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**THE COMPLEXITY OF MARKET STRUCTURE – PROSPECTS
FOR ON-THE-TRACK COMPETITION IN SWEDEN ¹**

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ABSTRACT

During 2009, the Swedish Government is proposing to the Parliament that the last remaining monopoly of the national operator SJ – the commercial parts of rail passenger traffic – is removed in a step-wise process 2009-2010. This would introduce the possibility of on-the track competition for rail passenger services on all parts of the network. If so, it will mark the finalisation of a process that started in 1988 with the vertical separation of railway infrastructure from operations. The critical issue is how to legislate and regulate the new railway market that will emerge in 2010-2012. In this paper, we discuss the conditions for such a reform, looking at some critical issues such as the interface between subsidised (tendered) services and commercial services, the markets for rolling stock and vehicle maintenance, and the distribution of infrastructure capacity. The first aim of the paper is to recapitulate and analyze the increasing commitment to deregulation in the Swedish railway market. The second aim is to analyze the possible options that are at hand in dismantling SJ AB's remaining monopoly rights to profitable railway lines in the inter-regional railway market and other potential sources of monopoly power. The third aim is to describe and analyze the transition from the multitude of market structures that exist today to an envisioned unified market structure after the reform. In addition, the sustainability of SJ's financial performance in a changing market environment is reviewed, finding that the influence from general business cycles may be an important factor. The paper

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also includes an overview of the experience from the previous regulatory reforms and recent changes in the competitive environment and supporting industries.

INTRODUCTION

The Swedish government is currently planning to go ahead with a step-wise nearly complete deregulation of the Swedish railway passenger industry (2009-2010, with full effect from 2012). If this takes place, it will mark the end of a process that started in 1988 with the vertical separation of track infrastructure from operations, and the transfer of responsibility for the unprofitable local and regional railway lines to the County Public Transport Authorities. These two reforms made it possible to perform the first competitive tenders of passenger railway services in Sweden in 1989-1990. These tenders concerned local and regional lines, resulting in BK Tåg becoming the first new entrant to the railway industry in 1990. For the first time in over 40 years, the state-owned incumbent Swedish State Railways (SJ) faced competition from another railway operator. Subsequently, more reforms followed that resulted in more competition in railway operations and a horizontal and vertical disintegration of the former monopolist SJ.

A current critical question is how to legislate and regulate the new railway market that will emerge in 2010-2011. The paper has three aims. The first aim is to recapitulate and analyze the increasing commitment to deregulation in the Swedish railway market, in order to provide the reader with a better understanding of the current policy problems in the deregulation process. This leads us to the two other aims of this paper: to analyze two critical problems of the next steps of the deregulation process. The first problem is how to dismantle SJ Ltd's remaining monopoly rights concerning the profitable inter-railway lines and other potential sources of monopoly power. These railway lines are the Stockholm-Gothenburg line, the Stockholm-Skåne line, the Stockholm-Dalarna line, the Stockholm-Sundsvall line, the Stockholm-Karlstad line, and the Gothenburg-Malmö line. In addition, SJ Ltd effectively holds a monopoly in the profitable railway network in Mälardalen. However, the future of this monopoly is more uncertain as it exists due to agreements with the regional transport authorities. The other sources of monopoly power that have been pinpointed during the latest steps of the deregulation process are the control of the ticketing system and the modern train sets adapted to the Swedish railway system. The second problem is how to organise the transition from the multitude of market structures that exist today to an envisioned unified market structure after the reform. Currently, the Swedish railway passenger market consists of six major sub-markets:

1. In some markets a monopoly firm decides on the number of trains and prices
2. In some markets operators compete on the track
3. In some markets regional transport authorities decides the prices of the tickets and the time tables and asks SJ to provide the services
4. In the Mälardalen region the county transport authorities have made an agreement with SJ Ltd giving the railway operator a monopoly
5. In some markets a national (Rikstrafiken) organises a competitive tenders of net contracts that includes both price aspects and quality aspects

6. In some markets regional transport authorities organise competitive tenders of (gross cost) contracts that includes both price aspects and quality aspects.²

As of today, no final model has been presented on tomorrow's railway passenger system. However, drawing from a current government report regarding all public transport (SOU 2009:39), the most probable case is that there will be a step-wise selection process starting with firms making commitments on lines that they are willing to serve without a subsidy, followed by tenders in which firms place bids on lines and networks where subsidies are deemed necessary. Numerous problems are likely to occur in the transition process; for example existing contracts and other legally binding agreements that can take decades to dissolve.

DEREGULATING MARKETS FOR RAILWAY SERVICES – SOME THEORETICAL REMARKS

The concept “deregulation” refers on the one hand to actions to privatise former state monopolies and/or to expose monopolies – formerly protected by legislation or other regulations – to competition, and on the other hand to the process that creates the new regulatory framework that will govern the deregulated market. The second aspect is often referred to as “regulatory reform”, because in many countries it is a prolonged and slow process to change the regulatory structures as old and often tacit regulations are replaced by new explicit regulations. The EU legislation in the railway sector is a good example of this, as no prior comprehensive pan-european railway regulation existed.

In an interview in the Spanish daily news paper *El País*, Nobel laureate professor Amartya Sen remarked, when answering a question on the present economic crisis, that Adam Smith explained in detail how other motives than the search for profits are important for the functioning of a market economy. Smith emphasized the need for trust, generosity, compassion, public vocation and so on (El País, 2009, p. 22). Swedish politicians and other policy makers taking part in the recent wave of deregulations seem to be in agreement with Smith. According to the Swedish politicians in power the deregulation of the railway system is deemed necessary to revitalise the public transport sector, to improve the quality of the services, to increase the efficiency of the system and to increase the number of passengers. All this will give a positive contribution to growth, employment, regional development, accessibility and environment (SOU 2008:92, p. 322).

Increased efficiency has been the principal driving force of the deregulation of the railway system in Sweden and in the EU. But there still exists a widespread disaccord among experts, politicians and other stakeholders on how the deregulated market should be organised. Some actors argue that a privatised monopoly will be the most efficient solution, other actors recommend competition in some markets to enhance the discipline of the public monopoly, other actors advocate competitive tenders or auctions to find the best operator of a railway line, and another group of actors suggest that operators can compete on the same track to provide the best service to society.

² In addition to these sub-markets one can add the mixed contracts in which Rikstrafiken and one or several regional authorities share the revenue risk with the operator, and the railway services in southern Sweden, affecting also the Öresund bridge and Själland, where a recent competitive tender was organized jointly by Skånetrafiken and the Danish Trafikstyrelsen.

The Crumbling Defences of the “Natural” Monopoly Doctrine in the European Railway Market

In the railway industry, presupposed scale economies in production, marketing, purchasing and co-ordination, and the mergers of smaller railways into bigger railways, for many decades implied that the provision of vertically integrated railway services was by definition viewed as a “natural” monopoly (see for example Beesley and Littlechild, 1992). Even Friedman (1972, p. 42), implicitly assumed that the railways were a natural monopoly when he wrote that a private monopoly of a technical monopoly, for example the railways, was better than a state monopoly or a regulation because a private firm will react faster to technical and societal change than regulated firms or public monopolies. Today, it is primarily the rail infrastructure that continues to be viewed as having characteristics of being a natural monopoly, forming the main argument for vertical separation of infrastructure from operations as applied in several European countries. However, we can note a persistent debate concerning the merits of vertical separation versus integration. Preston (1996) concluded that the economic evidence for vertical separation of railway firms is not fully convincing. He argued that there may for example be economies of scope related to vertically integrated planning of infrastructure and operations. Some researchers suggest that vertical separation should never have been applied at all because 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 (see e.g. Bruzelius, 1998). As the deregulation process has advanced in Sweden, the Government’s appointed committees have gradually changed the position on scale economies. In the final report from Kommunikationskommittén it is argued that: “For firms there are economies of scale up to a certain size of the firm. SJ has a size that is too small to fully exploit the economies of scale in both passenger and freight traffic” (SOU 1997:35), p. 162, our translation). The writers of the report also found that from a socio-economic point of view the most effective solution is that the monopolist operate the lines he find profitable and on all other lines other firms can be allowed to compete. The timing of the deregulation process on a European level has also been put forward as an argument against increased competition. In an article in the Swedish daily newspaper *Dagens Nyheter* (2007), the chairman of the board and the managing director of SJ Ltd argued against more competition in the Swedish railway system because some state owned companies (such as DSB and DB) seemed to use state subsidies to win contracts in Sweden.

One of the cornerstones of the monopoly argument is the assumption that the costs of using the market will be significantly higher than using in-house production and planning when running a railway business. 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. 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 that the actors in the emerging markets should be exposed to market mechanisms, which do not appear automatically after a deregulation, and has even been neglected in some regulatory reforms aiming at 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 same divisions as before but now in the form of business firms the learning and efficiency gains from separation could turn out to be substantially smaller than what we expect in a competitive market. 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 many firms operating in specialised markets which will result in increasing transaction costs. For example, the British railway industry was broken up into more than 80 firms. To reduce these potential disadvantages policy makers may consider to increase the size of the average tendered business operation and to construct upstream markets that are less specialised – for example by merging different activities into one market.

Some of those that oppose the idea of decreased transaction costs draw attention to 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 dismantling of a former monopoly. Yvrande-Billon and Ménard (2005) show that in the implementation of the privatization of British Rail, substantial discrepancies occurred between the length of the contracts awarded to the operators and the life-span and redeployability of the rolling stock owned and managed by the rolling stock owners (ROSCOs). This created huge differences in leasing costs between operators, with operators using lower redeployability equipment having to pay significant risk premiums compared to operators using more standardised equipment. Yvrande-Billon and Ménard (2005) claim that in order to deal with the misalignment resulting from the constraints imposed on them, parties involved in the transactions adopted a strategy oriented towards reducing the specificity of assets involved. Substantial changes in the design and construction of rolling stock were introduced aiming at increased

standardization. In doing so, the partners intended to reduce their interdependence, circumventing the problem generated by the mode of organization imposed on them.

Organizing the Deregulated Competitive Railway Markets

The deregulated European passenger railway markets have typically involved the introduction of public procurement of railway services by means of competitive tendering, also known as a franchise bidding framework (as originally developed by Chadwick in the 1850s, followed by Demsetz (1968), as an alternative to regulation of natural monopolies). For example, this was the case with the British deregulation in 1993-94 and the Swedish deregulation starting in 1989. However, Britain and Sweden used competitive tenders to select an operator in radically different ways (Alexandersson and Hultén, 2006b). In the British case, operators competed to win the right to operate a whole network using a net cost contract. In the Swedish case, operators competed either to run a network under a gross cost contract or to run a single or a only a few railway lines under a net cost contract.

In a competitive tender, a firm or a consortium makes promises about supplying a service at a defined quality level in return for either a subsidy or against payment. This procedure shows a strong resemblance 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 notable risks and potential disadvantages.³ 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) 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. An open English auction, in which

³ This paragraph draws from Alexandersson and Hultén (2006a)

the bidders continuously follow the bids of their rivals, may on the one hand stimulate aggressive bidding and decrease the risk of too optimistic bids and the related winner's curse (Milgrom and Weber 1982), but may on the other hand increase risk of collusion (see e.g. Robinson 1985).

In the coming years we will see two new types of competition in the European railway market. The first new type of competition is competition on-the-track on international lines based on the cabotage principle. This will make it possible for operators running railway lines between at least two EU member states to pick up passengers at every stop along the line, including stops in the foreign countries without having to sign agreements with local operators. The Thalys system that connects Paris, Brussels, Cologne, and Amsterdam has been functioning a bit like this, but only in accordance to an agreement signed by the four countries on how to share the revenue. The second new type of competition is competition on-the-track between operators in a national market. Used already to a limited extent in Great Britain, the regulatory framework for this kind of competition is currently being drawn up in Sweden. These two market types are quite different from the auction model or the beauty contest model. They resemble more normal competitive markets in the transportation industries, for example the airline market or the long-distance bus market.

The four different market structures that have been used or are planned to be used in the European market rest on different perceptions on how to optimise the functioning of a railway network (table 1). The competition on-the-track model emphasizes the benefits having competition as a driver for increased efficiency and meeting the demands of passengers. However, it assumes that network externalities and scale economies are becoming less important in the increasingly Europeanised and deregulated railway market. The advocates of the monopoly model argue that the railway continues to be a natural monopoly industry due to economies of scale and scope and network externalities. The competition for-the-track models lean towards the assumption that competitive tenders can combine the benefits of competition and allow operators to exploit economies of scale and coordinate the services in a long-term perspective. The competition on-the-track model has hitherto not been put to test in any modern European market. In many markets there are overlaps and what can be labelled "accidental competition" between inter-regional and regional operators charging different prices for trains running on the same track. The British bus deregulation of the mid 1980s resembles to a certain extent the on-the-track model currently being planned in Sweden. Several studies showed that the British bus market lost more due to lack of coordination between bus operators than it benefitted from competing companies offering a more customer-oriented product (see for example Mackie, Preston and Nash, 1995, for a review). On the other hand, studies of the deregulation of long-distance bus services and European air travel have found less negative and more positive effects (see for example Bergman, 2002).

Table 1: Underlying assumptions on the relative importance of coordination and flexibility in the deregulated European railway markets

	Private monopoly	Sweden (1988-2009)	Great Britain	Sweden (2010-)
Market orientation and flexibility of operations	Moderately high	Moderately high in monopoly network, relatively low in CPTA market	Moderately high	High
Economies of scale	High	High in monopoly network, lower in all other networks	Relatively high	Low
Time table planning	In the hands of monopolist	In the hands of public agencies: CPTA or Banverket	In the hands of the operator	Market driven
Network externalities	Very high	High	Moderately high	Not important

SLOW HISTORY: THE SWEDISH DEREGULATION PROCESS 1988-2008

There is an important pre-history of Swedish railway reforms beginning already in the 1960s, but the Transport Policy Act of 1988, with its ground-breaking 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 characterized by decentralization and intra-modal competition.

The Transport Policy Act of 1988 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 transform into a train operating company, paying charges for using the tracks (based upon marginal costs for maintenance). Prior to separation, SJ suffered from trying to perform services on a network that was under-capitalized. Once a line started to make losses, infrastructure investments typically came to a halt. For the state, it was difficult to grant more money to SJ, partly because it could be seen as unfair from the view of other transportation companies, and partly because it was difficult to monitor how SJ actually spent the money. Setting up the national authority Banverket made it easier to increase public spending on the railways, since all the money was channelled to a national authority rather than to a specific operator in the transportation industry. The split included an agreement implying that the state committed itself to spending at least 1 billion SEK per year on infrastructure investments while SJ would concentrate on becoming an efficient railway operator. Infrastructure investments were to be evaluated by means of socio-economic calculations. Among its several other components, the Act also marked a general policy step in the direction of extending the responsibility of the County Public Transport Authorities (CPTAs) – established in 1979 to coordinate regional public bus services – into the unprofitable regional railway services, inspired by some early cases where this

had been tried. In return, the CPTAs were compensated by state subsidies equalling SJ's operating deficits on these lines, and the rolling stock was also transferred to the CPTAs.

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 decentralized 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. This made it natural to use competitive tendering also of regional railway lines. The result of this policy change was the entry of competitors to SJ starting with BK Tåg in 1990, becoming the first entrant for more than 40 years.

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. At the time, there was a perceived fear among many politicians that SJ's power on the transportation market could become too strong, especially since SJ's management had been unwilling to concentrate on the railway services, keeping SJ a much diversified transportation conglomerate. After a shift in power in Parliament in September 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, instead of simply transferring subsidies to SJ every year to cover the deficits. In 1992, building on the experiences of regional services, a regulatory change made it possible for the state's negotiator to use competitive tendering for subsidized inter-regional services from 1993. While the local tenders were for gross-cost contracts, i.e. the operator got no revenues from ticket sales, the tenders of inter-regional services presupposed net cost contracts. The bidding firm has to project both the costs and the revenues from fares during the contract period and generally has more freedom to influence the services than under a gross-cost contract. Moreover, in order to get access to several common functions and to necessary rolling stock, the new operators bidding for these contracts had to reach an agreement with the former monopolist, SJ. For several years, these tenders involved much negotiation and whenever competitors appeared, SJ commonly reduced its own bid during this process in order to keep other operators from entering the market. It took until 1999 before other firms than SJ were able to win a contract. By that time, several of the railways' common functions had been removed from SJ and a proper price-list of vehicles had been established by the procuring authority and the government.

In 1993-94 several reports looking into the feasibility of deregulating the whole network followed, coupled with a fierce political debate. In May 1994, a bill on a far-reaching deregulation was passed in Parliament, despite strong opposition from the Social Democrats, the left-wing party and the railway unions. Unsurprisingly, when the Social Democrats regained power in Parliament through the election in September the same year, the deregulation of the railways was quickly postponed.

A less radical reform came into effect in July 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 Train Traffic Control unit within Banverket monitors has come to monitor all train movements on the Swedish railway network. All the wishes of the operators are coordinated with the objective to find solutions that meet these wishes in the best possible and non-discriminatory way. Due to track capacity constraints on a large part of the network, Banverket actually allocates planned delays compared to the shortest possible time needed for a particular transportation. The end result of this process is the granting of certain timetable positions (“slots”) to each operator, and the production of a corresponding national timetable. 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 and further increasing the practice of competitive tendering. In these years investments in the infrastructure increased significantly. During the recession years 1993-94, a political decision was made on increasing public spending on infrastructure investments to about 3 billion SEK per year. The real investment figures became substantially higher and reached nearly 10 billion SEK in 1995.

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, was established. The authority took over the tasks of the former state’s negotiator, becoming responsible for competitive tendering of unprofitable inter-regional services (including all modes of public transportation), aiming also at better co-ordination with the CPTA-tendered services. The basic model of competition used by Rikstrafiken is competition “for the tracks”. Once a contract has been won in a tender, the winning firm becomes the sole provider of the specified services during the contract period.

The CPTAs further increased their role in the railway market by buying new rolling stock or taking over the ownership of former state owned rolling stock. In 1999 a group of CPTAs became owners of Transitio a rolling stock company created by Adtranz in Sweden.

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 organizational 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 (Jernhusen), maintenance (EuroMaint and Swemaint) and other businesses. Two divisions, TraffiCare (cleaning services) and Unigrind (computer information systems), were fully privatized a few months later. The leasing contracts for the rolling stock were kept in Affärsverket SJ (ASJ), the remains of the business administration SJ. Gradually SJ Ltd has paid the leasing contracts and taken full ownership of the majority of the rolling stock. An important part of the rolling stock controlled by ASJ is leased out to the operators winning Rikstrafiken’s tenders. Consequently, ASJ in several respects functions as a rolling stock company. In 2007 EuroMaint and Swemaint were sold to private investors. Jernhusen, is still owned by the state, the company owns 150 railway

stations and is also the primary owner of buildings used for maintenance of rolling stock.

The taking apart and privatization of SJ is summarized in Figure 1, also including some of the previous divestments and separations from the business administration SJ. The most important of the earlier divestments were the sale of ASG, Sweden's biggest forwarding agent, in 1995, and Swebus, Sweden's biggest bus operator, in 1996. The figure also shows the current situation regarding which organisations that are now privatised or still state-owned.

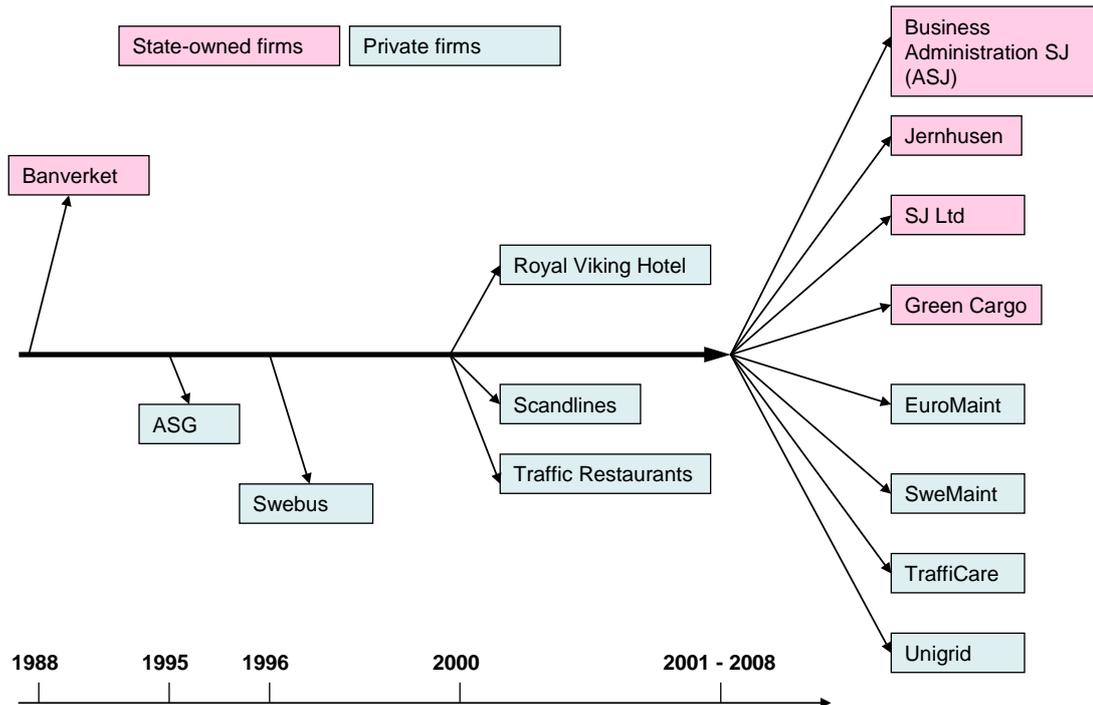


Figure 1: The separation of the business administration SJ 1988-2008

After the Bill of 2000, the process of regulatory change in the Swedish railway sector slowed down during the next eight years. The Social Democrat government was unwilling to allow competitors to enter SJ Ltd's profitable lines. In 2003, the state had to intervene by means of transferring a substantial amount of money (1.8 billion SEK) to SJ Ltd from other state-owned companies in order to avoid bankruptcy and increased its borrowing rights at Riksgälden from 1 to 2 billion SEK. It had then become clear that the breaking-up of SJ into several separate companies had been an under-financed reform, but also that several of SJ's contracts for regional and inter-regional passenger services were highly unprofitable due to the fact that SJ had won the tendered contracts with too low bids (Proposition (2002/03:86)).

The reforms in the following years focused on modernizing laws and regulations to achieve a regulatory framework in line with European Union directives. Following the European Commission's first railway package, in 2004 a new Railway Act (2004:519) and Railway Regulation (2004:526), which regulate the access to the state's railway infrastructure and the right to run railway services. A new Swedish Rail Agency was

established formed out of the old Railway Inspectorate. The authority has taken over the tasks concerning safety in the railway, underground and tram systems. It has also been assigned new tasks, such as monitoring that the fees charged for the utilization of the railway infrastructure are determined in a competition-neutral and non-discriminatory manner. The same goes for capacity allocation and provision of services. Any operator wishing to operate train services on the Swedish rail network needs to apply for a license from the Rail Agency.

In 2007 SJ Ltd lost its monopoly on night trains and on charter trains. These changes constituted a first step towards new competition on the track based on market principles without subsidies. In 2008, the counties in southern Sweden got the permission to operate trains across the county barriers.

Currently, eight passenger railway companies use the Swedish state's rail infrastructure, the state-owned company SJ Ltd is still the dominant operator (table 2).

Table 2: Turnover for the most important railway passenger operators in the Swedish market 2001-2006

Company	Turnover per annum (million SEK)					
	2001	2002	2003	2004	2005	2006
SJ Ltd (excl Stockholmståg)	5546	5711	5524	5241	5690	6233
A-train	315	341	359	402	441	469
Connex/Veolia	134	134	215	387	387	388
Tågkompaniet	378	399	242	154	225	246
Roslagståg			163	168	176	187
BK Tåg	177	165	177			
Citypendeln/Keolis	921	1027	1069	1077	1126	564*
Stockholmståg						705*
Merresor			8	26	121	164
Total	7471	7777	7757	7355	8166	8956

*6 months operations

The transportation volumes (in terms of passenger kilometres) have increased by more than 40% between 1990 and 2003. Looking closer at the development since 1995, it is clear that no other mode has experienced a stronger growth in terms of passenger kilometres. Behind an 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). During the whole deregulation period 1988-2007 we have seen an increase from 6.5 billion to 10.3 billion passenger railway kilometres, (Alexandersson and Hultén, 2009).

This impressive development has certainly come at a cost, as the Swedish state's net costs for the railway sector increased from 2.4 billion SEK in 1988 to 16.6 billion SEK in 2008 (in current prices). This (somewhat preliminary) cost calculation includes all payments from the state to the railway sector and all revenues from the railway sector to

the state (except taxes). Included in the revenues and payments are the annual losses or profits of SJ and the related state-owned companies (figure 2).

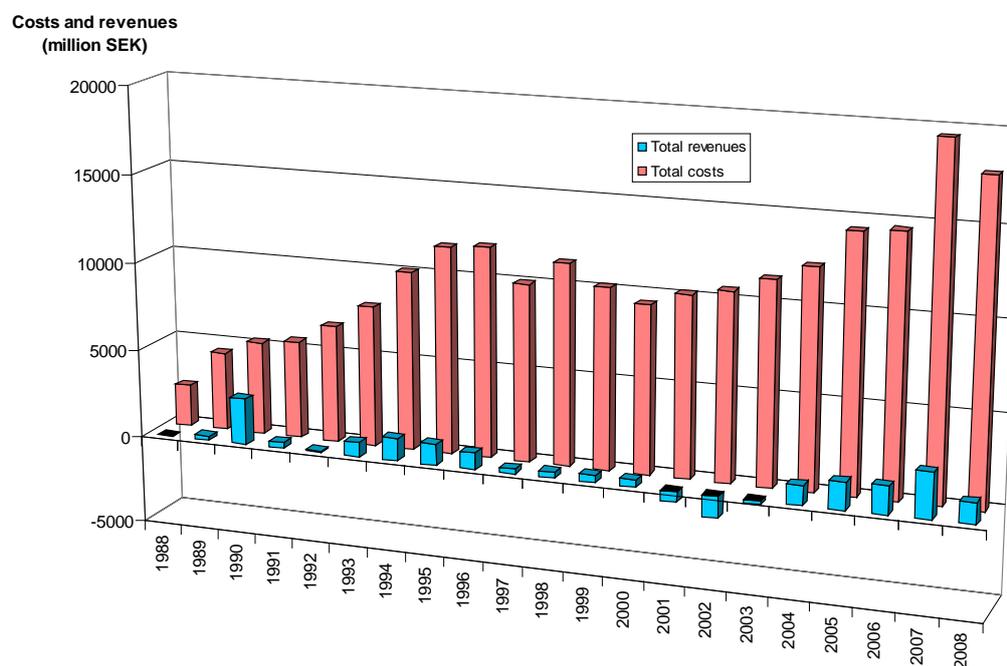


Figure 2: Cash flow between the Swedish state and the railway sector 1988-2008 (current prices)

Summary of the process 1988-2008

When the deregulation process started the politicians intended that SJ should become a profitable railway operator if the state took responsibility for the infrastructure. 20 years later the initial calculation that an annual cash injection of 1 billion SEK should be enough to get a sustainable railway system has proven to be much too optimistic. The costs have spiralled and the involvement of the state and the political system continues to be on the increase. Instead of a monopoly operator handling the state's interests in the railway sector, the state and regional political institutions manage an increasingly complex system, which has also come to be affected by increasingly ambitious goals.

As should be apparent from our case story, the state continues to be a very important actor in the Swedish railway sector and has a number of roles related to railway and transportation policy issues. The state is the owner of SJ Ltd, ASJ, Green Cargo, Jernhusen, and other companies, with all the responsibilities following from ownership. The state is also responsible for investments and maintenance in railway infrastructure through Banverket and for auditing, safety and regulatory issues through the Rail Agency. The role as owner also has to be combined with the role as the entity responsible for setting up the basic conditions for competition and operating firms in society, in this case the rules of the game in the railway market. In addition to this comes the role of forming the long-term national transport policy.

FAST HISTORY: THE RADICAL REFORMS OF 2009 AND 2010

The deregulated railway system that has evolved from 1988 to 2008 regarding the Swedish passenger services has increasingly become questioned by several actors in the market and by politicians in power. The widespread use of gross cost contracts are assumed to erode profitability of the industry, due to a too strong focus on the cost side and a race to the lowest price the companies are prepared to offer. In some cases this cost focus may even provide a disincentive to increase patronage, since more passengers may lead to increased costs, for example for cleaning and collecting ticket payments. Net cost contracts dominate in the procured long-distance passenger rail services. They give the operators a higher degree of freedom in running the railway services and give more leverage in balancing costs relative to revenue. The CPTAs and Rikstrafiken have often been criticized to lack sufficient competence as procurers, which can explain questionable outcomes in some tenders and even post-tender renegotiations. In some cases big firms seem to have undermined the system by means of placing strategically low bids in order to force smaller competitors to leave the market. Sometimes, miscalculated bids have won tenders only to incur serious problems for the winning operator. Firms that have lost competitive tenders have on numerous occasions claimed that winning firms either cross-subsidize from more profitable contracts or – in the case of state-owned firms – use public subsidies to win contracts. A general problem today is that almost all tenders are challenged in court by one or several of the losing bidders. This adds cost to the whole procurement process and may delay the start of new traffic contracts. The CPTAs have sometimes expressed their discontent over the limited possibilities to weigh in on “soft” factors in the selection of the winning bid, as well as the difficulties to renew the contract-period with a company that has served well but may not have presented the lowest bid. Towards the end of a contract period the staff of a company running a certain service may experience a lack of job security (since they do not know if their company will continue its services), affecting their commitment to the job.

These problems and increasing subsidy levels for public transportation in general combined with the current right-centre Government’s strong belief in market liberalisation has opened up for a radical regulatory change of nearly all parts of public transport. Two Government committees, one for public transport in general and one for the passenger railway sector, have presented their proposals in 2008-2009.

The report (SOU 2009:39) from the Government committee investigating the whole public transport sector proposes changes in terms of market entry that will affect railway services but also (and not least) local and regional bus traffic, aviation and maritime traffic. The head of the committee suggests (in a so-called traffic declaration model) that public transport supply plans shall be drawn up and revised once a year by transport authorities, inviting private transport operators to suggest what kind of traffic they are willing to run under commercial terms. Traffic not offered commercially, but still believed to be necessary, will be tendered. The head of the committee also thinks that the traffic authorities of today (often performing their responsibilities through limited companies) need to be reshaped into new regional public bodies (Lundin, 2009).

When the current model of provision and procurement of public transport services (for both bus and rail and other modes) is replaced, the committee believes that the new system should be adapted to the forthcoming regulatory framework as decided in the EU, i.e. the regulation 1370/2007 on public transport by rail and road, which will get

legal status in Sweden towards the end of 2009. This will primarily have consequences for how contracts are agreed upon and what type of contracts to use for the part of traffic where public procurement and subsidies are needed. The EU regulation presents three options for public transport authorities when it comes to the provision of public transport services (Van de Velde, 2005).

1. Providing them by themselves on their own account
2. Direct award to a subsidiary company, or
3. A competitive tendering procedure

The head of the committee believes that it is by means of a competitive tendering procedure that society should secure its complementing traffic needs, which is to be defined in a traffic plan and be run in accordance to a public transport obligation. After the tender, the responsible authority will award the winning transport operators contracts to perform public transport services by means of service concessions (i.e. not service contracts). These concessions may imply an exclusive right to run traffic along certain lines. With the new EU regulation, the use of concessions is regulated and thereby this will provide guidance for the new procurement system. The regulation says that the competitive tendering procedure should be open for all companies, be fair and follow the principles of transparency and non-discrimination, but is also granting traffic authorities flexibility on how to perform the tenders. The regulation does not include any list of criteria to be fulfilled for the authorities when awarding the contracts on public transport services.

While the aforementioned proposals (which have yet to translate into any official Government bill) is covering the whole public transport market and in particular the interface between commercial and subsidised services, the regulatory reforms regarding commercial train services have progressed further. By means of a government committee proposal from the fall of 2008 (SOU 2008:92), and a related Government bill in the spring of 2009 (Proposition 2008/09:176), the remaining SJ monopoly on long-distance passenger services will be abolished step-by-step, starting with journeys offered during weekends (Friday-Sunday) already in July 2009 (provided that ad-hoc capacity is available). In addition, limitations may be introduced for the CPTAs' abilities to steer what kind of traffic to run in each county, as the idea is to have commercial actors getting increased freedom to run railway services. Only services unable to run on a commercial basis, but believed to be truly necessary to keep, will be tendered. These proposals may be seen as an adaptation of all domestic passenger services by rail to the commitment of Sweden to open up the market for international passenger services by 2010 in accordance to the so-called market-opening directive (2007/58/EC) following from the third railway package. The ultimate goal of the Swedish proposals for the passenger railway market is to create a general system with competition on the track, where operators may be free to enter and exit the market much like in any other competitive market. Consequently, all operators willing to run trains commercially on the Swedish railway network will have the opportunity to do so – as long as capacity is not a constraint. However, track charges will vary according to e.g. how attractive a certain departure time is for potential operators. In order to break ties when firms apply for the same slots, comparisons of their respective "socio-economic efficiency" will be applied, at least until a proper auctioning system is implemented. Taking timetable planning into account, the market would in practice not be completely opened before the end of 2012. It remains unclear to what extent entrants will be

allowed to compete on the Arlanda Airport line (private monopoly) and on lines and networks where operators are running services under net-cost contracts.

The shift from the present system (early 2009) consisting of a mix of procured railway services on unprofitable lines and a monopoly on profitable lines to the envisaged system with competition on the track requires that two parallel processes are completed successfully. The first process described above simply consists of allowing firms to compete on increasing parts of the network. The second process covers the reconfiguration of all the supporting activities required for competition on the track.

We saw in the case history of the Swedish deregulation from 1988-2008 how the legislators have moved resources, competencies and property rights from SJ to other actors in the market. Despite of these conscious efforts a lot of work remains to be done to have a competitive market.

One of the biggest remaining issues is access to rolling stock. SJ Ltd owns a big fleet of modern train sets designed for the Swedish railway network. In addition, the CPTAs directly or indirectly through their rolling stock company Transitio also own modern train sets that can be used in interregional railway services. However, these train sets can only be used during weekends, when the CPTAs operate fewer trains than on weekdays (Hellsvik, 2009). It is probable that access to competitive rolling stock will make it difficult for start-ups and other entrants to compete with SJ Ltd on equal terms. One possibility to provide access to rolling-stock on equal terms would be to transfer the ownership and liabilities of the remaining parts of SJ Ltd's rolling stock to the state-owned rolling stock company ASJ. This entity today owns most of the rolling stock used in the railway passenger services procured by Rikstrafiken, some discarded railway coaches from SJ Ltd as well as a substantial amount of rolling stock used in freight operations. The draw-backs with this solution are that SJ Ltd will lose control of one of its most valuable assets and that the state will directly control an even bigger part of the railway market.

Another major issue is the booking and ticketing systems. The market leader today is Petra, owned by SJ Ltd, and the question is if Petra should become the standard in the deregulated market and made available to all other operators, or if the operators will have the right to use the booking and ticketing system they consider meet their requirements. If Petra becomes the only standard it will restrict the actions of the competitors in the future market. If Petra continues to be a proprietary standard of SJ it will give the operator a strong bargaining position against operators that are unwilling to develop their own booking and ticketing system. It is foreseen that this problem will be treated in a future Government bill. One related problem is the interconnected nature of the time-tables of all Sweden's public transport systems. This system was created to make it easier for passengers to travel from one place in Sweden to another with a minimum waiting time when moving from for example one transport mode to another or from one railway line to another railway line. If a "national time-table" is supposed to function as before it will severely restrict the freedom of action of the actors in the passenger railway market.

A third issue is the maintenance of the rolling stock. When the business administration SJ was dismantled, most of the buildings used for maintenance of rolling stock was handed over to the state-owned company Jernhusen. This company has now become a near monopolist in the market for these kinds of buildings. Maintenance firms and

operators that want to service and repair rolling stock are more or less forced to use Jernhusen's buildings. This issue was discussed in the Government's rail investigation committee in 2008 (SOU 2008:92) and is currently being evaluated by the Ministry of Enterprise, Energy and Communications.

A fourth critical issue is how to allocate time slots to interested operators. It is envisaged that administrative coordination will continue to play a role but that economic principles will be allowed to play a more important role in the future. It is not yet decided how the time-table slots will be allocated using economic selection methods. As mentioned above, evaluations of socio-economic efficiency will play an important role in the beginning of the market opening process, but later on it is foreseen that monetary concerns will dominate, for example by means of auctions. The underlying assumption for a widespread use of auctions is a belief that market actors will behave intelligently once they get control over valuable time-table slots and fully utilise these assets. Consequently, this will translate into improved socio-economic efficiency. Most significantly, the National Rail Administration would like to see a more efficient use of time-table slots in peak hours.

Table 3 below summarizes the goals of the reforms and the fundamental changes that took place in the railway industry from 1988-2009.

Table 3: The Goals of the Reforms and Institutional Changes 1988-2009

	1988	1994	2009
Important institutions and regulatory bodies	Banverket , CPTA, SJ	Banverket, CPTAs, Railway Inspectorate	Banverket, CPTAs, Rikstrafiken, Railway Agency
Responsibility for the common functions	SJ	To be provided by SJ at prices equivalent to internal costs	To be provided by Banverket or by firms operating in markets
Providers of rolling stock	SJ	CPTA, and at market prices by SJ	CPTAs, rolling stock companies, Rikstrafiken and railway operators
Responsibility for time tables and other logistics	SJ	SJ manages the train control function	Banverket
Goal of the reforms	SJ to become profitable	Competitors to enter in niche markets. SJ to become more efficient	Complete deregulation, industry efficiency
EU deregulation	Not started	Directive on the (account) separation of infrastructure from railway operations	Deregulated freight traffic from 2007 Opening of competition on international passenger lines from 2010 (incl cabotage)

ANALYSIS: THE TRANSITION FROM A MULTITUDE OF MARKET STRUCTURES TO A MORE UNIFIED MARKET

The present partially deregulated Swedish railway passenger market is constituted by many different types of markets – from monopolies on commercially attractive lines and networks to competitive tenders for the track for loss-making lines using either gross cost or net cost contracts and competition on the track of commercial lines. This system is now intended to be reshaped into a more unified model with market actors competing to operate commercially attractive slot times, lines and networks, complemented by competitive tendering of all the railway operations deemed unprofitable by market actors but socio-economically valuable by society (table 4).

Table 4: Regulatory structure of the Swedish railway sector in 1988, 2008 and the projected structure after new legislation

Part of market	1988	2008	2010-2012
Regional (non-profitable)	SJ holds monopoly and receives subsidies	Procurement of gross cost contract by competitive tendering (competition <i>for</i> the tracks)	Procurement of net cost contracts by competitive tendering (competition <i>for</i> the tracks)
Regional (profitable)	SJ holds monopolies	A-train has a monopoly on the Arlanda line. SJ has a monopoly contract in the Mälardalen region	Competition <i>on</i> the tracks
Inter-regional (non-profitable)	SJ holds monopoly and receives subsidies	Procurement of net cost contracts by competitive tendering (competition <i>for</i> the tracks)	Procurement by competitive tendering (competition <i>for</i> the tracks)
Inter-regional (profitable)	SJ holds monopoly	SJ holds monopoly	Competition <i>on</i> the tracks

There are a multitude of options to open up SJ Ltd's remaining monopoly rights to provide inter-regional passenger railway services. Three broad solutions are feasible: 1) the monopoly rights are in fact property rights held by SJ Ltd; 2) all lines, profitable and unprofitable, will be tendered and the best bid gives a monopoly to the winning firm; and 3) all time-table slots on all railway lines are auctioned to competitors in the market. If the monopoly rights are considered to be property rights held by SJ, then the Government must ask the former monopolist to divest these rights in return for compensation. In this scenario it is probable that SJ will have a say in how the monopoly rights are distributed in the market. However, it is very likely that the Swedish Government will take the position that SJ Ltd has no such property rights.⁴ In such a case the Swedish Government can choose between a set of different deregulation options. If the Government prefers to continue along the lines of competitive tenders it can choose a competitive franchising procedure similar to the British deregulation. Firms will then make bids for networks, lines or slot times. The bids may contain cash payments and quality aspects or quality aspects only. Such a tendering procedure could

⁴ The Government (SOU 2008:92, p. 327) put it succinctly in the committee directives: "The point of departure is that SJ Ltd's exclusive right to operate on railway lines is abolished" (our translation)

be administrated by Rikstrafiken, now having a solid experience handling competitive tenders. The third possibility is that the Government organises auctions of all the time slots in the whole railway network. Firms can then make bids on the lines they are interested in and make commitments on the quality, number and length of trains they intend to use if their bid wins. The third possibility currently seems to be the preferred long-term solution, but comes with a catch: firms may have to repeatedly apply every year (or even more often) where they want to run commercial services, since this would be closest to a model of true on-the-track competition.

Regardless of the solution that is selected, this process of making the most of the market has to be complemented by a new wave of competitive tenders for all remaining networks, lines or time slots that are considered socio-economically important but regarded as non-profitable by the railway operators.

Before the first round of the market selection process it is important to define a model and criteria to allocate capacity and enforce an efficient operation of the entire railway network to avoid the creation of bottlenecks. The Swedish railway network is increasingly marred by capacity problems on many lines, in particular during rush hours in the vicinity of the bigger cities. Lessons from Great Britain have shown that competitors using the same track may lead to sub-optimisation of the use of the railway line by operating too short trains, which will create bottlenecks and quality problems for the passengers (Nash and Matthews, 2003). The Swedish railway network has experienced similar problems when the traffic control has been forced to use administrative routines to decide if a high speed train or a regional train has priority on a line with limited capacity.

The transition from the old fragmented system to the new unified system clearly presents many obstacles and stumbling-blocks. A first problem is timing. A large number of contracts will not expire for many years to come. This will make it difficult to organise the new selection model in a comprehensive way, because many contracts effectively give monopoly rights to the contracted operator. If these monopoly rights are infringed, a contract holders may demand compensation or make the contract null and void if he makes losses on the contract. Timing in terms of the business cycle may also determine if the planned deregulation will be successful or not. If the demand for railway passenger travel slows down as an effect of the current recession, it will create significant problems for all operators in the deregulated railway market. A second problem is misalignment, an arrangement in which the characteristics of the mode of organisation (time span of contracts) do not fit the attributes of the transaction it organises (time span and costs of commitments). All future contracts can be expected to be renegotiated every year or after a few years, but the commitments of the entrants will be much longer. This will make it difficult for entrants to compete on equal terms with the incumbents – most importantly SJ Ltd – because entry and exit will be costly. The Government committee as well as the Government itself are aware of this and have suggested that common necessary functions, for example ticket systems, are being made accessible on equal conditions. However, access to rolling stock will be a much more difficult problem to solve. In Great Britain the railway operators winning the contracts became monopolists for at least seven years and nevertheless problems occurred in the supply and pricing of rolling stock. Swedish rolling stock continues to follow Swedish national standards, although newer vehicles (X2, X40, X60 and Regina) may be easier to trade in second hand markets. Another option to provide operators with rolling stock on equal terms would be to create a true state-owned rolling stock company, for

example by transferring the ownership and liabilities of the remaining parts of SJ Ltd's rolling stock to the state-owned company ASJ. However, there are many draw-backs with such a solution, for example that SJ Ltd would lose control of one of its most valuable assets, that the state would take charge over rolling stock development and that the state would directly control an even bigger part of the railway market. A third problem is the risk of strategic behaviour from oligopoly firms. This can take many forms, one extreme being firms promising to serve more destinations without subsidies than commercially feasible, and the other extreme being firms engaging in cherry picking, leaving the state and the regional transport authorities the cumbersome task of adding lines and departure times to get a viable railway network. The problem is that no one is in a position to know how firms will react in the new market context. The Government tends to argue that more rather than less railway connections will be operated commercially after the deregulation (SOU 2008:92, p. 329). The Government committee considered it likely that the enhanced possibilities to operate commercially should stimulate the railway market actors to more entries and increased attention to running commercial services instead of operating railway services with gross or net cost contracts (SOU 2008:82, p. 309). A fourth problem is the risk of comparing and selecting among offers that are inherently difficult to compare. One of the key arguments for the new regulatory system – competition on the track – is that it will introduce more competition and market activities to the railway passenger market. But what may happen is that operators offer to serve markets in so dramatically different ways that it will demand much more competence from the procuring authorities than the current system of competitive tendering. This is due to the fact that in the system used at present it is the authority describes the services to be provided, while in the system envisaged for the future the operators (which may have very different characteristics) will describe the services they would like to operate.

CONCLUSIONS

The Swedish passenger railway market seems set to take further steps towards deregulation in the near future. Railway operators will be given the right to compete directly on the tracks and hopefully this will lead to a higher level of service quality to the passengers at a lower cost for society. The belief is that competition in the market will provide a more efficient railway system than the historical model with monopoly rights held either by firms or public agencies. The new system will replace not only SJ Ltd's nation-wide monopoly on the commercial long-distance lines but also the regional monopolies held by the CPTAs when railway operators deem commercially railway services viable.

Let us conclude this paper by comparing the perceived disadvantages of the current system for procurement with the potential risks of the new competitive system (table 5).

The procurement system of today is considered to be problematic and non-optimal for many reasons. The use of gross cost contracts erodes profitability of the industry, and may even provide disincentives to increase patronage if more passengers only lead to increased costs. Both the CPTAs and Rikstrafiken have received criticism for lacking competence as procurers. This questioning of the authority of the procuring agencies have led to post-tender renegotiations and that almost all tenders today are challenged in court by one or several of the losing bidders. The most critical issue is the weight given to price (the level of subsidy) in comparison to qualitative factors. The result is that it

takes more time to carry out tendering procedures and that the whole procurement process has become more expensive. A further problem is that many tenders see only a few competitors (in some cases only one bidder) which raise concerns for the efficiency of the market process. The appearance of too low bids has also created major problems for the procuring agencies and the passengers, when operators go bankrupt (BK Tåg and Sydvästen) or under-supply compared with the agreement in the contract.

We have pointed out four problems with the envisaged new system, timing, misalignment, strategic behaviour and incomparable bids. Timing is a problem because a large number of contracts will not expire for many years to come and this will make it difficult to organise the new selection model in a comprehensive way. If attention is not paid to the monopoly rights of a contract holder, legal problems such as renegotiations of or reneging a contract can occur. Misalignment will probably become an issue because all future contracts will be renegotiated annually or after a few years, but the commitments of the railway operators will be much longer. This will make it difficult for entrants to compete on equal terms with the incumbents since entry and exit will be costly. Strategic behaviour from oligopoly firms can take many forms – with firms promising to serve more without subsidies than commercially feasible or firms engaging in cherry picking. The fourth problem or risk is that operators offer to serve markets in so dramatically different ways that it will demand much more from the procuring authority than the current system with competitive tendering.

Table 5: A comparison of the problems and opportunities in the current railway passenger system and the system envisaged for the future

	Current system with parallel market structures of monopoly and various procurement models	Envisaged system with a sequential selection process of on-the-track competition followed by procurement
Misalignment	Entrants have been at a disadvantage in getting access to many functions such as rolling stock	The contract length will be sometimes be so short that it will be extremely risky for an entrant to invest in new rolling stock
Strategic behaviour	Strategic bidding to win contracts from financially weaker competitors	Risk of either too aggressive or too soft commitments
Timing	Early long-terms agreements (pre 1988) between CPTAs and SJ have given SJ a strong bargaining position when the CPTA wanted to introduce competitive tendering	Breaking of contracts not due to expire for many years will be costly. The down-turn in the business cycle may lead to economic problems for the operators
Bid comparisons	Increasing number of legal battles	Will probably demand even more competent analysts and time-consuming comparisons
Market competition	True competition has been nearly absent in many tenders, leaving the former monopolist SJ in a strong bargaining position	Will hopefully be stronger than in the new system as Sweden becomes the one of the most deregulated markets in Europe

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