



Competitive tenders in passenger railway services: Looking into the theory and practice of different approaches in Europe

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Abstract

During the past 15 years competitive tenders have become a common procedure to procure and organise passenger railway services in European Union member countries. Different models have been developed in different countries, spanning from the British radical privatisation and franchising of the railway services to the more incremental processes in countries like Sweden, the Netherlands and Germany. The variety of tendering models has occurred for a number of reasons. For example, EU legislation permits different models of organising tenders, member countries have had different goals with the introduction of tenders and other reforms, and within countries we find trial-and-error processes aiming at reducing earlier flaws. In this article we will describe the dominating tendering procedures, look into their theoretical rationale and discuss their possible pitfalls and advantages, drawing from the experiences of several countries. It is evident that the different tendering regimes suffer from different types of problems. In the Swedish tenders there have often been very few competing firms, in Britain the long time span of the first round of franchised contracts resulted in difficulties in making correct estimates of future developments etc. The article concludes with an overall appraisal of the different models and explores the possibilities for learning across the tendering regimes.

Keywords: Railways; Competitive tendering; Privatisation.

Introduction

The process of “Europeanisation”, the creation of European institutions and markets, of the former national economies in Europe, has increasingly affected the competition policy in the union’s member states (see e.g. Vickers, 2001, Morgan, 2001, and Dabbah, 2003). Public procurement by competitive tendering is an important part of these policies. It is supposed to increase competition, save taxpayers’ money and safeguard

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equal treatment for competing firms, regardless of nationality (European Commission 1996). The European transportation industry, not least the railway sector, has been particularly affected by this development, implying important structural changes in several countries. The European Directive 91/440 on the separation of accounts for infrastructure from operations has commonly functioned as a starting point for railway reforms, although specific problems and events at the national level have also played an important role. An overview and interpretation of how far rail liberalisation has progressed in the countries of the European Union is provided in reports of the so-called rail liberalisation index (Kirchner, 2004).

This article begins with a broad look at some of the theories related to the introduction of regulatory reforms such as tendering in the railway sector. We then turn to the evolution of railway policies at the European Union (EU) level, followed by a closer look at the development in four EU member states: Sweden, Great Britain, Germany and the Netherlands. For each country, we look into the rationale and reasons behind the reforms, the process and history of the reforms, and the structure of the reforms (vertical and/or horizontal disintegration, use of tendering and contracts, types of contracts and their lengths etc). We also consider the experience in terms of the number of bidders, new entry, transparency, positive effects and particular problems, and how problems have been solved. In an analysing section we make an overall appraisal of the different models and explore the possibilities for learning across the tendering regimes. The paper ends with our conclusions and a look at possible ways forward.

Theoretical approaches to railway reforms

Theories on public and private ownership and PPP

Privatisation refers to the transfer of public ownership and management to the private sector. Since privatisations are often the effect of a market transition that originates in a deregulation, the words deregulation and privatisation are sometimes mistakenly used as synonyms. According to Vickers and Yarrow (1991) privatisation of former public enterprises and services can take three forms:

1. Privatisation of competitive firms – the transfer to the private sector of state-owned enterprises operating in competitive markets.
2. Privatisation of monopolies – transfer to the private sector of state-owned enterprises with substantial market power. These firms can either be natural monopolies (like electricity transmission) or “artificial” monopolies, where competition from foreign or domestic firms could exist.
3. Contracting out of publicly financed services, previously performed by public sector organisations.

The economic motives for privatising a public monopoly compared to replacing a public monopoly with competition are quite different. There is a widespread agreement that the replacement of a public or publicly guaranteed private monopoly with competition between competing firms results in improved efficiency. The efficiency gains are less clear for the transfer of a public monopoly to private ownership. In this case, it seems that the regulatory policy is crucial for preventing negative effects of monopoly power (Vickers and Yarrow, 1991; Alexandersson et al, 1998). One must

also consider the distinction between *productive* and *allocative* efficiency. Competition generally fosters gains in productive efficiency, for example through increased labour productivity, while a transition to a state of better allocation of resources and optimum output may be less straightforward and take longer time (see e.g. Preston, 1996).

Some monopolised markets may be better suited to the introduction of competition for the market (for example by means of tendering), rather than competition in the market. In theory, this is advantageous when some resources of production are fixed or otherwise limited in terms of capacity, making them difficult to be used by more than one firm at a time (for example a time slot in a railway time table), when there is a need for coordinated planning of production in order to make use of network effects, and when many competing companies would create a fragmented and possibly irregular supply over time – making it difficult for consumers to get the necessary information.

The special circumstances related to contracting out and the selection of a winning bid entail some specific problems that are rarely observed on ordinary markets. The procuring entity has a strong position as a buyer, sometimes close to a monopsonist. It determines the range and limits of the actual market. A supplier that wins a tendered contract enjoys a monopoly-like position during the contract period, but its actual powers are often very restricted, e.g. in terms of its possibilities to influence prices and supply. The end consumers are bound to use the supplier chosen by the procuring entity.

The contracting out of public passenger railway services may lead to a large variety of contracts, ranging from relatively simple and short-term management contracts to complex and long-term concession agreements. At a general level, they all imply the introduction of one form of public-private partnership. Public-private partnerships and their regulation is one of the recurring policy themes in the history of the transport industries (Estache and Serebrisky, 2004). In the European railway sector, tendered service contracts span from one to fifteen years, while the contracts of some Build-Operate-Transfer (BOT) projects may run for 50 years and sometimes even longer. This means that actual competition between firms for a specific part of the market only takes place at discreet points in time, affecting the continuity of the seller structure, and thereby competition, over time. Even if other public tenders, concerning other parts of the market, may happen during these years, a loss in a tender that represents a major part in a firm's business may lead to the dismantling of the firm altogether. It may be argued that firms that are efficient in the long run would always have the alternative to borrow money. However, this option does not seem to be realistic in situations when firms need to survive long periods of no or much reduced business activity, with only a chance (not certainty) to win a future tender.

According to Bennett et al (1999) service contracts are generally the most competitive form of "privatisation". They provide a relatively low risk option for expanding the role of the private sector, and the awarding procedure can help governments gain a more complete understanding of their infrastructure systems. Service contracts have potential to provide better system operation, allowing the government to obtain improvements in performance and efficiency through technology transfer and the acquisition of technical and/or managerial capacity. Since the contracts are reissued rather frequently, contractors should be under continuous pressure to keep costs low. Also, because service contracts are limited in scope, the barriers to entry should be fairly low.

The disadvantages of service contracts are that they do not involve significant infusions of private capital, nor do they necessarily create a base from which to optimise entire infrastructure systems. In consequence, the contractor's effectiveness in

improving the service performance is limited by the government's ability to provide the necessary capital investments and direction. Another potential disadvantage is that service contracts leave the government in charge of many of the most explosive political issues and do little to separate the operator from political intervention.

Long-term contracts like BOT projects can be an effective way to bring private money into the construction of new infrastructure facilities or into the substantial renewal of existing ones. BOT agreements tend to reduce market and credit risks for the private sector because the government is the only customer, reducing the risks associated with insufficient demand and ability to pay. Private actors will avoid BOT projects if the government is unwilling to provide assurances that the private sector investment will be paid back (Bennett et al, 1999).

Scale economies, natural monopolies and contestable markets

In the railway industry, presupposed scale economies in production, marketing, purchasing and co-ordination, for a long time implied that the provision of vertically integrated railway services was by definition viewed as a "natural" monopoly (see for example Beesley and Littlechild, 1992). Today, it is primarily the rail infrastructure that continues to be viewed as having characteristics of being a natural monopoly, forming the basis for vertical separation of infrastructure from operations as applied in several European countries. However, there is a persistent debate concerning the merits of vertical separation versus integration. Preston (1996) shows that the economic evidence for vertical separation is not entirely convincing. For example, there may be economies of scope related to vertically integrated planning of infrastructure and operations. It is possible that some scale economies in the European railway sector, which might have been possible to exploit before, are no longer available due to asset stripping and separation of previously integrated businesses and lines. Some researchers have therefore argued that vertical separation should never have been applied at all (see e.g. Bruzelius, 1998).

In addition to the discussion on the pros and cons of vertical separation, there has also been a long-lived debate concerning the importance of various types of scale economies in railway operations. Empirical evidence from the U.S. suggests that there are constant returns to scale, but increasing returns to density in the railway sector. In other words, a railway company may only gain from running more trains on its existing network of lines, rather than both increasing the number of trains and expanding the network. Studies performed in Europe provide a more complex picture. According to Preston (1996), there are important economies of scale in network operation, but there is probably also an optimal size above which diseconomies set in. The smallest operators in Europe are affected by increasing returns to scale, the medium-sized operators experience constant returns and the largest appear to be affected by decreasing returns to scale. However, almost all railway companies, regardless of size, exhibit increasing returns to density (Preston, 1996). There are several possible sources to these economies, for example, increased amounts of services may lead to better use of terminal facilities, rolling stock and labour. But in the end, these economies may reach a point where they get exhausted and diseconomies of scale start to become apparent. This may be due to increased *agency costs* as companies become very large and possibly more difficult to manage and control.

It is important to note that this discussion on scale economies is limited to the effect of size upon variable costs. If demand-side complementarities are weighted in, such as co-ordinated timetables and marketing, the case for large railway companies probably gets stronger. However, very large firms may also have greater difficulties than small to respond quickly to shifts in customer needs.

While most U.S. railroads are focussed on freight, European railways have traditionally been involved in both passenger and freight operations. This raises the question of economies of scope between passenger and freight operations. Although empirical findings are not entirely consistent, there is evidence of diseconomies of scope from studies on European as well as Japanese railways, suggesting that passenger and freight services may gain from being separated (Preston, 1996).

The existence of scale economies in railway operations has sometimes been used to defend a regulatory framework that maintains a close-to-monopoly position of national operators in some European countries. But it has also been argued that scale economies are not automatically being advantageous to these operators. Rather, they need to be exploited, and firms may very well differ in their skills to do that. Large incumbents, lacking intra-modal competition for a very long time, may previously have experienced a rather limited pressure to rationalise their operations, especially if it was easy to get additional subsidies from the Government or other public authorities (Alexandersson et al, 2000). In theory, the introduction of a more open and competitive market should reveal the true economies of scale, enabling the most efficient firms to grow to their optimal size.

To some extent related to the discussion on scale economies, we find an important theory development regarding how competition influences markets. With studies of the preconditions for when monopoly firms may actually be good for society, Baumol and other researchers came to formulate a theory on a new type of idealised market, the *contestable market*. Such a market is characterised by possibilities for easy and fast entry and exit of firms, which should all be affected by the same regulatory framework and have equal access to market knowledge and technology. Scale or scope economies may exist, but this is not a necessary condition. *Sunk costs*, rather than scale economies, make up the barrier to entry that gives a monopolist harmful power. The implications are that an industry may be efficient even in the case of a monopoly or oligopoly, provided that the *threat* from future competition is considered to be real. Regulations should therefore aim at facilitating entry and exit (Baumol et al, 1982). Shires *et al* (1994) have studied the British railway industry from a contestable market approach, finding some conditions to be fulfilled, but easy and fast entry and exit is still limited by several types of barriers, categorised as innocent, strategic or predatory.

Transaction cost theory

The costs to carry out transactions depend on the frequency of the transaction, uncertainty, the degree of specificity in the investments, and the perceived need to insure against opportunistic behaviour in markets with few actors. As can be understood from these factors, any change in a market structure may result in opposite forces as regards the transaction costs. A reduced uncertainty in the price level when using the market can be off-set by co-dependence between buyers and sellers if there is a high degree of investment specificity.

When the former railway monopolies were dismantled in countries like Great Britain and Sweden, transactions that used to be managed internally were moved to a market with sellers and buyers. This type of shift has been interpreted in two contrasting ways by researchers. One group claims that the horizontal and vertical disintegration resulted in lower transaction costs because the transactions were made visible and exposed to market mechanisms. One of the architects behind the privatisation of British Rail claimed that the separation of large vertically integrated firms into smaller specialised units lead to positive effects in terms of increased specialist knowledge of these firms (Foster, 1994). This division implied that a number of new contracts between the units had to be set up. Although the number of transactions in the system may have increased, the argument from this interpretation of transaction cost theory was that this does not necessarily imply higher transaction costs. In addition to the argument that transparency makes the transactions efficient, it has also been claimed that modern methods of management and control, auditing and computerisation decrease the costs of every transaction and make it easier to formulate the division of responsibility in contracts. Therefore, a clear separation of businesses into separate firms is necessary.

It is important to note that one precondition of this line of reasoning is the exposure to market mechanisms, which is not always easy to achieve, and has even been forgotten in some regulatory reforms involving disintegration. When splitting large railway companies into smaller units, some of them may become monopoly firms (such as providers of railway stations). Moreover, it can be argued that learning and efficiency gains are also linked to having several customers with partly different needs. If the companies of the new system are only serving the very same divisions as before – and perhaps only one each – the gains from separation could turn out to be minor at best. Another potential concern is that if the monopoly is broken up into many sub-markets for inputs as well as for operations, the post-deregulation industry may contain so many firms in each market that transaction costs will inevitably increase. For example, the British railway industry was broken up into more than 80 firms. To reduce the potential risks associated with breaking up a monopoly one may consider to increase the size of the average tendered business operation and to construct upstream markets that are not so specialised – for example by merging different activities into one market.

Some of those that oppose the idea of lowered transaction costs highlight the high asset specificity in the railway sector. They suggest that there is no such thing as an optimal way of organising competition in industries that have to rely on (monopoly) network facilities, and there is now a growing concern that the wrong design of the industry's basic structural framework may have been chosen in the early days of the European regulatory reforms (Hultkrantz et al, 2005). One possible source for increasing transaction costs that may be more important than gains from competition is the misalignment of the mode of organisation. Misalignment refers to an arrangement in which the characteristics of the mode of organisation do not fit the attributes of the transaction it has to organise. This problem can occur in any new market constructed after the deregulation of a former monopoly (Yvrande-Billon and Ménard, 2005).

Auction theory

In a competitive tender in the European passenger railway market, a firm or a consortium may make promises about supplying a service at a defined quality level for

either a subsidy or against payment. Therefore, using competitive tendering when contracting out public services is similar to performing common value auctions with a sealed-bid procedure. However, the price of the bidders may not be the only factor (although often the most important) to take into account. The procuring public authority typically evaluates the competing bids regarding both price and quality once the bidding process has ended. Hence, competitive tenders combine traits, advantages, disadvantages and risks, of both auctions and beauty contests. Hultkrantz and Nilsson (2001) claim that a pure auction is better than a beauty contest because it offers a more market-oriented, objective and transparent method for awarding licences. Their strongest argument in favour of auctions is that firms in the auction process, by means of offering more and more money, reveal information about their estimation of the value of the good. Hultkrantz and Nilsson (2001) point out several disadvantages with beauty contests: 1) the process is slow and cumbersome, in particular if the final decision is challenged in court, 2) it is difficult to achieve transparency, and 3) many criteria are not objective or difficult to quantify. They further suggest that, even when social concerns are important, an auction is a better alternative since it can also include minimum requirements and can allow both positive bids in attractive regions and negative bids in unattractive regions.

Auctions also present some notable risks and potential disadvantages. In many auctions, as well as in many competitive tenders, firms have made unrealistically optimistic forecasts about future revenues and costs. In auction theory, the concept of *winner's curse* is used to explain why winning bids may be based upon judgmental failures. In particular, *common value auctions* – in which the participating bidders value items differently based upon their judgment of uncertain prospects – tend to be won by the bidder with the most optimistic estimate of the item's value (see e.g. Kagel and Levin, 1986). Adnett (1998) discusses winner's curse in relation to such tendering procedures. He argues that a low number of bidders, and in particular if they are inexperienced as in the first round of tendering in a certain business, will increase the importance of winner's curse in competitive tenders. One way to limit the problem of winner's curse is to alter the auctioning procedure. An open English auction, in which the bidders continuously follow the bids of their rivals, may stimulate aggressive bidding but yet decrease the risk of too optimistic bids and the related winner's curse (Milgrom and Weber 1982). However, there is an increased risk of collusion in open auctions (see e.g. Robinson 1985). It should also be noted that winner's curse in tenders of public services may also be related to the bidders' attitude towards risk, for example their view of whether the government will be willing to bail them out or renegotiate the contract if they fail.

The development of a common European Union railway policy

The European Directive 91/440, on the separation of accounts for infrastructure from operations, was one of the earliest initiatives of the European Community regarding reforms in the railway sector. This directive has sometimes functioned as a starting point for railway reforms in the Community member states. In countries where tendering of railway services have been introduced, general EU directives on public procurement and European competition law have also played an important role.

Gradually, the European Union has developed a political agenda to promote the advancement of the railways.

The current overall objectives of the European Union railway policy are (Lundström, 2004; European Commission, 2001, 2002):

1. Create a common market for railway transportation services.
2. Achieve operational compatibility in order to overcome the different technical standards of the member states.
3. Create a common market for railway material and equipment.
4. Create equal conditions for competition between different modes of transportation.
5. Support a sustainable development by means of stimulating modes of transportation that have less (negative) environmental impact (such as railway and sea transportation).

In recent years, the European Commission has increased the efforts to make these goals more tangible, expressed by its work on several “railway packages”. The first railway package was accepted in 2001 following three years of negotiations. It included the decision to open up international freight services on a specified network of lines or corridors in 2008. Also, it would no longer suffice to separate infrastructure from operations only on the accounting level. The second railway package was agreed upon in the spring of 2004. In order to hurry on with liberalisation of the international freight services within EU, this part of the market was to be opened for entry on January 1, 2006 (instead of 2008). In 2004, the European Commission also presented its proposal on a third railway package. An important part of this package is that the international passenger services within the European Union are to be opened up to competition no later than January 1, 2010. All companies that fulfil safety regulations and several other demands will then have open access to the railway infrastructure. This also includes the possibility of cabotage, i.e. that the market of one country is open for actors based in another member state.

In parallel to the development of the railway packages, there has been a long on-going process to reform the old Community regulation 1191/69, aiming at providing a coherent framework for when and how passenger services may be subsidised or given exclusive rights. The current regulation (latest revised in 1991 by regulation 1893/91) says nothing on market opening or how to award public service contracts. The development in several European countries during the 1990’s, with the introduction of competitively tendered rail services and the rise of international railway operators, has highlighted the need for a new regulation. For several years, such a regulation has been in the pipeline (see van de Velde, 2005b, for an extensive review). In 2005, the European Commission presented its third proposal. In this, it is established that all exclusive rights or compensations for any public service obligations must be established within a framework of a public service contract, defining clearly the obligations and geographical areas concerned and the parameters for calculating the compensation (European Commission, 2005). While previous proposals have been favouring almost compulsive competitive tendering for the award of public service contracts, the latest one takes a much less dogmatic view. There is now a possibility for authorities to provide public services by themselves, or to award them directly to an internal operator. Specifically, all regional and long-distance rail services are exempted from any obligation to be tendered, i.e. they may also be awarded directly. However, the possibility to award contracts directly comes with a limiting reciprocity rule, implying that the operator must not engage in other passenger transport activities outside the awarded territory.

In all, the current proposal for a new regulation on the award of public service contracts is not exactly in line with the efforts to further liberalise the European railway sector as proposed by the Commission's third railway package. Existing public service contracts in one country may limit the possibility of cabotage, and, if used deliberately as a national policy, may even close off countries entirely from rail competition. It remains to be seen if the reciprocity rule (that may dampen this effect) will really be enforced. Moreover, there seems to be an uncertainty about the exact border between the applicability of the new regulation versus the directives on public procurement, being dependant on whether certain procured services are to be viewed as "concessions" or "service contracts".

In yet another line of development, the European Commission has also taken a closer look at the development of different forms of Public-Private Partnerships in the member states. In 2004, a Green Paper was published, in order to stimulate a discussion on how to apply EU regulations to PPP projects, specifically concerning the choice of private partners (European Commission, 2004). One conclusion was that there is no proper definition of PPP at the EU level and no common legislative framework, giving member states a rather large degree of freedom as long as the Treaty's principles of transparency and non-discrimination are followed. The feedback following from the Green Paper will probably lead to suggestions from the European commission on new regulations, at least concerning the award of PPP concessions.

The railway reforms of four countries

Great Britain

Origin and process. British Rail (BR) started to be criticised in the 1970's for low productivity, inefficient management and ever increasing subsidies (Pryke & Dodgson, 1975). In the early 1980's BR experienced a severe financial crisis, forming the background to the work of the so-called Serpell committee. In its report, it was argued that major closures were necessary to reduce the need for subsidies (Serpell, 1982). Partly due to political concerns, BR was instead reorganised into several commercially oriented business sectors. This seems to have led to a remarkable improvement in BR's productivity during the 1980's. Nevertheless, from 1983 and onwards, several academics and right-wing thinkers argued for rail privatisation. In 1988, the politician John Redwood presented an overview of four alternative models for railway deregulation/privatisation being under consideration: 1) Privatisation of BR as a single unit, 2) Splitting of BR into several regional independent units, 3) Splitting of BR based upon its main business sectors, and 4) Separation of railway infrastructure from operations. Providing the advocates of rail privatisation with useful arguments, was the research on contestable markets, transaction cost economics, and the deregulation of the US railways sector. Other important influences were the EC directives aiming at opening up the railways to competing operators and Sweden's vertical separation of infrastructure from operations and introduction of competitive tendering on regional lines (Alexandersson et al, 1997).

When BR's financial situation once again deteriorated in the early 1990's, the search for an appropriate form of privatisation was intensified (Nash and Preston, 1993). In

July 1992, the Conservative Government presented a White Paper that set out six policy intentions to be achieved by April 1997 at the latest: 1) To sell British Rail Freight and Parcels to the private sector; 2) To establish a Franchising Authority and to franchise a substantial number of passenger services; 3) To restructure British Rail to own and operate track and infrastructure separately from operations; 4) To establish rights of access for new operators to the rail network; 5) To establish an independent Regulator; and 6) To provide opportunities for the sale or leasing of stations.

The stated aims behind the railway privatisation reform was to make “better use of the railways, [to ensure] greater responsiveness to the customer, [to achieve] a higher quality of service and better value for money for the public who travel by rail” (OPRAF, 1995, p. 29). The economic rationale was developed in more detail by the special adviser on rail privatisation, Sir Christopher Foster (Foster, 1994). He took the principal view that rail privatisation would achieve greater economic efficiency due to the superior incentives provided by the private sector.

The White Paper was followed by a number of more specific documents from the Department of Transport and finally resulted in the passing of the Railways Act in November 1993. The Act laid the ground rules for the privatisation of British Rail, setting out the regulatory and statutory conditions under which this process, beginning in April 1994, could be undertaken. The company Railtrack was created by the Act, having as its key purpose to own, maintain and develop Britain’s mainline rail infrastructure. The decision to have a single rail infrastructure owner was based upon the belief that this part of the railway business bears the characteristics of a natural monopoly. In November 1994 the Government announced its decision to privatise Railtrack. The sale was completed in 1996 when the shares were floated on the stock market.

The rolling stock was divided between three separate Rolling Stock Companies (ROSCOs), which were subsequently sold to the private sector in 1995-96. BR’s freight business was privatised and open access for freight operators was introduced. BR’s passenger rail operations were reorganised into 25 separate units, then transformed into Train Operating Companies (TOC). One or two at a time, these companies were subsequently franchised by means of a tendering procedure, with interested parties placing bids on the grounds of required subsidies. The tenders were organised by the newly created body Office of Passenger Rail Franchising (OPRAF) and the process was completed in late March 1997.

Including the sales of the supporting businesses, BR was divided into more than 80 separate companies, the intention being to create competition in as many parts of the sector as possible (Nash, 1997). A number of new regulations were also designed with the purpose to encourage competition and guard the passengers’ interests concerning prices and coordination of rail services. The overall responsibility for making sure that the different actors followed these rules was placed in the hands of the Office of the Rail Regulator (ORR).

The whole reform was completed in April 1997, not long before the Parliamentary Election in which the Conservative Party’s 18-year reign was brought to an end. The winning Labour Party decided not to reverse rail privatisation (as it had promised), but to expand investments and strengthen the regulatory body. OPRAF was transformed into the new Strategic Rail Authority, established in 2001. The new authority set out to re-franchise the operations of the TOCs and introduce longer agreements (20 years instead of 7 years) in return for TOC involvement in infrastructure investment. Railtrack

was perceived as lacking the ability to invest enough on its own, and the new idea was to finance major infrastructure improvements from a variety of sources (SRA grants and private capital), while Railtrack would buy the assets once they had been completed (Nash & Smith, 2006). However, for a number of reasons, the ambitious plans did not materialise. The Hatfield accident in the year 2000 set off a series of events that eventually lead to the collapse of Railtrack, being re-placed by a non-profit company, Network Rail. Also, several TOC's turned out to have problems to fulfil their obligations (see further below). Therefore, several franchises were re-negotiated to temporary cost-plus contracts in order to later be re-franchised with the old contract length of 7 years. Infrastructure investment did increase, but the funds were directed to maintain and renew the existing network rather than to perform major upgrades.

Experience to date. Although the response from the private sector to TOC franchising was lukewarm in the beginning, the original bidding process in 1995-97 was very competitive, with 5-10 serious bids for each franchise. Including the limited number of management-buy-outs, a total of 11 separate organisations entered the UK passenger train industry by means of winning franchises in tenders. Companies related to the bus industry (such as Stagecoach, National Express and First Bus) were very successful. National Express won more franchises (five) than anyone else, while French conglomerate Connex grabbed the biggest market share (16% of ticket revenues) (Alexandersson et al, 1997).

Since privatisation started, there has been a substantial concentration in terms of the owners behind different franchisees; National Express is now the owner of 11 TOCs. When re-franchised, competition has generally continued to be strong. On one occasion a tender was stopped prematurely since too few (only two) operators were pre-qualified. (Nash & Smith, 2006). It has generally been difficult for the incumbents to defend their franchise in tenders.

The TOCs were to be paid annual subsidies according to net cost agreements, typically to be reduced over the contract period. In some cases it was even envisaged that the TOCs would be able to make enough profits to be able to pay back money towards the end of the contract period. However, in several cases, these subsidy levels turned out not to be sufficient and in a couple of cases the winning bidders were clearly too optimistic. For this reason, some franchises had to be renegotiated or re-franchised early, for example leading to the exit of Connex altogether in 2003 (Nash & Smith, 2006).

After some initial reductions in the subsidies to train operators, they are now considerably higher than projected – almost back to the level at the beginning – and are expected to rise further when track access charges are increased to account for the revised costs of Network Rail. Since the collapse of Railtrack, there has actually been nothing less than a cost explosion in the British rail industry, affecting not only infrastructure but also train operations and rolling stock investments (Nash & Smith, 2006).

In terms of demand, the British experience is much more positive. It is clear that passenger demand and revenue have increased substantially since privatisation, although it is difficult to establish the relative importance of the possible multiple reasons behind this development.

Sweden

Origin and process. Regulatory changes in the Swedish railway sector have often emanated from a wish to come to terms with the recurrent financial difficulties of Swedish State Railways (SJ). The Transport Policy Act of 1988, with its split of railway infrastructure from operations, is commonly considered the starting point for the transformation of the Swedish railway system, from a vertically and horizontally integrated monopoly to a market characterised by decentralisation and intra-modal competition.

The Act had the objective to make the conditions for the railways more similar to those for the roads. The state took the full responsibility for railway infrastructure investments and maintenance by means of a new authority – Banverket, while SJ would be transformed into a train operating company, paying charges for using the tracks (based upon marginal costs for maintenance). The Act also marked a general policy step in the direction of extending the responsibility of the County Public Transport Authorities (CPTAs) into the unprofitable regional railway services. In return, the CPTAs were compensated by state subsidies equalling SJ's operating deficits on these lines, and they also received the corresponding rolling stock.

A deregulation of the railways in terms of increased intra-modal competition was not explicitly mentioned in the Act. Nevertheless, the vertical separation of infrastructure from operations, combined with the decentralised responsibility for regional railway services to regional authorities (along with the necessary money and rolling stock), made public procurement by competitive tendering of these lines possible. Some CPTAs had already tried tendering procedures for their bus services, as a result of previous reforms in that sector (Alexandersson, Hultén and Fölster, 1998). This made it natural to use competitive tendering also of regional railway lines. The outcome was the first new entrant, *BK Tåg*, in 1990.

In the beginning of 1991, the Ministry of Transport expressed the view that more operators would stimulate the railway industry to make use of its resources in a more efficient way. After a shift in power in Parliament the same year, a new centre-right-wing government declared its objective to open the railways to more competition. The first step was to subject more railway traffic to tendering. When SJ got rid of the responsibility for track infrastructure, it had been directed only to perform *profitable* train services under its own account. While large parts of the *unprofitable* services were run on the regional lines and therefore under the responsibility of the CPTAs, many services of the inter-regional main line network were also unprofitable. Since 1988, the state had been procuring these services by means of annual negotiations with SJ, but in 1992 a competitive tendering process was used for the first time.

In 1994, the first case of a BOT tender was completed, leading to a long-term contract to build and operate the new Arlanda Airport Link. The same year, a bill on a far-reaching deregulation was passed in Parliament, but when the Social Democrats regained power in Parliament through the election later the same year, the deregulation of the railways was quickly postponed. Instead, a less radical reform was suggested, coming into effect in 1996. The functions of allocation of track capacity and train traffic control were transferred from SJ to Banverket, while other common facilities were to be available for other train operators under commercial but non-discriminating terms. The CPTAs' rights were extended, making it easier for them to replace reductions in SJ's supply of inter-regional trains with regional CPTA-managed services. Consequently, the

practice of competitive tendering became available for more parts of the railway network. For the freight services, open access on the whole network was introduced.

A new Transport Policy Bill was passed in 1998. In an effort to achieve more equal terms for competing modes of transportation, in particular concerning freight, the track access fees were lowered. In order to make entry easier for freight operators competing with SJ, some fringe railway lines that had remained in SJ's hands were transferred to Banverket. Moreover, a new national authority, Rikstrafiken, became responsible for competitive tendering of unprofitable inter-regional services (including all modes of public transportation).

Following the inflow of new operators in 2000, a new Bill had the objective to facilitate for SJ to compete under the new circumstances and to ensure equal access to functions and services for all operators. SJ's organisational structure as a business administration was therefore replaced in 2001 by several state-owned companies concentrating on specified parts of the railway businesses. The passenger division formed one company (SJ Ltd), the freight division another (Green Cargo), and so on for real estate, maintenance and other businesses. Two divisions, comprising cleaning services and computer information systems, respectively, were fully privatised.

Since the Bill of 2000, it has often been suggested that the remaining monopoly of SJ Ltd concerning the profitable inter-regional lines should be abolished, possibly opening up for at least competitive tendering on these lines. So far, the Social Democrat government has been unwilling to take this step, motivated by a perceived need for more time to evaluate the previous reforms, and the risk of creating new losses for SJ. The most recent reforms have focussed on modernising laws and regulations to achieve a regulatory framework in line with European Union directives and the recent railway packages. For example, a new Swedish Rail Agency was established in 2004.

Experience to date. The past 15 years of railway reforms in Sweden have seen an important shift towards major investments in new and renewed infrastructure in a way that seemed impossible before the vertical separation of operations from rail infrastructure. The state has gone from spending 1 billion SEK annually on infrastructure investments in 1990 to about 3 billion SEK annually during the recession of the early 1990s, and now seems set to invest approximately 10 billion SEK (€1.1 billion) per annum in the years to come. (All these figures are in nominal values).

The introduction of competitive tendering of regional passenger railway lines in 1989 immediately led to the entry of BK Tåg in 1990. For a couple of years this remained the only new entrant and true competitor to SJ. It was not until 1995 that another small operator entered this part of the market. In the market for inter-regional services, the break-through for competing operators did not happen until the year 2000, after transparency had gradually been improved as more and more functions and resources had been handed over from SJ to Banverket. Currently, about 20 train operating companies use the Swedish state's rail infrastructure, most of them being very small. On the passenger side, the state-owned company *SJ Ltd* is still the dominant operator, but private firms like *Connex*, *Keolis* and *Tågkompaniet* are important competitors. *Arriva* is set to enter in 2007. In terms of passenger kilometres, SJ Ltd had a 74% share of all railway services in 2004, with an 88% share of the long-distance (more than 100 kilometres) and a 54% share of the short-distance (less than 100 kilometres) railway services. *Green Cargo*, formed out of the former freight division of SJ, is the largest rail

freight operator, with a 74% market share in rail freight transportation in 2004 (Banverket, 2005).

Data on subsidy reductions caused by the tenders carried out by the CPTAs is somewhat scarce, partly due to difficulties when comparing subsidy levels under different conditions. Typically, there have been subsidy reductions in the magnitude of 20% in the first round of tendering. For the services procured by the state, substantial reductions were accomplished during the first two years of tendering, despite the lack of actual new entry. After that a period of tenders implying stable subsidies followed. When several new firms finally were able to win these tenders in 1999, additional large subsidy reductions (28%) were achieved (Alexandersson et al, 2000).

The decentralised responsibility of regional passenger rail lines, making them organised by the same authorities as are responsible for public bus services, appears to have brought about better co-ordination of regional train services with bus services. Combined with the high level of ambition among many CPTAs to develop the regional train services, this has probably played an important role in the positive development of railway travel. Passenger train transportation has since 1995 experienced a stronger growth than all other modes in terms of passenger kilometres. Behind this increase of 32%, we find that the growth in short-distance regional transportation has been particularly strong (up more than 70%), while long-distance travelling (more than 100 km) increased by 15% (SIKA, 2005).

In conjunction with the corporatisation of SJ and the creation of the separate maintenance company Euromaint, it became evident that maintenance and security check-ups of had been lagging behind in the integrated firm. The new organisation with separate entities facilitated a rapid solution to these safety issues before any fatal accident had occurred.

The number of bidders taking part in Swedish passenger rail tenders has been rather low. On average, the CPTAs' tenders for gross cost contracts – in which the operator bears no ticket revenue risk – have attracted more bidders (2-3) than the state's tenders for net cost contracts (1-2) – where the operator gets the revenues from fares. A recurrent problem has also been the non-fulfilment of tendered contracts. In all these cases the railway passengers have been put at a disadvantage by disruption of the services, fewer trains or trains being replaced by buses.

Contract costs show signs of being on the increase. Both big and small firms have placed unreasonably low bids that have resulted in economic problems for the firms. Citypendeln (Keolis) had enormous problems in early 2000 when taking over the commuter services in Stockholm from SJ. In early 2005, Connex aborted some train departures of its railway services to northern Sweden after re-negotiations with Rikstrafiken. Loss-creating contracts have ultimately lead to bankruptcies on two occasions in Sweden – Sydvästen in the year 2000 and BK Tåg in 2005. After having placed several too optimistic bids SJ Ltd came close to bankruptcy in 2002-2003, and was saved mainly because the state stepped in with an additional capital of €200 million. Litigation is also increasingly being used. In the year 2000, SJ was sentenced to a fine and paid substantial damages to BK Tåg after losing a court case on under-pricing fought against the Swedish Competition Authority. In 2002 Tågkompaniet unsuccessfully tried to stop Connex from taking over the trains to northern Sweden. Rikstrafiken was drawn into a potentially costly law-suit that it avoided by admitting to have made errors in the procurement of the services. In 2006 many different firms

unsuccessfully tried to stop the winning bid for the commuter trains in the Stockholm region.

Germany

Origin and process. Beginning in the 1960's, rising deficits lead to several attempts to reform the German railway sector. Most of these attempts failed, due to opposing interest groups such as the states and the employees, and the lack of a broad political consensus on suggested reforms. The deficits of the national railway operator in Western Germany, Deutsche Bundesbahn (DB), increasingly became a major fiscal burden for the federal budget, reaching a record level of about €7.5 billion in 1990. From 1960 to 1990, the rail's market share compared to road transportation also declined from 37.3% to 20.6%. When the re-unification of Germany in 1990 also added the problems of Deutsche Reichsbahn (DR), it became clear that fundamental reforms were absolutely necessary in the German railway sector (Kirchner, 2005).

Three consecutive Commissions (of 1989, 1990 and 1991) suggested the restructuring, liberalisation and deregulation of the German railway sector, although differing in their view on how far liberalisation and deregulation should go (Lehmann, 1999). The Government Commission of 1991 proposed a far-reaching structural reform by means of the creation of a new holding company that initially would be owned by the federal government but later on privatised (limited to the freight traffic and passenger divisions only). The debts should be transferred to an external institution, and in order to reduce the burden of the many privileged civil servants of the workforce, an external institution would take over the staff. The new holding company would then be able to renegotiate terms and re-hire each employee individually, paying market salaries rather than civil servants' salaries. The services on the unprofitable lines were to be made the responsibility of the states (in a step towards regionalisation), albeit following negotiations on necessary subsidies taken from the federal budget. In order to stimulate intra-modal competition, the Commission also proposed non-discriminatory open access for other operators to the entire network of the new holding company (Kirchner, 2005).

The suggested reforms were put forward as national solutions to national problems, but were also influenced by the current work on the European Community level which led to the Council Directive 91/440/EEC.

In 1993, the two national operators DB and DR were merged into BEV, forming a special federal government railway asset. Deutsche Bahn AG (DB AG) was then spun off from BEV's assets, forming a new private stock corporation in January 1994, with subsidiaries for long-distance passenger services, regional passenger services, freight services, railway services and the track network. Cross-subsidisation between these entities was prohibited. DB AG was supposed to operate on commercial terms with full responsibility for costs and revenues, and the separation into different units was supposed to improve transparency and enable the units to work as profit-centres close to the market (Lehmann, 1999). The separation of long-distance from regional passenger services was linked to the regionalisation (see below) and a fear among the states that DB AG would otherwise cross-subsidise the long-distance services at the expense of regional services.

DB AG was kept under federal government ownership, but changes in the constitution were made to make it possible to sell stocks to the public later on, with the exception of such railway undertakings that functioned as infrastructure managers.

Open access on non-discriminatory terms was introduced for all German railway companies and also for EU member states companies. A new federal regulatory body was set up. BEV relieved the former national operators of debts and other financial burdens, amounting to a massive €63 billion (Kirchner, 2005).

Another important element of the reforms was the regionalisation of regional passenger services. In 1996, the German states (Länder) became responsible for the regional passenger services, receiving subsidies from the federal government to keep socially important public train services. Some states have chosen to put these services out to tendering, while others have chosen only to close contracts with DB Regio (a subsidiary to Deutsche Bahn AG) (Kirchner, 2005).

In 1999, the reform process took another step, transforming the five operative divisions of Deutsche Bahn AG (now a holding company) into independent corporations. One of these is DB Netz, the track infrastructure provider. This model of “less than complete” vertical separation of infrastructure from operations has been the subject of much debate and criticism, since some politicians and researchers have claimed that it is not sufficient to exclude discrimination of other operators (despite additional measures such as a regulatory body and specific regulations). Others have defended the model as a way to keep some of the benefits of integration, such as lower transaction costs and possibilities for track-wheel innovations (Lehmann, 1999; Kirchner, 2005).

Experience to date. Initial regional tenders performed by the states attracted only a few bidders. Rather commonly, local publicly-owned organisations or DB Regio won the tenders. For several years no new company entered the long-distance passenger market, despite the open access (Lehmann, 1999).

In recent years, the number of new entrants has increased. A total of 286 railway companies are now present, most of them operating in the freight sector. Although it is growing, the combined market share of the new operators is still low: about 5% in rail passenger transportation and about 7% in freight transportation (Kirchner, 2005). In particular, French firms (such as Connex, Transdev and Keolis) are very active in Germany (Deutsche Bahn, 2004). In 2004, British Arriva entered in a major way by means of several acquisitions (Deutsche Bahn, 2005).

Between 2001 and 2004, a total of 39 tenders were carried out, with contract lengths from 3-15 years (Brenck et al, 2005). Although contracts are commonly used in local and regional passenger services, they are not always awarded through tendering, and there are still some obstacles related to access pricing, rolling stock approval, administration and information (Kirchner, 2005). The practice of direct awards in some areas, rather than tendering, is being challenged on the EU level. There have been cases of very low bids in regional tenders, and also too optimistic efforts to start new long-distance passenger services, leading to the exit of some firms (Deutsche Bahn, 2004, 2005).

Passenger rail services have increased their market shares between 1993 and 2003 compared to other modes, while the share of freight services by rail has decreased during the same period (although it has been rising in recent years) (Kirchner, 2005). There is some research indicating that competitively procured lines grow faster (in terms of frequency) than other lines (Lalive and Schmutzler, 2005).

The heavy investments needed in Eastern Germany have had a large impact on public spending on infrastructure and rolling stock. Consequently, the federal expenditures

since the beginning of the reform process have been very large, but nevertheless lower than expected, and substantially lower than what was to be expected if no reforms had been made (Kirchner, 2005).

The Netherlands

Origin and process. The railway reform process in the Netherlands was initiated in 1991 by means of the recommendations of a committee appointed by the Ministry of Transport, stating the need to make the national railway company Nederlandse Spoorwegen (NS) independent of subsidies. The first actual reforms were implemented in 1995 with the reorganisation of NS into several subsidiaries and subdivisions. The subsidiary NS Groep included those divisions that were supposed to work under market principles (including passenger services, stations, and real estate) and was supposed to become privatised in the future. Infrastructure and related issues were to be handled by three task organisations within NS, although directly financed by the Ministry. The reforms of 1995 included an agreement to set the infrastructure access charges to zero until the year 2000, in return for a reduction in state subsidies from €130 million in 1995 to zero in 2000 for a defined network that was supposed to be able to cover its operational costs (excluding infrastructure costs). A special contract agreement on continuous subsidies was reached for a set of other loss-making lines with socially desirable services (van de Velde, 2005a).

The original committee had not proposed the introduction of competition in passenger services. Nevertheless, the reforms of 1995 made competition a possible option. An experiment with on-the-track competition came into effect after a private company had asked for permission to add services on some lines already operated by NS. The initiative lasted from 1996 to 1999 (when the new entrant went bankrupt). During this period, the Government also actively sought information and experiences from the introduction of railway competition in other countries.

In 1999, a new administration issued a policy document that broke both with the on-the-track experiment and a British franchising model for the national network as had been suggested by the former liberal administration. Instead, it suggested that NS should be given a 10-year concession to run the profitable part of the national network in accordance with a performance contract, including a number of obligations, incentives and targets. On the other hand, loss making regional services would increasingly be subjected to competitive tendering. While the new performance contract became delayed several years due to political opposition and NS' problems to fulfil the targets in a transitional contract, a new transport law came into effect in 2000. It introduced the principle of "authority initiative" rather than "market initiative". Under this principle, competitive tendering was to be used in all public transportation, mainly affecting the regional bus and train services. New regional transport authorities were created, and some tenders of regional lines were performed, but more commonly the threat of tendering was used in order to stimulate the creation of integrated bus and rail networks. A special government approach was used in 2001 for the new high-speed line Amsterdam-Rotterdam-Brussels, with a tender for a concession to run the services for 15 years, while the construction and maintenance of the infrastructure was in part organised as a Public-Private Partnership with a contract length of 30 years (van de Velde, 2005a).

In 2002 a full separation of infrastructure management from operations was implemented and a new state-owned rail infrastructure organisation, ProRail, was created in 2003. A new monitoring and regulatory body, Office of Transport Regulation, was established in 2004 as a part of the National Competition Authority.

In 2004, the 10-year concession and performance contract for the trunk rail network was finally settled, coming into effect in 2005. NS was granted this exclusive concession, which includes a number of performance clauses on gradual improvements but no payment from the state to NS. An evaluation in 2008 may result in a competitive tender, but NS is no longer set to be privatised. This concession was only one part of a new long-term regime for the railways, aiming at achieving a reliable railway system. Another 10-year concession was granted to ProRail for the management of infrastructure. Also, several measures were taken to improve cooperation and coordination between infrastructure management and the train operators.

In December 2005, the central government decided that the process of decentralisation and competitive tendering of regional lines will continue, in order to include more lines (van Dijk, 2006).

Experience to date. The introduction of contract agreements and (threats of) competitive tendering generally seems to have put a pressure on NS to keep costs down, thereby making reduced subsidies possible. For example, the initial contract for the non-profitable lines reduced subsidies by 50%. However, NS has had a hard time reaching the envisioned targets and it seems as if excessive focus on rationalisations lead to a low reliability of both infrastructure and vehicles. Political uncertainty on how to proceed with reforms (regarding e.g. competition and privatisation), lack of governmental supervision of the task organisations, and too much focus on new infrastructure investment projects rather than infrastructure maintenance, created an unstable environment for the railways. This may have contributed to the reduced performance and a related drop in patronage after 2000 back to 1995 levels (van de Velde, 2005a).

Competitive tendering has gradually been tried by more and more regional authorities, but has so far only affected about 6% of the Dutch network (van Dijk, 2006). Partly depending upon the conditions in the tenders, the resulting contracts have implied either a gain in quality, quantity or rolling stock, or substantially lower subsidies (20-50%) for the same level of supply. This may be compared to some directly awarded contracts that have only implied gains up to 10%. Contract periods have varied from 5-6 years to 10-15 years (the latter involving investments in new rolling stock).

A couple of new entrants have appeared. Apart from the case of Lovers Rail entering in on-the-track competition with NS, entry has occurred through the competitive tendering of regional lines, with companies like Arriva and Connexion taking the lead (van Dijk, 2006). In addition to this, the demand for coordinated bus and railway services has initiated the creation of some new constellations of firms of different origin, such as NS and Arriva and NS and Keolis. The brief history of Lovers Rail showed that even if the new operator did not actually enter into some parts of the network that it had been granted permission to, the mere threat made NS expand and improve its services in these areas. The bankruptcy of Lovers Rail was ultimately caused by a lack of integrated ticketing with NS (van de Velde, 2005a).

The punctuality problem in the early 2000's caused something of a crisis in the Netherlands. When NS failed to meet the contracted performance target of 88%, the Ministry in mid 2001 initially reduced the required level to 80%. Later the same year,

when it became clear that NS would only reach 79.9%, the complete Board and two managers had to resign, a rather unique event from a European railway sector perspective.

Analysis

The regulatory reforms of the railway sector in the EU member states have been driven by different types of economic, institutional and legal concerns. We will start this section by examining these differences in more detail.

In Great Britain, the pursuit of a conservative market liberalisation agenda was an important initiator, although the problems of British Rail also played a role. In the design of the reforms, two theoretical approaches seem to have dominated. First and foremost, the belief that private ownership and management is superior to public ownership, since private firms will make sure that the needs of the market will be met in order to reach maximum profits. For example, this explains why even the track infrastructure was privatised. Second, the belief that transaction costs were generally low, clearly lead to a very large degree of both vertical and horizontal disintegration. It also influenced the limits put on TOC mergers, as it was apparently believed that keeping the number of competitors high would benefit the market more than any possible gains from re-integrated services (although TOC ownership was much less restricted).

In Sweden, the primary driver for reforms has been the recurrent problems to make SJ profitable. This has generated reforms for several decades. Since SJ's problems have often been viewed as linked to heavy competition from other modes of transportation, several reforms have been designed to improve the possibilities for railways to meet inter-modal competition. This was one of the most important aims with the vertical separation of infrastructure from operations in 1988, making the conditions more similar to those for the roads. The importance of keeping unprofitable lines running for social concerns has been another important factor. Coupled with the idea to decentralise the responsibility to the level where this mattered most (the regional level) this became the starting point for the introduction of contracts and tendering in the Swedish railway sector. It was not foreseen that this would lead to intra-modal competition, but once it did with positive results, it became a part of the political agenda and competitive tendering spread to more and more railway lines. The process of reforms in Sweden has been incremental compared to the more radical approach of Great Britain. A more radical approach was tried once (in 1994) but was reversed by a new political majority even before it was implemented. Although some actors have advocated more general steps towards deregulation and privatisation, the impact upon overall railway transportation policy has been rather limited. One exception is the deregulation of freight services in 1996. The only instant when private sector capital has actively been sought after was in the BOT tender of the new Arlanda airport link.

In Germany, reforms were clearly borne out of necessity, following many years of financial problems and deteriorated market shares, culminating at the time of the German re-unification in 1990. The reforms focussed upon relieving the railways of debts and costly rules of employment to make a fresh start, initially with the intention of a future privatisation of passenger and freight operations. Regionalisation opened up for competitive tendering of local lines and networks, but several regions have chosen not

to make use of tendering. Overall, there has not been a general policy to promote efficiency by means of intra-modal competition, although the introduction of open access for long-distance passenger services was a step in that direction. To make the railways more efficient to meet inter-modal competition seems to have been more important. Also, Germany has been very reluctant to go all the way in terms of vertical separation of infrastructure from operations, based upon a firm belief in the benefits of integration.

The Netherlands has spent several years seeking for appropriate reforms to implement, that to a considerable extent draw on the experiences of other countries. The policy has varied over time depending upon circumstances, also making room for experiments with on-the-track competition. Initially, the growing subsidies played an important role as initiator to the reforms, and privatisation of NS operations was envisaged as preferable and possible. Regionalisation has been carried out, while the approach to competitive tendering at first was ambivalent but now looks set to continue. A common principle has been to use the threat of competitive tendering as a way to promote performance improvement. Railway performance, seen from the end user perspective, has been very important (more so than financial concerns). Much effort has been put into the creation of contracts focussing on performance measures and targets. Recurrent failures to meet performance have also created situations of crisis. Privatisation of NS passenger operations is no longer seen as an option – following the mixed British experience and experiences from other sectors.

The parallel development of a common European Union policy for the railways has played a role in the reform process of individual member states, but the extent and impact vary among countries. The vertical separation in Sweden preceded the EU initiative (Sweden did not join the EU until seven years after this reform). It may actually be argued that EU policy to some extent was influenced by Sweden's reforms. During the second half of the 1990's, Sweden was mostly prompted to implement minor revisions in the regulatory framework in order to comply with EU policy. In recent years, the influence has become bigger and the impact will most certainly be pronounced if the liberalisation of international passenger services actually happens in 2010. In Great Britain, EU policy may not have played a role as an initiator, but possibly influenced the design (vertical separation). The radical reforms of Great Britain, and their effects, have been a source of inspiration in most European Union member states, but sometimes also used as warning examples in order to oppose reforms where privatisation would be an important element. In Germany and the Netherlands, EU policy has played a role for the timing of reforms, but both countries have sought to find national solutions that avoided a full separation of infrastructure from operations. In the Netherlands, this is no longer the case, while Germany has persisted in keeping some vertical integration.

It is evident that the different tendering regimes suffer from different types of problems. In the Swedish tenders there have often been very few competing firms. In Britain the relatively long time span of the first round of franchised contracts resulted in difficulties in making correct estimates of the future behaviour of the markets and market actors. In Germany, tenders are mostly used in the local and regional markets and they have not significantly helped to diminish the deficits in the railway sector. The Netherlands has recently started with competitive tenders and their effects are so far rather limited, but problems related to NS performance have been exposed. Sweden, Germany and Great Britain have all experienced problems with winning bids that turned

out to be too optimistic, leading to service interruptions, re-negotiations and bankruptcies.

Concluding remarks

The introduction of competitive tendering has been theoretically motivated by a general belief that the private sector is more effective than the public sector and that competition fosters efficiency. Advocates of PPP solutions typically state that long-term private sector involvement like BOT arrangements offer more advantages than e.g. short-term service or management contracts. Their basic argument is that the bundling of activities in a BOT enables a private firm or consortium to optimise the total project. This is not really reflected in the policies and actions of the European Union member states and public authorities. In the case of passenger railway services, it is evident that they have been more interested in using competition either as a threat or as a mean to increase efficiency in the railway market. The number of BOT projects is very limited.

Before the reforms and deregulation of the European railway services took off, there was a widespread belief in important economies of scale in railway operations. After more than fifteen years of competitive tendering, we can note that more and more public agencies purchasing railway passenger services act as if the gains from competition are greater than any potential resulting losses of economies of scale, scope or density. There may be multiple reasons for this, such as agency costs and problems for the political system to supervise the activities of a monopoly, but also a belief that competition between several firms will still allow for economies of scale to be exploited where appropriate.

A possible increase in transaction costs has not been seen as a major obstacle for the introduction of competitive tendering or the vertical separation of the former national railway monopolies. Generally speaking, there has been a clear trend towards the use of more and more contracts to formalise the obligations of different actors in the European railway industry. However, recent research suggests that transaction costs may be higher than expected. The evidence is both theoretical and empirical. Asset specificity may have produced problems when designing the contracts in the British case. A lack of bidders (the small numbers problem) has been apparent in some countries. Contract costs seem to be inherent in the competitive tenders, in auctions as well as beauty contests. Many winning bids have been too optimistic, the combined evaluation of price and quality has often resulted in legal processes, and renegotiations have turned out to be necessary when costs and revenues didn't develop according to plans.

We see at least two major possibilities for future empirical research. Firstly, a comparative European study directed towards measuring the effects of competitive tendering and testing the relative contribution of different factors, such as network size, number of bidders, contract length, how many times the services have been tendered, type of contract (net or gross cost), upstream competitive markets or vertical monopoly, and so on. Secondly, research projects including both statistical and qualitative data, comparing railway systems using competitive tendering to railway systems using either negotiated contracts or a monopoly regime. Such a study could shed some light on the relative merits of the different regimes after nearly two decades of experimentation with railway deregulation in Europe.

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