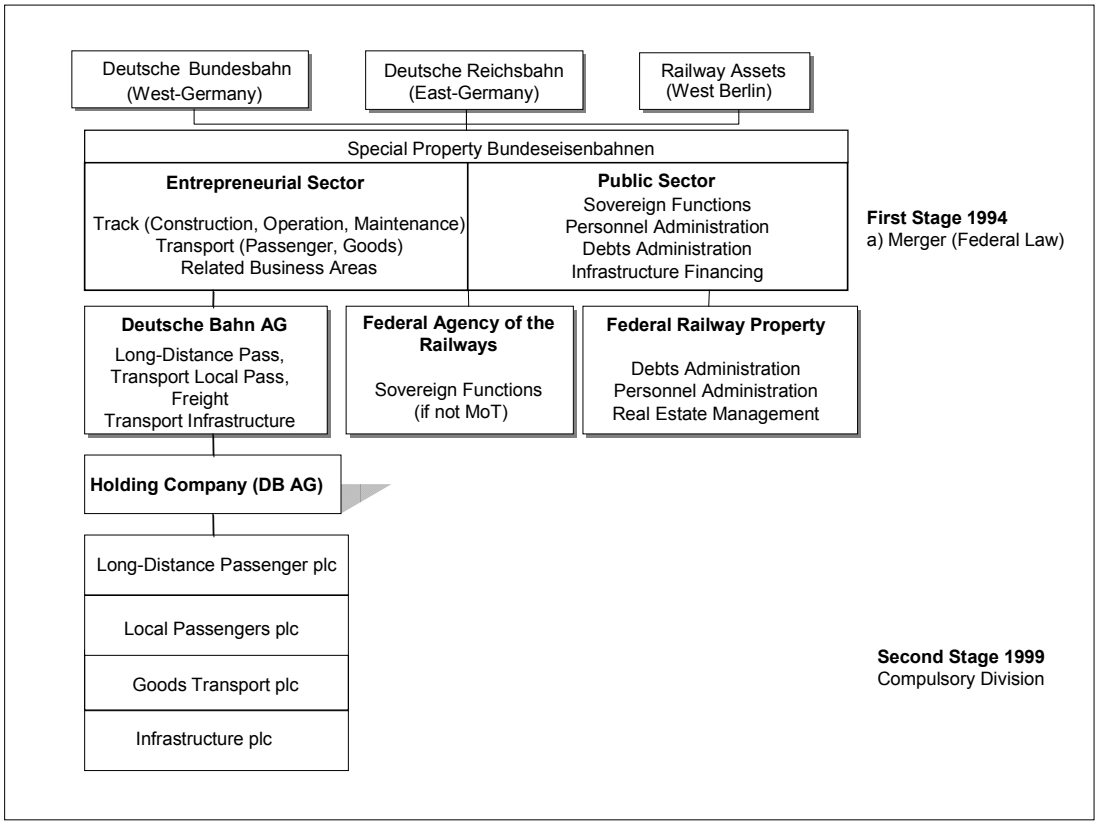
The commission issued its report in 1991. Under pressure because of the rising deficit of the Deutsche Bundesbahn and the tight public budgets, the first measures proposed by the RB were turned into draft laws in 1992. The reform itself came into force at the beginning of 1994. A couple of new laws were set up or amended as a basis for the radical change in the railway system: Above all, the German constitution had to be changed. This change required a qualified majority in the Lower House of German Parliament and an approval by the Federal Council of Germany. This opened up a lively negotiation process between the federal government and the states lasting from December 1991 to December 1993. The states demanded a compensation for giving up their influence on the Deutsche Bundesbahn. As a result, they received massive transfers to finance public passenger transport. Additionally, the states enforced the codification of public ownership of the rail infrastructure (at least 50.1%) in the constitution.

The corner stones of the reform were (Knorr, 2003, 39 and Aberle, 2000, 136ff):

- DB and Deutsche Reichsbahn (the railway operator of the former GDR) merged and were transformed into Deutsche Bahn AG (DB AG), a PLC in public ownership.

- The reform stipulated an enterprise restructuring in at least two steps (see Figure 1).
  - In the first step, DB AG was subdivided into four divisions for local and regional passenger transport, long distance passenger transport, freight transport, and infrastructure.
  - In the second step of the reform (taking place 01/01/1999), the four divisions were turned into five PLCs under the roof of DB AG, which is now working as a holding:
    - Local and regional passenger transport: DB Regio AG.
    - Long distance passenger transport: DB Reise und Touristik AG.
    - Freight transport: DB Cargo AG.
    - Infrastructure: DB Netz AG.
    - For passenger train stations, DB Station + Service AG were newly created in addition to the legal requirements.
  - The third step stipulated a privatisation of the holding. No agenda was set for it and it is being heavily discussed at the moment.
- In addition to the restructuring of the DB, three measures are of special importance for the whole railway sector:
  - Open access to the rail network is granted to third parties.
  - The Federal Railway Agency (Eisenbahnbundesamt) was founded as a regulatory institution. It was made responsible for the licensing of TOCs and safety issues. Alongside, the Federal Cartel Office supervised the access to the network. In 2006, this role was handed over to the new railway department at the Bundesnetzagentur, which is the federal regulation authority for network industries.
  - Moreover, on 01/01/1996, a regionalisation took place. The German states became responsible for the local and regional train services. To order these services from the train operating companies (TOCs), they get the above mentioned funds from the federal government (see Section 2.1 below.)

Figure 1. **Steps of the German Railway Transportation Act**



Source: www.bmvbw.de.

2. Development of the Market since 1996

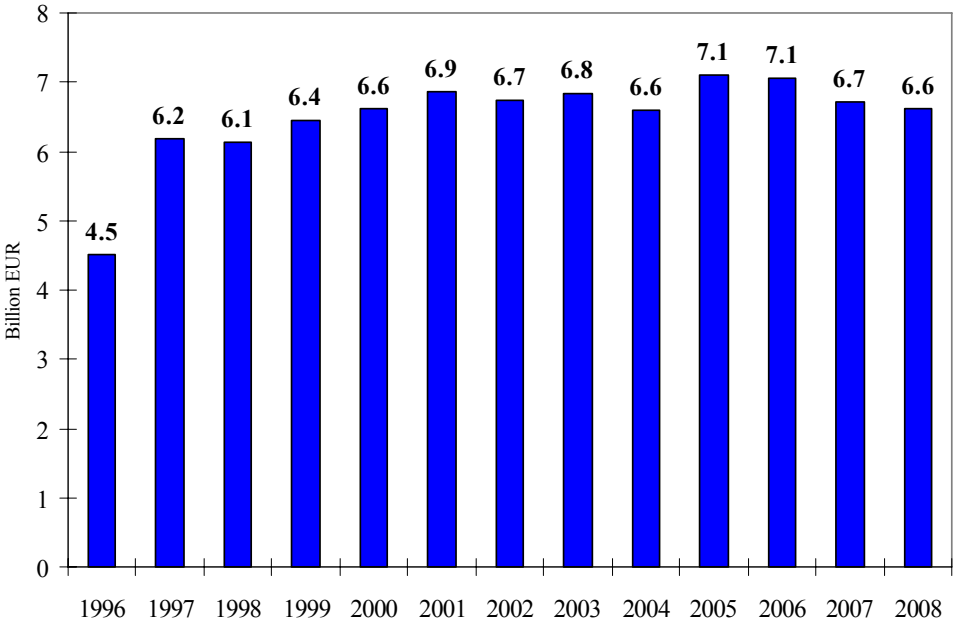
A major part of the Railway Reform was the shift of responsibility for the provision of Regional Rail Passenger Services (RRPS) from the federal government to the states ("regionalisation"). The states receive "regionalisation funds" for the RRPS from the federal government on a yearly basis derived from parts of the federal gasoline tax. The assessment for the actual amount of the regionalisation funds was based on estimated cost for an average train-km of the RRPS in 1993/94. Thus, in 1996 the federal government transferred € 4.45 bn of funds along with € 3.22 bn for the transport in local communities. In 1997 the federal subsidies were raised to around € 6 bn but at the same time the subsidies for the local communities were lowered to € 1.64 bn.

2.1 The current institutional and legal framework

Since 2002, regional passenger transport has been subsidised with about € 7 bn per year (see Figure 2). A major cut of the funds was decided in June 2006. Over the years 2006-2009, the federal government will probably spend € 2.1 bn less than originally expected for RRPS. The states which receive the highest funds will have to deal with around € 100 m less than anticipated in 2009. The regionalisation funds are earmarked for public transport and shall be used for the procurement of train services. But, a part of the subsidy is also used for public bus services and infrastructure investments, e.g. station rehabilitation. In 2005, 74% of the regionalisation funds were dedicated to rail operation (SCI, 2005, 66).

The states have established special regional authorities (*Aufgabentraeger*) which are responsible for planning, managing and procuring regional rail transport. In Germany, 33 of these authorities exist. They show a high diversity in terms of the area that they have to provide the services for. While some states have several *Aufgabentraeger*, e.g. nine in Northrhine-Westfalia, Berlin and Brandenburg have established one common responsible authority.

Figure 2. **Federal subsidies for regional passenger transport in Germany (billion EUR)**



Source: Deutsche Bahn AG (2003), Krummheuer/Hauschild (2004), Haushaltsbegleitgesetz 2006 [accompanying budget law], Art. 13.

The newly established system gives the states a considerable amount of freedom of choice. The states can choose between different contractual forms and service specifications. The RRPS can be specified either for networks or lines with varying contract duration, service descriptions are very detailed on the one hand and incentive contracts on the other hand.

The states are also free to directly contract with DB AG or its newly established competitors. Services can also be procured by tendering. The following different procurement procedures can be found across the states and sometimes within one state:

- Open tender: An unlimited number of transport operating companies (TOCs) are allowed to bid.
- Non-open tender: A limited number of TOCs are asked to submit a bid.
- Negotiation: a less formalised procedure in which the *Aufgabentraeger* directly negotiates with one or more TOCs.

All these procedures can be set off as a two-stage process.

Since 1996, at least 98 service contracts[1] have been concluded. 37 of them were directly awarded, mostly to a subsidiary of DB AG. Apart from that, there were 43 open tenders and 18 not–open tenders (on-line version of the Supplement to the Official Journal of the European Union and DB AG, 2004, 2005, 2006). These figures overstate the importance of competitive tendering, since the directly awarded contracts cover the overwhelming share of services. An example for the awarding of services without competitive tendering could be observed in the states of Thuringia and Saxony-Anhalt. In 2002, Thuringia signed an exclusive contract with DB AG. The contract comprises the whole regional passenger transport in Thuringia, 17 million train-km per year, has a duration of 10 years and is worth € 1.5 bn (total volume). Likewise Saxony-Anhalt signed a similar contract with the DB AG of a value of € 2 bn (see Table 1).

Table 1. **Contracts of the Federal States with DB AG**

State	Conclusion of contract	Train-km (m p.a.)	Value (bn €)	Duration of contract
Berlin/Brandenburg	December 2002	35.0	1.9	10 years
Lower Saxony	January 2003	27.8	2.5	10 years
Saxony-Anhalt	March 2003	16.2	2.5	12 years
Hesse (Rhine-Main-Area)[a)]	April 2003	33.0	4.4	11 years
Baden-Wuerttemberg[b)]	July 2003	49.0	4.6	13 years
Hamburg (S-Bahn-light rail)	July 2003	12.5	0.7	6 years
Rhineland-Palatinate	January 2003	29.5	2.4	11 years
Northrhine-Westfalia	July 2004	44.0	6.0	15 years
Saarland	July 2004	6.3	0.8*	14 years
Berlin (S-Bahn)	August 2004	32.4	3.0	15 years
Bavaria*	November 2004	98.1	ca 8.0	10 years[e)]
Lower Saxony*	January 2005	5.3[c)]	n.a.	12 years
Saxony**	April 2005	2.6	n.a.	10 years
Northrhine-Westfalia[d)]*	June 2005	12.7	1.1	11 years
Bremen**	November 2005	2.4	0.02*	10 years
Hesse**	November 2005	2.4	n.a.	5 years
Bavaria**	November 2005	0.5	n.a.	12 years

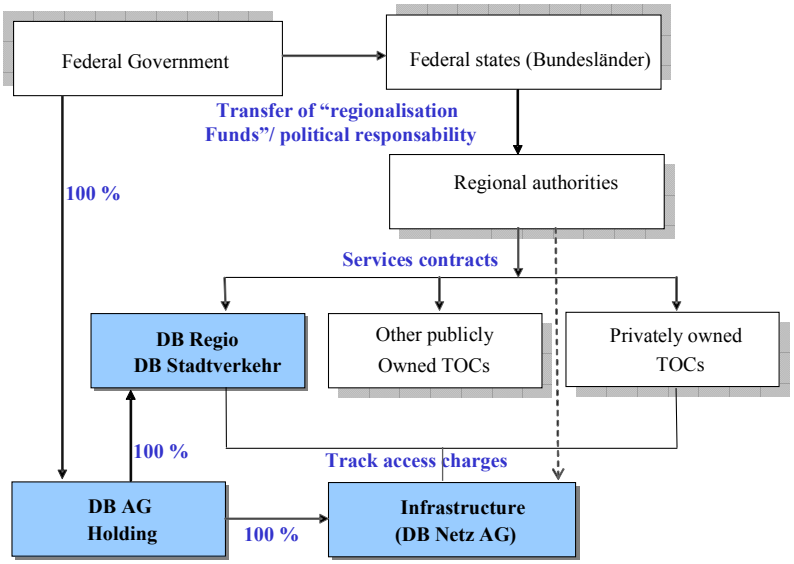
a) Rhein-Main-Verkehrsverbund; b) without region Stuttgart; c) Verkehrsverbund Rhein-Ruhr;
d) five contracts with different authorities.

Source: Tegner (2004), p. 4; * press release; ** Deutsche Bahn AG (2006), p. 19.

Understandably, competitors of the DB challenge direct awarding. Hence, two railway companies appealed against the contract between Saxony-Anhalt and the DB AG. In June 2002, the Chamber of Tenders in Madgeburg decided that all regional services have to be allocated by competitive tendering and that sub-networks have to be tendered in a size which leaves chances to all bidders.

After a period of political debate and lobbying by the DB AG, the federal government adopted a new regulation of tenders (*Vergabeverordnung*) in late 2002. The modified regulation was designed in order to provide legal certainty and a sound basis for an incremental change from monopoly to competition. It still allows the states to award contracts for RRPS-services directly (without tendering), but only if an essential part of the services (train-km) is awarded for a shorter period and tendered competitively subsequently. The contract duration shall not exceed twelve years.

Figure 3. **Funding of regional rail passenger transport in Germany**



Source: Author's figure.

Just before the enactment of the new regulation, the Connex-Group[2] took legal proceedings against the contract between the DB AG and the state of Brandenburg. In September 2003, the higher regional court of Brandenburg decided that RRPS-services do not have to be tendered because the German Railway Law regards tenders only as an option. The European legislation, which typically calls for tenders, has been regarded as inferior to German Railway Law. Anticipating this decision, the Connex-Group had already complained to the European Commission. Connex argued that the decision of the Brandenburg court directly contradicts the European public procurement law and the principles for state aid (Bremer/Wünschmann, 2004). According to their argumentation, all service contracts which are not tendered cause the danger of overcompensation and thus could be - according to the European Court of Justice - relevant for state aid control.

As a first reaction the DG Internal Market sent a request for detailed information to the German government. According to this letter the decision of the OLG Brandenburg is not consistent with European legislation. In October 2004, the EC started proceedings against Germany at the European Court of Justice for breach of contract. In June 2006, the German federal government alongside with the states committed themselves to change the procurement procedures of RRPS. Their intention is to set up more transparent, non-discriminating awarding procedures and to stop direct awarding. Consequently, the EC stopped the proceedings against Germany at the European Court of Justice and at the same time highlighted their close observation of the future procurement procedures in Germany.

2.2 Strategies of competitors and market entry barriers

The overall RRPS volume in 2005 was around 632 m train-km or almost 42 bn passenger-km. Regarding these numbers and considering the amount of public funds for RRPS, the RRPS market has developed not only to be a substantial source of revenue and turnover for the DB, but is also commercial attractive for other TOCs. Consequently, the number of the competitors has steadily increased. In 1993/1994, 25 mainly small or medium-sized companies operated alongside DB. Their market share added up to 3% (based on train-km) (Schinke/Hempe/Kolodzinski, 2002, 21 et seq.). Since then the number of competitors of the DB rose to 93 (BAG-SPNV, 2006, 1). However,

competitors like Arriva or Connex each own several of these TOCs. The vast majority of non-DB operators do not conduct any regular RRPS but work as contractors or as seasonal holiday operators. The remainder of the competitors can be subdivided in three strategic groups: (i) national publicly owned TOCs, (ii) national privately owned TOCs and (iii) international players. These competitors use two different business models:

- The first group are small and mid-sized firms with regional or railway-related skills. Their expertise and organisational flexibility allows them to offer cheap and high quality train-services. However it prevents them from taking part in larger, more complex tenders. The strategic focus of these operators is the deliverance of carrier-functions in minor networks or the co-operation with operators, which can compensate for the mentioned handicaps.

- The other group consists of management-orientated, often internationally focussed operators. The organisation of transport firms, transport services and a keen market-orientated approach are strengths of these companies. The appropriation of regional and special operational skills is their central inner-operational strength. This strategy is based on the transfer of international experiences or pursued by acquisition of regional TOCs. These operators are in the position to conduct complex train-services with an adjusted, cost-focussing approach.

The strategic orientation for the DB is different from its competitors. The DB focuses on delivering complex train-service solutions with a strong interconnection to more comprehensive services (mainly passenger transport, but ultimately offering their broad portfolio of logistic services).

Over 60% of train-services delivered by operators other than DB are performed by the public TOCs (see Figure 4). Consequently their development poses one of the most important questions. At least some of these public owned non-DB operators show some traits of the above mentioned second group. But their expansive strategies might be stopped in the future by their public owners.

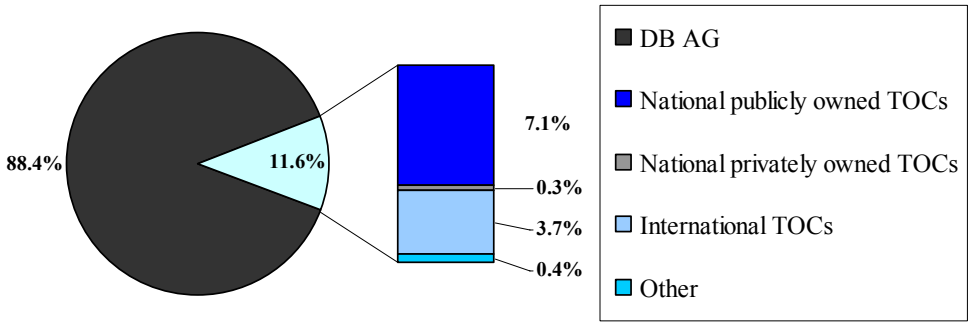
The vast majority of competitors consist of small or medium-sized operators. Besides the DB only Connex, Arriva, Hamburger Hochbahn and Hessische Landesbahn exhibit a mentionable share of the market. The first international player to enter the RRPS market in Germany was the Connex group. It won 17% of the competitively tendered services until 2005 (see Figure 5). According to a company's representative, their advantages over the DB are (Leister, 2004, 109ff).

- Small overheads (from scratch approach).
- Decentralised firm organisation, significant labour cost advantages.
- Substantial responsibility for regional branches and high flexibility.
- Usually local brands with co-branding to obtain customer loyalty.
- Specialised regional marketing activities.
- Customer orientation of the staff.

The Connex group is the largest of the competitors of DB. However, with only 2.5% of the RRPS volume (passengers) it has only a very small market share. The marginal role of the competitors is due to two interlinked reasons:

- The reluctance of the regional authorities to conduct competitive tenders.
- The reluctance of TOCs to enter the market or expand their activities.

Figure 4. **Market shares of strategic groups in 2004 (percentage of train-km)**



Source: Höhnscheid (2005).

The RRPS market is primarily organised as a market driven by the demand of the regional authorities. Their tender policy is of overwhelming importance for the market structure. At the beginning of the regionalisation, the *Aufgabentraeger* had to cope with the deployment of the necessary substructures, like the creation of network plans and staffing. Additional know-how had to be developed. In the face of this highly transitional period the continuation of the status quo by simply extending existing contracts with the DB was expected and understandable.

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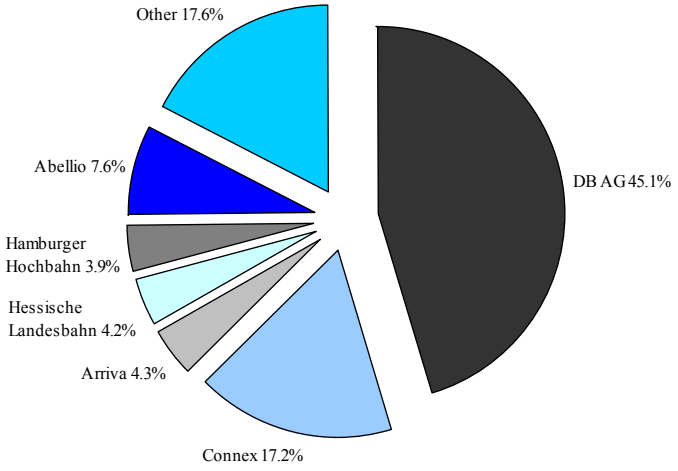
Ten years later the responsible authorities now have overcome these initial problems and are able to deliver high quality transport planning and management. However, numerous large contracts are still directly awarded to the DB (see Table 1). Representatives of the regional authorities as well as competitors of the DB bemoan, that the company, in order to acquire RPPS-contracts, interlinks their

offers with services derived from their infrastructure ownership (e.g. Leister, 2004, 109ff). Critics claim that infrastructure measures such as electrification, dismantling and maintenance of tracks or the modification and maintenance of railway stations are directly interlinked with their contract proposals. Furthermore, some argue that DB links promises for job-creation and training positions with service contracts. These measures are even more critical since the funds for the infrastructure improvements are mainly federal funds.

Figure 5. **Percentage of train-km won by different TOCs (1995-2005)**



Source: Deutsche Bahn (2006).

Apart from this advantage of the DB (which holds only for the RRPS), actual and potential competitors worry about a number of discrimination possibilities by the DB:

- DB heavily influences the infrastructure investment decisions and the infrastructure pricing.
- The network operator has the opportunity to disrupt train services thus influencing directly operation costs for transport operators.
- TOCs interested in the tendering processes have to let DB Netz prove their concept for operability. Sometimes their maintenance concept also hinges on the co-operation with the DB.
- Rolling stock of the DB has been partly financed with public money.

A current concern on market entry barriers is the volume of services that are tendered. So far, the volume has been between 0.1 and 6 m train-km p.a. with an average of around 2 m train-km. It is obvious that new entrants in a certain region can only be expected if a service contract allows covering the minimum fixed costs for workshops, standby rolling stock etc. Laeger recommends 0.8 - 1.0 m train-km p.a. as a minimum volume (Laeger, 2004, 126).

A more serious concern is the maximum volume of service contracts. A number of *Aufgabentraeger* plan to tender great parts of the services they have assigned to the DB in the years 2002-2005. Some critics claim (e.g. Tegner 2004) that this might hamper competition. Most of the TOCs in the German market are rather small- or medium sized enterprises and not able to provide large scale services. So, the tender of large networks could result in a reduction of competition.

These concerns seem to be largely exaggerated. While offering large networks for tender would discourage small competitors, this could be more than compensated by the entry of international players not yet in the German market. Much more important are a commitment to offer operations for tender, a reliable schedule for the tendering and the prevention of discrimination.

There is only limited evidence to prove a relation between the volume of the contract and the number of bidders. The biggest contract in terms of train-km was the Rhine-Neckar light-rail system in the area of Stuttgart. Initially, there had been three bidders, but one withdrew rather quickly, and only one consortium with Connex and one with the DB Regio remained. The contract was eventually assigned to the DB Regio. Tenders with less volume did not see much more bidders. From what is published and preliminary results of an own questionnaire we know the number of bidders of ten tenders. In this sample, there is no correlation between the volume of services and the number of bidders. In any tender between two and four TOCs entered the bidding stage. There might even be more bidders once contracts with higher service volumes are tendered. We know from interviews that further international TOCs are ready to enter the German market if higher revenues can be earned.

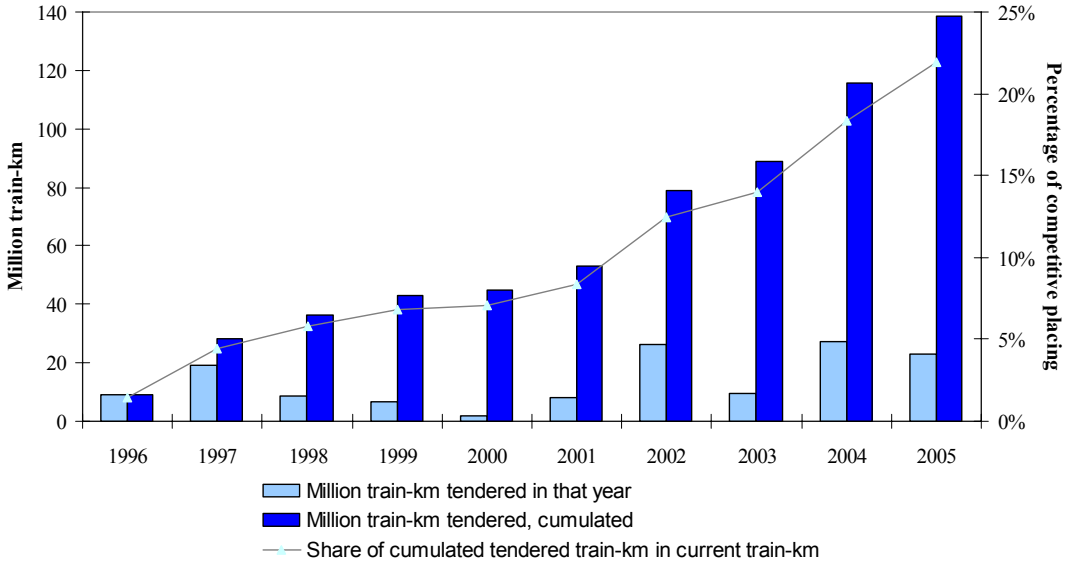
A further potential hindrance for TOCs to enter the market is the rolling stock. Around 50% of the tendering documents require the bidders to provide for new rolling stock (Beck, 2005, 114). Consequently, the cost of financing trains accrues to around 20% of the total costs (including track charges) (Gorka, 2005, 5). The lifetime of the rolling stock is longer than that of the franchises. This causes an investment risk for the TOCs. At the moment, there are limited possibilities to deploy used cars, although the attitude of the *Aufgabentraeger* seems to change in the face of tighter budgets. There are three ways which are chosen in order to mitigate this investment risk for the bidders:

- Some States (Lower Saxony, Baden-Wuerttemberg, Northrine-Westfalia, Bavaria, Schleswig-Holstein) have set up rolling stock pools for parts of their rail traffic. Normally, maintenance is a task of the train operating companies, but for one of Lower Saxonys pools maintenance activities have been contracted out. If car pools and maintenance contracts exist, their use is sometimes obligatory.

- An instrument which is more often found in service contracts are takeover-guarantees for the rolling stock. In this case, the contracts contain provisions to pass rolling stock on to the next service provider at the end of the franchise.

- Guarantees for the residual value of the rolling stock are a rather new instrument. In this case, the regional authorities offer to take over the rolling stock at the end of the franchise at an agreed price.

Figure 6. **Competitively tendered services 1996-2005**



Source: Own figure, based on Deutsche Bahn AG (2004, 2005, 2006), 2005: estimated by DB AG.

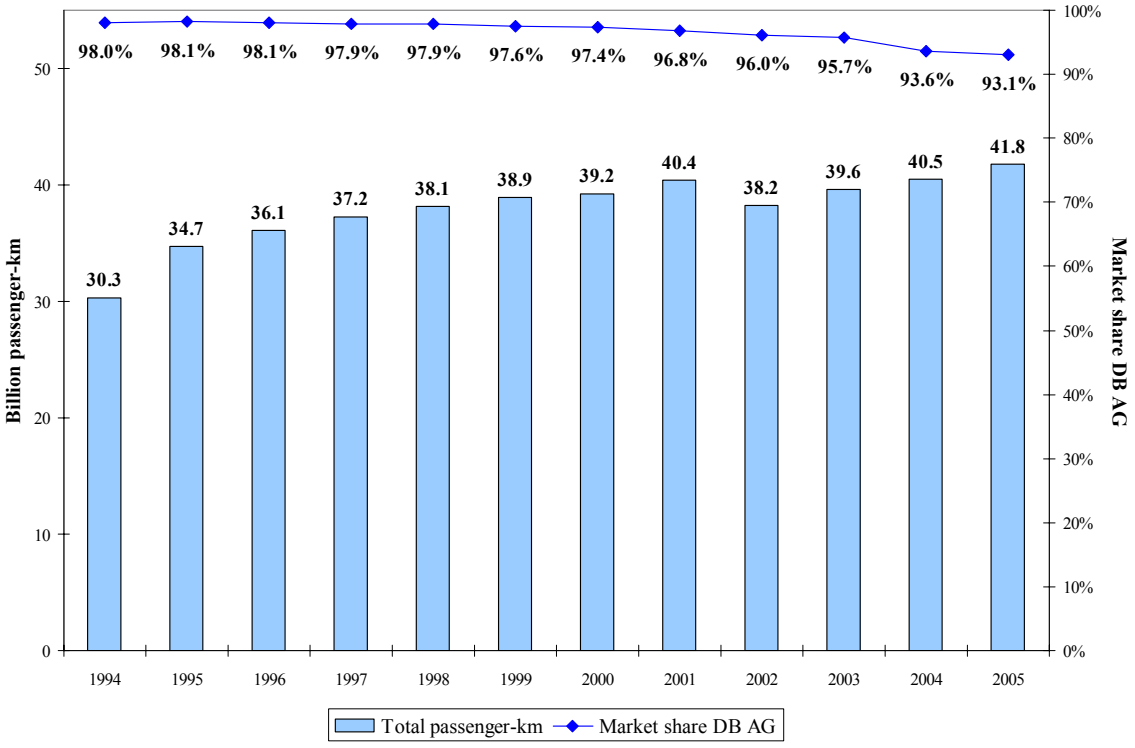
Some TOCs have raised concerns about obligatory public rolling stock pools. They argue that the characteristics of the trains are part of their own product strategy. Others claim comparative advantages in the financing of rolling stock. A further possibility for the TOCs to ease their investment risk is the growing activity of private train car pools in Germany. There is limited information about the influence of financing risks on the number of bidders. Beck e.g. finds no evidence for a positive relation between the number of bidders and the use of a car pool or residual value guarantees (Beck, 2005, 96). This finding is rather surprising given the importance of capital costs for a TOC in the RRPS. Residual value guarantees obviously help the companies to get a bank loan and public car pools even do more than that. If there is no financing problem it might reflect the fact that there are some big international companies in the German market and on the other hand a lot of smaller TOCs which are publicly owned and backed by states or local governments.

2.3 Effects of competition

Competition among the various railway operators only takes place for tenders issued by the *Aufgabentraeger*. Additional competition very rarely occurs. The direct award of contracts is still the dominate practice. This procedure usually means that the federal states have signed long-lasting contracts (between 12 and 18 years) for a large network with the DB (Table 1 lists some examples). Competitive tender procedures on the other hand have usually contained only single lines or smaller networks. In 2004, only 26.1 m train-km were awarded via tender procedures. This contrasts with 217.8 m train-km which were directly assigned to the DB (Deutsche Bahn AG, 2005, 15). Overall, approximately 130 m train-km were tendered between 1996 and 2005 in a competitive way (see Figure 6).

Figure 7 shows the development of market shares of the DB and its competitors (share of passenger km). While the market has been growing since 1996, the DB lost a part of its market share.

Figure 7. **Development of market shares and passenger-km 1996-2005**



Source: 1993-2002: Progtrans (2005); 2003-2005: DB AG (2006), 2005: estimated by DB AG.

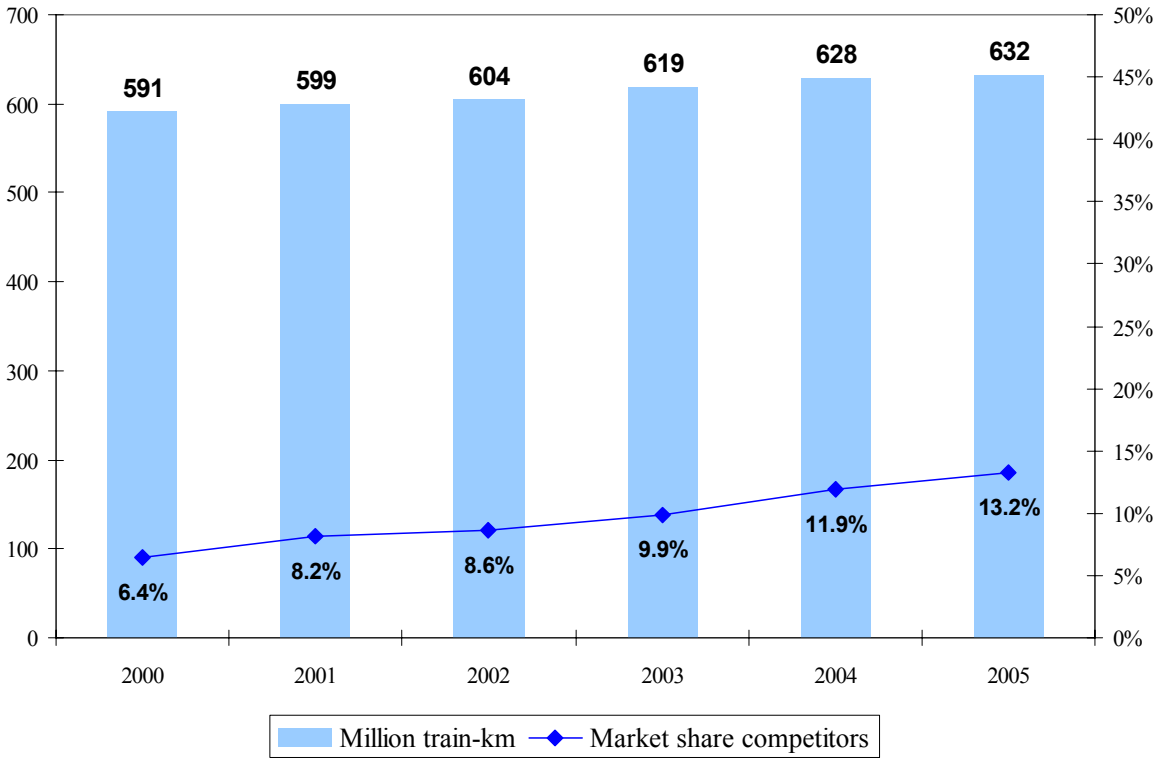
As already mentioned, the forces of the market are not the main drivers for the change over time. The most important parameter of the market structure is the awarding policy of the regional authorities. The DB has acquired "only" 45% market share in tendered train-km between 1995 and 2005. The growth in market share (train-km) of the other railway operators from 6.4% in 2000 up to 13.2% in 2005 can be mainly attributed to their success in winning tenders. The *Aufgabentraeger* only very rarely awarded contracts directly to DB's competitors. A few regional authorities pursue a long-term strategy to support competitors of the DB in order to have more alternatives in the future.

The overall transport performance in regional rail passenger transport rose from 29.9 bn passenger-km in 1993 to (estimated) 41.8 bn passenger-km in 2005. Thus, the RRPS grew by almost 40% within a decade. After a brief collapse in the year 2002 the transport volume of the RRPS has been growing consistently and reached a new peak in 2005. The generous endowment with federal funds and to a lesser degree the implemented competition is responsible for this very positive development. Additionally, the DB cancelled some interregional train services which helped the growth of the RRPS.

In 2004 (2005), the overall performance of DB's competitors was at around 2.6 (2.8) bn passenger-km (Deutsche Bahn AG, 2005 and 2006). Thus, the competitors had a market share of 6.3% (6.8%) (Deutsche Bahn AG, 2006, 18). In 2004, among the competitors of the DB, the three global players in the German market (Connex, Arriva, Keolis) had a cumulated market share of 40%. Consequently any one of them accounts nationwide only for a marginal part of the market (Höhnscheid, 2005, p. 22-23).

There is a substantial discrepancy between the share of train-km and the transport performance (see Figures 7 and 8). The reason for this discrepancy is the end user demand for rail transport in the past tendering processes. So far, the regional authorities have tendered only lines or networks of minor importance.

Figure 8. **Market share and train-km 2000-2005; 2005: Estimated by DB AG**
The train-km figure also includes occasional services



Source: Deutsche Bahn AG, 2006.

Reports about the experience made with competition for RRPS are few but can be summarised as follows (see e.g. Höhnscheid, 2005, and Leister, 2004):

- Tendering of lines and networks led to substantial savings for the states. A reduction of 20% of granted funds for RRPS-operators could be observed. An analysis of 37 tenders shows that the *Aufgabentraeger* realise savings of around 18% in competitive tenders of less attractive services. Some authors speculate that savings for high value RRPS could rise to around 38% (Mehrbahnen, 2004, 4).

- Meanwhile, the quality of services improved substantially. Among numerous measures taken by the states (buying/financing new rolling stock, introduction of integrated regular timetable services and pricing-systems) many point out that the customer-orientated approach by the new entrants led to their success.

- As a result of the quality improvements made by the competitors the overall transport performance rose substantially. A number of lines are reported to have increased the number of passengers by more than 100% (Leister, 2004, 110).

3. The Service Contracts

Regional as well as local rail passenger transport in Germany is almost completely undertaken through public service contracts. Despite its tremendous importance, a general standard for the contract of required public service obligations does not exist. The regional authorities responsible for awarding contracts have instead chosen to use solutions that they have adapted to their regional requirements, taking advantage of different contractual forms and the competitive environment - as they interpret it. This has resulted in a remarkable heterogeneity of contracts.

Before discussing this variety of contractual forms that are being used in more detail, some central aspects of public service contracts should be mentioned:

- Contract duration and network configuration

  Both aspects are crucial for the attractiveness of market entry. Additionally, contract duration can be decisive for the incentive system; short-term contracts can rely mainly on the threat of losing a contract, while long-term contracts need supplementary incentives like bonus-malus systems to ascertain a high quality performance from the provider. Network configuration describes first of all the volume of the service and in some cases additionally its complexity (e.g. the degree of integration in larger service networks). In Germany, there is an intense discussion first and foremost regarding the maximum service volume that should be tendered. This clearly reflects the concern for medium-sized competitors.

- Service definition

  What tasks have to be fulfilled and how "tight" is their specification? First of all, this aspect concerns service dimensions but also the means of production, e.g. whether the use of a car pool is mandatory. There is an ongoing debate in Germany about the appropriate level of TOCs autonomy to specify services, prices, marketing activities, and the rolling stock used. The trend towards a more intense integration of tendered RRPS into more comprehensive service networks (e.g. Federal States initiatives), associated with the creation of regional brands limits the range of independent initiatives by the operators. Additionally, a tight specification eases market entry especially for medium-sized competitors (reduction of risks, less planning capacity required, transferability of rolling stock). On the other hand, this reduces firms' ability to differentiate their offers, thus intensifies price competition, and shifts planning tasks back to public authorities.

- Risk allocation

  The allocation of risks hinges on several parameters. The most important aspects are to align risk taking and the ability to influence risk and the trade-off between risk taking and risk sharing. Authorities use a wide array of measures to deal with these questions and it is only partially possible to identify these measures. On the one hand, there are some clearly identifiable trends, e.g. almost all authorities share or bear the risk of infrastructure charge increases. In other cases, the measures are very specific for the concrete case (e.g. some authorities guarantee ticket prices if these are determined by regional public transport associations or they guarantee minimum revenues if demand estimations are highly uncertain due to a lack of data).

A relationship between risk allocation and market entry/intensity of competition must be expected. Theoretical models show a trade-off between risk bearing – and the consequential interest in cost reduction – and the intensity of initial competition for the contract (McAfee/McMillan, 1986).

- Additional incentive elements

  Service contracts often require additional measures, especially to assure compliance with quality targets. The necessary extent depends mainly on contract duration and risk allocation design. Particularly, the link between service quality and revenues is often weak, due to the impossibility e.g. to raise prices within a public transport association, to fully capture general demand increases (network externalities) and the limited importance of passenger revenues in general. To compensate for this, authorities can "correct" quality incentives by introducing a more fine-tuned system.

  While the conceptual design of these incentives is complicated, time and resource consuming, it can avoid the assignment of unmanageable risks and it has forced the authorities in Germany for the first time – to think systematically about quality measurement, quality targets and their willingness to pay for quality.

- Contract adjustment

  Like almost any contract, public service contracts are never fully specified. Of central concern is the question whether the possibility to re-negotiate contracts renders the incentive system and the tendering approach useless. In its most extreme form re-negotiations install a kind of cost plus contract, destroying incentive effects of fix-price arrangements and corrupting the tender process – tendering a cost plus contract does not assure the choice of the most efficient provider. On the other hand, in an ongoing relationship contractual flexibility – the other side of re-negotiations – is necessary to deal with changing circumstances, new information and new opportunities. Thus, efficiency depends on design. Design questions concern especially the use of automatic adjustment formulas and the efficiency enhancing specifications for renegotiations.

Contractual details are not regularly published in Germany. Consequently, the following information on contractual forms used is partly based on a survey conducted by Matthias Borrmann (2003) in 2001, comprising 22 contracts, and publicly available information (official press releases, articles, personnel information). There are also first results presented from an own survey.

3.1 Contract Duration and Network Configuration

The average length of the contracts awarded by open tenders is around ten years, with a minimum of three and a maximum of ten years. Service contracts which are a result of not-open tenders are shorter. They range from 2 to 15 years, with an average of 6.5 years. Sometimes there is an option to extend the contract for one or two years. Preparation time after the signing of the contract is given to the winner. The start of the operation usually takes place around two years later. This period is necessary if new rolling stock must be ordered.

The difference in the time horizons of the contracts is one explanation for the awarding procedure the authorities decide for. They have to spend € 250 000 to € 400 000 for a tender (Gorka, 2005, 6). This amount can be reduced with a smaller number of bidders.

Up to now, only minor, often not electrified, networks have been tendered. The average size is about 2 m train-km per year. A remarkable exception was the light rail system in the Rhine-Neckar area with 6 m train-km per year. The smallest service contract so far only entailed 0.16 m train-km per year and served a net of 13 km. Winners of larger contracts face network lengths of more than 300 km (Laeger, 2004, 125). In our sample we found no significant correlation between the length of the contract and the requested annual performance (train-km). The effect on the number of bidders remains unclear. A rather short contract with a high number of train-km should certainly create problems to the bidders if the rolling stock market is not fully developed.

3.2 Service Definition

There is no standard contract for RRPS in Germany. Even within one state there are sometimes different types of contract. This holds for the service definition as well. The majority of contracts display a tight specification:

- Concerning operational factors (relations, running time, frequency, first and last services, and so on), the majority of contracts leaves almost no decision-making authority to the TOCs. Often, the offer to exceed predetermined standards is not taken into account in the awarding process. A central reason is the introduction of synchronized timetables by several German states. The co-ordination of bus systems and intercity rail traffic with regional rail services restricts the possibility of individual decisions by train operating companies. Additionally, synchronized timetables also severely restrict available infrastructure capacity, complicating the introduction of additional trains, and finally, the scope for profitable additional services seems to be very limited.

- Pricing decisions of TOCs are also severely restricted. Public transport associations offer "one stop shops" to public transport users and have set up integrated regional passenger service offers. This has forced TOCs to adhere to the given price systems. Usually, the TOCs have to offer some classes of tickets which are also applicable for other local public transport modes. There is also the need to find an agreement with the DB on mutual ticket acceptance. This means a further limitation for the TOCs of their pricing possibilities by the tariffs for long-distance passenger transport of the DB.

- Marketing is also a task mainly performed by public transport associations. They define the umbrella brand characteristics. There are regional authorities that claim to have had bad experiences with TOCs, which did not make enough efforts to increase rail demand. Consequently, some service contracts specify annual amounts to be spent for marketing, a substantial amount of which has to be dedicated to the umbrella brand. In-train service and to a lower extent information campaigns are the main marketing instruments that can be used by the TOCs to increase their own ridership.

In addition to service specification, almost all of the contracts lay down the rolling stock to be used. The technical capabilities are indirectly defined by the required service programme and the infrastructure. The furniture of the trains is usually specified in detail (number of seats, toilets, ticket machines, and so on).

Data of 14 contracts exhibit a remarkable difference of the payments: they reach from € 5.2 to 10.6 per train-km. If you assume an average load factor of 70 p-km/train-km[3], the franchise payments are 7.4-15 Eurocent per p-km. The differences in the types of contract, service specifications, alongside with demand and infrastructure characteristics and charges, do not allow for this simple

comparison of the franchise payments. Further analyses have to be postponed, as knowledge about individual specifications of contracts is still limited.

For the future, representatives of regional authorities have announced the amplified use of so called functional tenders (Wewers, 2004). The tendering documents shall contain minimum standards. Offers that exceed these standards shall be considered in the awarding process. The TOCs will then compete with different timetable-offers, and get more decision-making authority concerning rolling stock and marketing.

3.3 Risk Allocation

The classical trade-off in contract theory concerns costs and benefits of risk sharing between contract partners, i.e. costs of risk bearing/the willingness to participate and the incentives to economize. The actual risk allocation depends on the form of remuneration. One can distinguish between revenue risk and cost risk. Two questions are decisive:

The first central question is, whether the TOCs receive realised revenues. In "net cost contracts" a railway company receives its revenues and the regional authority only pays the difference between revenues and costs. In this case, demand information plays a crucial role in the bidding process. This is usually perceived as an advantage for DB Regio. DB Regio possesses the most detailed information on demand and an area-wide ticket sales system. Moreover, the DB controls the long-distance passenger transport, which is a competitor for the RRPS on some relations. Due to limited information, the calculated revenues of the TOCs can differ significantly. In the tender for the *Marschbahn* (4.1 m train-km p.a.) in 2003, the DB claimed that the revenue forecast of the winning firm, Connex, had been highly exaggerated: according to the DB, Connex calculated with revenues of 8.2 Eurocent/p-km, which was 30% more than the other two bidders expected (Deutsche Bahn AG, 2004, 11).

In a "gross cost contract" revenues generated are passed to the regional authority and the operator receives a compensation for its emerging costs. Revenue risks are in these contracts entirely borne by the regional authority.

Between these extreme forms of remuneration several intermediate contractual provisions are possible: The railway companies receive only a share of their revenues or they receive some form of "shadow revenue", that is their remuneration is based on ridership but not on revenues. Payments per passenger-km can in this case reflect social costs or they can be the result of revenue allocation rules of public transport associations. In other contracts, the TOCs have guarantees for a tariff mix on certain lines. This reflects their limited possibilities to influence the tariffs.

It is often argued that net cost contracts, leaving revenue risks with the railway companies, are essential to create adequate incentives for the companies to raise ridership. But the costs of these incentives may be too high. Gross contracts on the other hand are said to establish incentives to minimise costs –- even by reducing quality. This argument is usually reinforced with the low demand elasticity in local public transport. Even if one neglects the effects/incentives of the tendering process this characterisation is only strictly true if the contracts are some kind of fixed-price contracts.

Secondly, the question is whether a fixed-price or a form of cost plus contract is chosen. In the first case, the payment is simply the firm's bid (usually required compensation per train-km). In the second case, the government assures a certain profit (as percentage of actual costs). Again, not only extreme forms are possible: In an incentive contract the government agrees to offset a given share of a firm's deficit/the firm can keep a given share of higher-than-agreed revenues. Additionally, the introduction of cost pass-through rules allows a combination of fixed-price and cost plus elements.

Again, the situation in Germany exhibits a wide variety: The sample of contracts analysed by Borrmann (2003) included:

- Net cost contracts (36%), gross cost contracts (41%) and some forms of incentive contracting, i.e. regional authorities and TOCs shared revenues, typically on a 50:50-rule (23%).

- Fixed-price contracts concerning costs (40%) and contracts with cost pass-through for "unavoidable" costs (60%). Cost pass-through is especially relevant for track and station access charges, but it sometimes applies to energy and personnel costs as well.

A much discussed example was the tender of the *Netz Nordharz* (2.8 m train-km p.a.) in 2003. It was stipulated to grant the operator 95% of the revenues and to burden him nearly all costs apart from around 40% of the track charges. The compensation for the remaining track charges was to increase by 1% each year. Likewise, the compensation for all other cost components had been set to rise by 1.5% each year. TOCs complained about the risk being unduly high (Quandt, 2003, 4). This tender has so far been the only one which to our knowledge did not generate any valid bid. Eventually, the contract was awarded to Connex in a negotiation process.

One particular problem in this tender concerned the infrastructure costs only being partly passed through to the regional authority. Usually, an *Aufgabentraeger* covers all track and station costs. They accrue to 40-60% of the TOCs´ total costs (e.g. Gorka, 2005, 5). Although these charges are regulated, some operators are afraid of discrimination by the DB. The same holds for energy costs (usually diesel), which accrues to 6% of the total cost (Laeger, 2004, 88).

Additionally, one has to keep in mind that revenues are often the allocated shares of public transport associations´ revenues (Borrmann, 2003, did not differentiate between real and shadow revenues). This may limit the incentives for a TOC to raise its revenues, as the tariff income allocation rules of public transport associations can usually hardly be influenced by the TOCs.

3.4 Additional Incentive Elements

Bonus-malus systems or contractual penalties are often used to assure compliance with agreed upon quality and to introduce an incentive - beside additional revenues - to raise quality. In Germany, almost all contracts entail contractual penalties for failing to achieve contracted quality. Formerly, punctuality was the only quality dimension considered. In the last years, the malus schemes have become more complex. Contracts may stipulate malus payments for number of seats, tidiness of cars and stations, number of personnel on the train etc. Less than 20% of all contracts in Borrmann's sample also included some kind of bonus system.

The more recent enquiry of Beck (2005, p. 105) found bonus-malus payments in 50% of the contracts and pure malus regimes in 47% of the contracts. Net cost contracts are more likely to be combined with a malus system, while gross cost contracts are more often amended by bonus-malus systems. This finding is intuitive, as TOCs which operate under a gross cost contract must not only be incentivised to prevent a decrease of their performance but also to raise the patronage.

The design of the malus system is a delicate issue. Low penalties will have no effect on the performance while high penalties can drive the operator into financial difficulties. We found several contracts which provide a cap of the malus payments of 15-16% of the total annual payments. Contractual penalties, e.g. for the delayed start of the operation, are treated separately from malus payments. They are often capped as well, e.g. 5% for the *Marschbahn*, 8% in some other contracts.

The operators thus face a total reduction of 20-24% of their annual payments at maximum, if they do not deliver the required services. Such a malus regime can threaten the viability of a business, as the margins in tendered services are - according to representatives of the TOCs - less than 10%. But there are significant differences in the caps of the malus payments, e.g. in Saxony-Anhalt caps for malus-payments were at 1.5% in 2003. As a result, the malus payments of the DB Regio were cut from € 7.7 m to € 3.8 m. In the same year, contractual penalties accrued to € 2.5 m (NN, 2005, 48).

While bonus-malus schemes can be useful to incentivise TOCs, their design poses significant informational requirements: Especially, restrictions like budget-constraints or costs of public funds require a planner to take account of the cost structure of the operators.[4] If this information is not known to the regional authorities when they prepare the tendering process, theory suggests e.g. offering a menu of bonus-malus schemes to the bidders.

In the case of the *Westerwaldnetz* the TOCs had to select one out of three combinations of maximum bonus-malus payments. The maximum malus payments were in any case four times higher than the maximum bonus-payments. If the bidder chooses category A, the annual malus payments are capped at € 2 m, the annual bonus-payments are capped at € 0.5 m. In category C, the cap is € 4.0 m for malus-payments and € 1 m for bonus-payments. It is not known how the regional authorities considered the choice of the bidders in the awarding process.

Again, one should keep in mind that the tendering process itself exhibits strong incentive effects. Moreover, the experience with a bidder and his reliability are important for the appraisal of an offer.

3.5 Contract Adjustment

Franchise contracts are usually long-term contracts. Changing conditions, e.g. changing factor prices or demand shifts, may require contractual adjustments to restore efficiency. But, these adjustments can also result in inefficiency. Especially renegotiations may e.g. actually transform a high-powered incentive contract into some form of a cost plus arrangement resulting in lower efforts and seriously damaging the selection efficiency of a tender.

First of all, franchise contracts in Germany usually contain dynamic adjustment formulas. More than 50% of all contracts entail price escalation clauses and all contracts (1996-2005) except two entail a cost pass-through rule for access charges (track and stations). The necessity to renegotiate contracts is drastically reduced by these automatic adjustment formulas.

Additionally, almost 50% of all contracts analysed by Borrmann (2003) entailed a specification of the renegotiation process. Usually these specifications clarify when a party has the right to call for a renegotiation, what information the parties have to provide, the rules that govern the decision-making board, and whether and when a party has the right to refer a matter to arbitration. Public information on the exact specifications entailed in the franchising contracts, the frequency of renegotiations and their results are hardly available.

Whether the possibility of renegotiations renders franchising systems inefficient is a matter of design. The institutional design decides whether a public authority can hold up a franchisee or whether the originally intended risk allocation will adhere. In August 2003, e.g., the first case of bankruptcy occurred. The train operating company FLEX AG, a subsidiary of the Norddeutsche Nahverkehrsgesellschaft (NNVG), which had received a franchise in Schleswig-Holstein one year before (1.1 m train-km per year with a term of 13 years) had to institute insolvency proceedings. Its parent company followed shortly. One central reason for the bankruptcy was the overestimation of revenues, as a net cost contract had been awarded. There was further a problem with revenue

allocation within the tariff association of Schleswig-Holstein. The regional authority denied any renegotiation but instead opened up a new award procedure (price request) immediately. Within two months a two year interim solution was established. A Connex subsidiary took over the business with more favourable conditions. Simultaneously, a new, regular award procedure was initiated.

4. Some Conclusions

The most striking characteristic of RRPS in Germany compared to the outstanding example of the UK is the variety of awarding procedures and contract designs. The heterogeneity is rooted in the fact that 33 regional authorities are responsible for the service contracts. Although the regionalisation of RRPS already took place in 1996, the process of convergence is progressing very slowly. The possibility of the *Aufgabentraeger* to learn from each others experience is severely limited by a lack of official information on the awarding procedures, contracts, and results of tenders.

A first glance at the performance of the RRPS and the intermodal competition since 1996 reveals a success story: service level and quality were noticeably raised and as a consequence traffic performance increased by more than 30%. At the same time, the authorities realised cost savings of around 20% with competitive tenders. The success of the regionalisation was partly triggered by growing intramodal competition: the share of DB Regio's competitors increased to 6.9% (p-km) in 2005 and international companies entered the German market. Some public companies, owned by local authorities or Federal States, have been present for a long time in the market and are now becoming serious competitors of the DB AG, partly with the help of venture capital. Unlike the development in UK and Sweden, no large bus operator entered the railway market, the main reason being that there is hardly any scheduled long-distance bus transport in Germany.

The flipside of the good results is the financing of the whole system. The increase in performance was paid for by the federal government with high subsidies for the RRPS. This allowed the Federal States to be rather slack in their procurement procedures. Not all of them strived to realise the cost savings reported above. They rather awarded long-term contracts to the DB AG without any element of competition, sometimes in exchange for additional infrastructure investments.

The service contracts differ markedly in terms of their length. They reach from two up to 15 years. There is not enough data to support the hypothesis that shorter franchises cause problems to the bidders. The life time of the rolling stock might no longer be of decisive importance. Half of the franchises do not claim new rolling stock to be deployed. Moreover, the second-hand market for rolling stock is developing. And lastly, some *Aufgabentraeger* provide the TOCs with resale guarantees for their trains or provided car pools. This part of the service contracts deserves more investigation but it certainly can decrease the financial risk for the bidders.

The freedom of the operators to specify their transport programme is quite restricted. Usually, there are tight service specifications, e.g. in terms of service frequency, rolling stock etc. For other supply side characteristics, call for tenders contain minimum requirements. The main possibility of TOCs of winning the franchise is to cut costs. But most of the costs can not be influenced by the operators. There are differences for the cost of personnel, mainly between the DB and its competitors. The DB is frequently said to have personnel costs of 20% above its competitors. Among most of the competitors, the cost structure and level is not likely to differ significantly due to the tight service specifications.

Gross cost contracts dominate in Germany with a share of around 40%. One reason for this is the integration of RRPS in public transport associations. This sharply limits the possibilities for the TOCs to influence their fares. A further limitation is imposed by the long-distance passenger tariffs of DB,

which usually have to be accepted by the RRPS operators for the through-ticketing. Moreover, the service providers are not totally free in their marketing activities. Given this environment, it might be efficient to not burden the revenue risk to the operators. But the whole system of tariff setting has to be questioned, as it often leaves no influence to the TOCs on what is usually one of the most important instruments of a commercial company.

As the remuneration itself exerts rather low incentives, bonus-malus schemes are additionally used. Mainly penalties are stipulated for a failure to meet performance targets. In the absence of strong remuneration incentives it seems to be straightforward to counterbalance this with a reward or a penalty for changes in the ridership. But there are usually more possible facts causing penalties for the operator. We know of contracts which define seven different reasons for penalties. Some of those are likely to be unnecessary, if the TOCs could influence their revenues more freely, e.g. the number of seats. An additional possible drawback for the efficiency of the incentive schemes is the lack of detailed cost and demand information that the authorities have. This can lead to inefficient and ineffective incentives.

On the cost side, cost pass through-arrangements are usually used, at least for infrastructure charges. Some contracts additionally provide automatic adjustment of franchise payments in case of rising energy or labour costs. But most of the contracts exhibit some fix-price components, so that *Aufgabentraeger* can expect to benefit from possible productivity growth of the operator and reap these benefits in the tender stage.

The cost pass through-rules reduce the need to renegotiate contracts. Usually there are further clauses which stipulate possibilities and procedures for changes, in particular in terms of train-km and payments. Despite the differences between the contracts in Germany, these provisions have so far facilitated a stable system of RRPS services, with only one bankruptcy and no withdrawal of franchise occurring. This may not least be based on the fact that the regional authorities and the service providers are bound to develop a good working relationship during a long-term contract.

For the future, the regional authorities have expressed their will to advance the contract design. They intend to put more emphasis on functional service specifications. We also expect an increase in the size of the tendered networks. A further development will be prompted by the cut of regionalisation funds which took place in 2006. One possible reaction of the regional authorities is to think about reducing costs, probably by giving more room to tenders instead of the direct awarding of services.

NOTES

1. Not all concluded contracts are published.

2. In May 2006, the Connex Verkehr GmbH changed its name and became the Veolia Verkehr GmbH.

3. This is roughly the load factor of DB Regio. It is likely above the average, as the DB Regio serves a great part of the high-demand-relations.

4. An ideal incentive scheme - intended to urge the operators towards socially optimal services - shall confront the TOC with the social consequences of its performance. E.g. if low performance results in lower ridership, only revenue effects are directly relevant to the TOC (in net cost contracts), while e.g. additional congestion costs on roads are not taken into account; thus, the planner has to correct revenue effects. Without the restrictions mentioned, a performance-based contract could be based "only" on demand information (consumer surplus, externalities and so on) since the transfer of rents would be irrelevant. For a comparable problem see Hensher/Houghton, 2004.

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ABBREVIATIONS

AFI	Annual Financial Improvement
BOT	Build, Own and Transfer
BR	British Rail
CEO	Chief Executive Officer
CER	Community of European Railway and Infrastructure Companies
CN	Canadian National Railway Company
CPTA	County Public Transport Authorities
CUP	Capacity Utilisation Policy
DB AG	Deutsche Bahn AG (German Railways)
DfT	Department for Transports
DOI	Department of Infrastructure
DSB	Danish State Railways
EWS	English Welsh and Scottish Railway (freight operating company)
GDP	Gross Domestic Product
GNER	Great North Eastern Railway
GOVIA	Partnership of Go-Ahead and Keolis (train operator)
ITC	Independent Television Commission
MBO	Management Buy Out
MTL	Rail subsidiary of MTL Holding (operator of Merseyrail services)
NAO	National Audit Office
NEG	National Express Group
NERA	National Economic Research Associates
NPV	Net Present Value
NR	Network Rail
NS	Dutch National Carrier
OPRAF	Office of Passenger Rail Franchising
PSR	Passenger Service Requirement
PTC	Public Transport Commission
PTE	Passenger Transport Executive
RBI	Rail Business Intelligence
ROSCO	Rolling Stock Leasing Companies
RRPS	Regional Rail Passenger Services
SJ	Swedish State Railways
SRA	Strategic Rail Authority
TOC	Train Operating Company
WAGN	West Anglia Great Northern