

THE LIBERALIZATION OF RAILWAY PASSENGER TRANSPORT IN SWEDEN – OUTSTANDING REGULATORY CHALLENGES ¹

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ABSTRACT

Railway reform in the European Union proceeds on the assumption that continued introduction of more competition by separating parts of incumbent national railway monopolies will increase welfare in the railway sector by delivering more attractive services and prices. This reform process, however, runs in different directions and in different speeds in the member states. Sweden's Parliament recently removed the last remaining exclusive rights of the incumbent. Entry and the possibility of on-the track competition also for rail passenger services on all parts of the network will now become feasible. These reforms place Sweden in the frontline of reformers trusting that the new market organisation will deliver the desired results. The purpose of this paper is to describe this focus on deregulation and market opening. The paper also addresses four critical issues for the success of the reforms; the allocation of infrastructure capacity, the provision of maintenance and terminal facilities, the access to rolling stock and the provision of information and ticketing to travellers. The analysis points to a number of challenges which probably will have to be tackled by legislators. The analyses of the challenges are partly similar to analyses of previous reforms in other countries.

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1. INTRODUCTION

Sweden's regulatory reforms in the railway sector started in 1988 with the vertical separation of track infrastructure from operations, and the transfer of responsibility for unprofitable local and regional railway lines to the Public Transport Authorities (PTA) of the counties. These two initial changes made it possible to tender the first non-commercial contracts in 1989-1990. Subsequent reforms have increasingly divested the incumbent of its non-core business and freight operations have been liberalized. As a result, Sweden's railway market now comprises five major segments:

1. The commercial (long-distance) passenger services, where the incumbent SJ AB's monopoly control is about to be abolished.
2. The freight market, which is open for entry.
3. Most non-commercial (regional) services, which are tendered by regional PTAs, mostly using gross-cost contracts.
4. The *Mälardalen* region where several PTAs have jointly made an agreement with SJ AB, giving the railway operator a monopoly also for some non-commercial services within this particular region. These trains provide services both to regional markets and to long-distance commuting to the greater Stockholm region.
5. Some non-commercial long-distance services, which are tendered by a national public transport authority (formerly *Rikstrafiken* now the Swedish Transport Administration) using net cost contracts.

In the most recent reforms the Swedish government has taken several steps towards a nearly complete deregulation of the country's railway passenger industry, with full effect from 2012. The purpose of the present paper is to present the particulars of the upcoming market opening and to identify critical issues for the success of this completely deregulated railway market. The analysis focuses on four critical issues for the functioning of a market with significant infrastructure elements; capacity allocation, terminal and maintenance services and facilities, rolling stock and information and booking services. The claims to originality in this paper are limited to the adaptation of the analysis to the idiosyncrasies of the Swedish reform.

Sweden's market will differ from for instance Germany's with respect to the position of the incumbent. While Sweden's railways are strictly vertically separated, Germany's incumbent is part of a company which comprises responsibility for infrastructure, freight as well as commercial and non-commercial passenger services under a holding company umbrella. While market opening in Germany on paper goes back to the early 1990s, the incumbent's subsidiaries dominate their respective market segments. Thus, free entry is formally feasible but not a prominent feature of that market. Despite the unified legislation for railway regulation and railway reforms in the European Union, the comparison of Sweden and Germany illustrates that member states have been able to proceed quite differently.

The recent Swedish reforms have been analyzed and proposed by two government commissions (SOU (2003:104) and SOU (2008:92)). Four key areas for the development of a liberalized passenger market were identified: allocation of capacity, ownership and administration of real estate associated with stations and maintenance, rolling stock and, finally, information on time tables and booking facilities.

The reforms in the EU legislation (Nash 2011, Nash and Matthews 2003) were initiated with a directive on the development of the community's railways (91/440/EEC). This mandated a separation of accounts for railway operations from infrastructure management. This was followed by a directive on the allocation of railway infrastructure capacity (95/19/EC), which required non discriminatory charging for access to the infrastructure. Later this was followed by the first railway package in 2001 consisting of four directives and has since been amended by a second and a third railway package. The directives of the first railway package are currently in the process of being revised by means of the so-called recast.

The paper starts in section 2 by providing more detail of the transfer from 1988 until today. Section 3 describes the upcoming market opening and section 4 addresses some aspects of common concern for the future. Section 5 concludes. A post-script (section 6) provides an update on the outcome of the most recent reforms towards market-opening.

2. THE SITUATION BEFORE THE 2009 AND 2010 BILLS

Figure 1 seeks to display the transformation of the incumbent consolidated monopolist SJ during the process of regulatory reform and market opening of Sweden's railway system. The first step, the Transport Policy Act of 1988, meant that the state took the full responsibility for railway infrastructure investment and maintenance by means of a new government authority – *Banverket*. SJ was transformed into a train operating company, paying charges for using the tracks, and sold its forwarding agent ASG and its bus company in the mid 1990s. The same Act also included the decentralisation of responsibility for regional, non-commercial railway lines to the regions in the shape of their respective PTAs. The decentralized responsibility for regional railway services has subsequently been dealt with by way of competitive tendering of most of the contracts.

In July 1996, the functions of track capacity allocation and train traffic control were also transferred from SJ to *Banverket*. Moreover, the rail freight market was opened for entry.

In 1998 another Bill reduced track access fees, primarily in order to balance the competitive pressure from road freight transport. Sweden's operators have since then paid about 10 percent of track maintenance costs per year, one of the lowest rates in Europe (Nash 2008 p. 67). The rest is funded over the national budget. At the same time, a new national agency, *Rikstrafiken*, took over the tasks of the former state's negotiator, becoming responsible for competitive tendering of unprofitable inter-regional rail, bus, air and sea services.

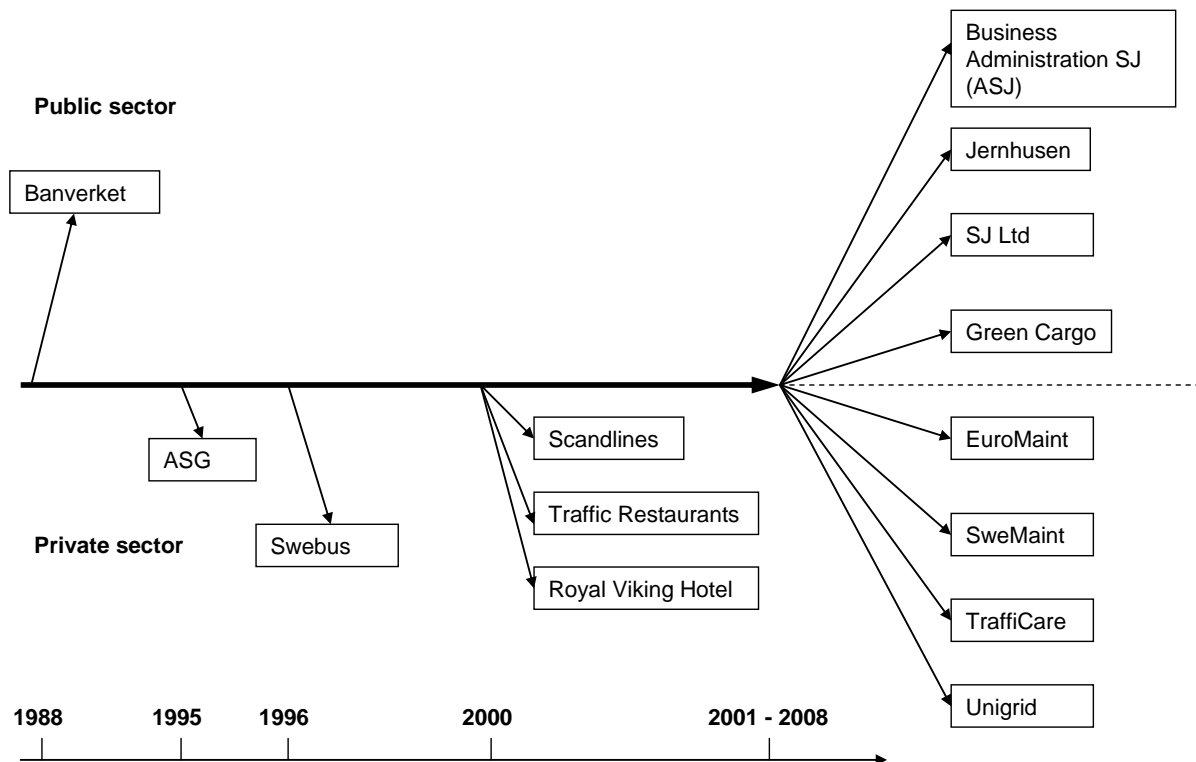


Figure 1: The transformation of the consolidated monopolist between 1988 and 2010.

Following the inflow of new operators, a Bill in 2000 had the objective to facilitate for SJ to compete under the new circumstances and to ensure entrants access to common functions and services. SJ had so far been operated as a business administration, but was now thoroughly reorganised. The passenger division formed one limited responsibility company, SJ AB, and the freight division another, Green Cargo. Also real estate (*Jernhusen*) and maintenance (*EuroMaint* and *Swemaint*) were hived off and subsequently privatized. The leasing contracts for rolling stock were kept in *Affärsverket SJ* (ASJ) which is the rump of the previous parastatal. Some of the rolling stock controlled by ASJ is leased to operators winning tenders let primarily by *Rikstrafiken*.

In 2003, the state had to intervene by means of transferring a substantial amount of money (SEK 1.8 billion) to SJ AB in order to avoid bankruptcy. The motive was that the restructuring of SJ had not been properly financed. An underlying reason was that several SJ contracts for non-commercial passenger services were running at a loss due to that they had been awarded on bids which did not cover their costs.

Following the European Commission's first railway package, a new Railway Act (SFS 2004:519) and a Railway Regulation (SFS 2004:526) were implemented. These laws formalized the prerequisites for operators' access to the state's railway infrastructure rather than introduced any change of substance. The previous Railway Inspectorate was transferred into the Swedish Rail Agency (*Järnvägsstyrelsen*) with responsibility for safety issues as well as market monitoring and regulation. An operator wishing to run train services needs to apply for a license from this Agency. In 2010 it was merged with

similar organizations for other modes into the Swedish Transport Agency (*Transportstyrelsen*).

SJ AB lost its monopoly on passenger night trains and on charter trains in 2007, marking the beginning of new phase of additional reforms aimed at market opening (to be further developed below). In early 2011, 13 companies operate passenger railway services in Sweden, but, when adjusted for subsidiaries and joint ventures, there are only eight different companies present. Five operators other than SJ AB or its subsidiaries) have won contracts for subsidized services. In addition, A-train operates a rail shuttle to Stockholm's main airport under a PPP contract (Hultkrantz *et al* 2005). All in all, SJ AB (including subsidiaries) still had a market share of almost 80 percent (of all revenues) in 2009.

In terms of passenger kilometers, demand has increased by more than 70 percent between 1990 and 2009, with particularly strong growth in commercial services. The whole period 1988-2009 of regulatory reforms have seen an increase from 6.5 billion to 10.3 billion passenger railway kilometers (Alexandersson and Hultén 2009, Nash *et al* 2011). This impressive development has however 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).

3. THE RECENT REFORMS

Two additional reforms will further rattle the railway market. The first, submitted to Parliament in 2009 as the Government's bill 2008/09:176, confirms the Government's wish to proceed with the opening of the passenger railway transport market. The given motive is to provide for a faster, more dynamic development and more efficient use of resources in the railway market (Ibid, p. 11). These reforms may also be seen as an adaptation of all domestic passenger services to Sweden's commitment to open up the market for international passenger services by 2010 in accordance to the so-called market-opening directive (2007/58/EC).

The new Act creates a system with competition on the tracks where operators are 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 according to a "fit, willing and able" criterion. Following an initial step of market opening for weekend services already in July 2009, the whole market was legally opened in October 2010. However, the timetable planning process means that competing scheduled services will not become operational until December 2011 (following the submission of train path applications in April 2011).

In a second Act, presented in the 2010 Government's bill on local and regional public transport (2009/10:200), the PTAs' control over non-commercial services is removed.² Today, PTAs have the exclusive right to decide who may run public transport services, both by bus and rail, within their respective regions. This also includes railway services crossing regional boundaries without being commercially motivated. From 2012 it will

² These pieces of new legislation will subsequently be referred to as the first and the second Act, respectively. In a way, they could be seen as a package since both provide for market opening, albeit on different parts of the market.

be feasible for commercial operators to run services also over these parts of the road and railway networks.

The practical handling of this market is that a PTA – much in the same way as today but by means of a new public body – lays out its objectives for which supply it intends to provide in an annual Transport Programme. It will then put out its contracts for tender, or the existing services will proceed as before until the contract is up for renewal. Based on this presentation of the PTA's intentions, a commercial operator is allowed to establish services which are complementary to, or competing with tendered services.

Both Acts were preceded by a lengthy process of successive committee reports elaborating on different design aspects. A first committee published its recommendations already in 2003 (cf. SOU 2003:104). A commissioned report considered the possible consequences of the suggested reform and highlighted the benefits of providing incentives for the development of new services. It also addressed critical dimensions for making the reforms deliver results, where the main points concerned the loss of economies of scope and positive network externalities through the fragmentation of the planning and supply of railway services (SIKA 2004).

A second committee identified four critical issues for efficiency in the railway market: capacity allocation, rolling stock, maintenance and coordinated ticketing systems (SOU 2008:92). All these may potentially require purpose-built regulatory mechanisms for the market to function.

All these critical dimensions are, to varying degrees, addressed in the two Acts. Generally the Government notes that the future development will probably require further legislation and other measures to stimulate competition and to achieve improvements to passengers and society (Government's bill 2008/09:176 p. 34). The second Act also provides some further provisions concerning these critical issues.³

4. WHAT WILL HAPPEN?

To provide a point of departure for a forecast of the consequences of the upcoming market opening, it is important to reflect on the position of an operator considering entry. A commercial operator will have to cover its full costs by way of ticket revenue. On the part of the market which today is considered not to be commercially viable, an entrant may have to compete with a tendered service which is subsidised with (on average) 50 percent of costs. If there are market segments where the PTA has not realised the presence of a latent demand, or indeed on lines where an entrant could compete with existing services with quality (comfort, speed etc.) rather than price, new services may emerge. Another niche market could be to extend commercial intercity railway services to cater also for local and regional markets based on scope economies.

An entrant considering the establishment of a service on a line which is today seen to be commercial has to contemplate a similar situation. The incumbent has obvious first-

³ It can be noted that the second Act differed quite a bit from the original suggestions of a preceding committee report (SOU 2009:39). In this, commercial alternatives for public transport would always take precedence, implying that tendering would only occur if other options were found not to be viable.

mover advantages and may benefit from scale and scope economies over a large network. On the other hand, several operators, many of them under foreign ownership often by public bodies in neighbouring countries, have a toehold on the Swedish market through their tendered services. This reduces their entry costs and may contribute to scale economies if they could draw on their respective owner's core resources.

The entry decision is further clouded by the four critical issues identified in committee reports and acknowledged in the Acts. Capacity allocation will be addressed in section 4.1, terminals in section 4.2, rolling stock in 4.3 and information and ticketing in section 4.4.

4.1 Capacity

Capacity allocation is of great importance for an efficient utilisation of the infrastructure. It is therefore also important that the infrastructure managers develop efficient allocation systems and pricing. Consequently, the Government urged The National Transport Administration⁴ (*Trafikverket*) to intensify its development of criteria and methods for the allocation of rail capacity (bill 2008/09:176, p. 25).

These concerns should be seen against a background of Sweden's railway network increasingly being marred by capacity problems, in particular during rush hours in the vicinity of the three big cities. Lessons from Great Britain indicate that when competitors use the same tracks this may lead to sub-optimal use of the line. One reason is that too short trains are used, which will contribute to bottlenecks and quality problems for passengers (Nash and Matthews 2003). Another reason is that the relative prioritization of services may be inappropriate. Today, a further problem in the Swedish system seems to be that too many applications for train paths are granted, resulting in a schedule which is sensitive for disturbances. In an optimal timetable it may therefore be necessary to accept fewer applications than today.

Train path allocation is dealt with by way of the timetabling process, and priorities are based on crude rules of thumb, saying that some categories of trains are higher ranked than others etc. Another feature of this process is that it lacks optimization tools. This means that, at the end of the day, manual handling of the conflicts will include the acceptance of solutions which can be identified but the actual tradeoffs are impossible to realize due to intricate interdependencies between trains. Every new timetable is also typically designed to stay as close to the previous one as possible, in order to minimize the need to search for radically new solutions (cf. further Nilsson 2002 for an elaboration on the capacity allocation issue).

While capacity problems until now have been characterized by priorities between different classes of trains – high speed vs. regional passenger vs. commuter vs. high priority freight vs. low priority freight – there is reason to believe that a deregulation will introduce competition also between the same classes of services. If the incumbent wants access for a train from A to B at 7.30, and an entrant wants to operate at the same time with the same type of rolling stock etc., no mechanism for breaking the tie has so

⁴ In 2010, the National Rail Administration (*Banverket*) was merged with the National Road Administration (*Vägverket*), forming the National Transport Administration, *Trafikverket*.

far been presented. Auctioning has been discussed as a possible way forward but no decision on this has been taken.

An additional issue concerns the possibility for operators to secure capacity for longer periods than one year. As a railway operating organization requires substantial investments in rolling stock and marketing the perspective of only obtaining capacity for one year at a time may in itself create an obstacle or a disincentive to entrance and new services. This issue has so far not been resolved in the Swedish legislation, although directive 2001/14/EC provides the possibility to reach multi-annual framework agreements on capacity allocation.

These problems may discourage entry since a prospective entrant does not know how his or her application will be prioritized. Another problem is that in the absence of reasonably well-functioning principles for handling of conflicts, there is a clear risk that the priorities actually given may be inappropriate, meaning that the social value of using existing infrastructure is less than it should have been. Moreover, the annual revision of capacity allocation and the related unpredictability of future time tables will create a huge discrepancy with the long term commitment of the operator needed to purchase rolling stock and hire personnel etc. Such misalignment, the difference in time span of the market contracts and the time span and costs of commitments, resulted in delayed investments in rolling stock in Great Britain after the deregulation (Yvrande-Billon and Ménard 2005).

It should, however, be acknowledged that the government intends to substantially increase track user charges (overall by more than a factor 3 until 2020), in particular on parts of the network and during time periods where demand is high relative to capacity. With current charges being very low in a European perspective, it remains unclear to which extent they will contribute to balancing demand and supply.

4.2 Terminals and maintenance facilities

Concerning maintenance facilities and terminals the government's assessment is that *Trafikverket*, the Infrastructure Manager, and the state-owned railway real estate company and station manager, *Jernhusen*, should consider the need for acquisition of land for the development of terminal and service functions. The government will therefore not intervene but commits itself to monitor the development of these services and if necessary to intervene in order to ascertain competition (bill 2008/09:176, p. 28).

In the second Act the government furthermore indicates that publicly owned public transport infrastructure like stops and terminals should be provided in a competitively neutral and non-discriminatory fashion (bill 2009/10:200, p. 51). The responsibilities for these issues are, however, complex and the committee proposals were not sufficient for the government to intervene. It therefore decided to monitor also this dimension of the market opening.

When the incumbent was being split up in 2001, many stations, terminals and most of the buildings used for rolling stock maintenance were placed in *Jernhusen*, becoming the government's caretaker of real estate in the vicinity of railways. It obviously is the dominant provider of leasing contracts for this type of buildings, which are increasingly

used also for office purposes, restaurants and shops etc. While it competes with providers of real estate at large in major cities, it has a competitive advantage in its closeness to busy spots in downtown parts of the cities. All operators are to be given equal treatment in the lease of terminal areas, but the definition of equal treatment has not been operationalized nor indeed measured. There is also a risk that some of the producer surplus generated from railway operations may be diverted to this holder of critical facilities. If the provider of these facilities chooses to exploit its market power, this will result in additional costs to operators.

The same argument is relevant for maintenance depots. There is now competition in the market for workshops, with both SweMaint and EuroMaint providing services. They do, however, concentrate on freight and passenger trains, respectively, which reduces the scope for actual competition. These two firms have inherited the incumbent's workshops or lease them from *Jernhusen*. Some maintenance is also provided by large rolling stock manufacturers, at least for newer vehicles.

Entry into the maintenance market is obviously feasible. One option is to lease land from *Jernhusen*, and another to make greenfield investments on land which is now used for other purposes. To hold down costs, much of this could, however, be expected in regions with lower land rents. This may open up for a business strategy to undertake repairs and more heavy maintenance not in the vicinity of hubs but in regional end stations. It is not obvious whether that would allow for providing competitive services or not.

4.3 Rolling stock

The government's position is that the provision of rolling stock is to be handled by the market. Therefore the new policy is in this respect solely concerned with curbing the possibility for publicly owned rolling stock companies or other public entities to subsidise rolling stock (bill 2008/09:176, p. 31).

The economic life of rolling stock is at least 25 years. Compared to airplanes, which can be transferred across borders without any technical issues arising, rolling stock is still to a high degree technically idiosyncratic to national grids. The current trend is towards streamlining technical features at least across the European Union, but the potential for standardized rolling stock has to be traded off against benefits from specialization and the second hand value of specialized stock may still be low or at least uncertain. While the incumbent has already sunk these costs, entry to the railway market requires the sinking of significant investments for an entrant (Stiglitz *et al* 1987). Potential entrants may therefore be reluctant to invest, not least in combination with the inability for the infrastructure manager to guarantee long term access to the network in attractive time windows.

One alternative to upfront investment is to get access to second hand vehicles, at least in the short term. ASJ, the parastatal rump of the incumbent, today leases old vehicles for longer or shorter periods of time. In addition, the PTAs directly or indirectly – through their rolling stock company *Transitio* – own modern train sets that can be used in interregional railway services. These trains could be leased to commercial operators, but only during weekends when the PTAs operate fewer trains than on weekdays (Hellsvik, 2009). There are however some legal and practical obstacles against such

arrangements.⁵ Another option would be if a commercial leasing company is established. Commercial leasing companies dominate the British market for passenger rolling stock but may prove to be less adapted to the smaller Swedish market where the former incumbent holds a fleet of rather new vehicles. Commercial leasing companies are present in segments of the Swedish freight vehicle market. Freight cars however have fewer idiosyncratic features than partly highly specialized passenger vehicles, meaning that the prospect for entry is highly uncertain.

The incumbent will benefit from a degree of market power in this dimension. One (predatory) way to exercise this power is to provide services to destinations that previously were thought to be commercially unviable, but do so on a commercial basis. This would remove the need for PTAs to tender, and thus reduce the possibility for competitors to challenge the incumbent for these contracts. There are also other ways to “flood the market” in order to reduce the scope for commercially viable entry. The actual use of different techniques for predation depends on the incumbent’s tradeoff between costs today and recoupment tomorrow through market control and higher profits, and is of course uncertain.

A parallel set of issues emerged when the telecom industry was reformed in Europe (directive 2002/20/EC). European legislators recognized that telecommunications require substantial investments in infrastructure that are sunk for entrants and that these markets under a considerable time period would be characterized by imperfect competition. The regulation of this market therefore incorporates a “ladder of investment” argument which is used to encourage infrastructure investments (Cave 2006). The idea of the ladder of investment is to encourage entrants to progressively make investments in network assets which are less and less easily replicable by promising to regulate the price of access to such infrastructure to an initially low but increasing level. By doing this with successively less replicable forms of infrastructure, entrants are supposed to be able to invest and compete in infrastructure. In the railway regulation there is so far no corresponding regulatory provisions for investment that constitutes significant sunk costs.

As already indicated, the Government seems to believe that more rather than less railway services will be operated commercially after the deregulation. One of the Government’s committees 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).

An alternative to the current policy would be to create a state-owned leasing company to provide operators with rolling stock on equal terms. What today is ASJ could for instance be corporatized and even partly privatized. Except for its current assets, the Government could transfer some of the rolling stock which today sits with SJ AB. An alternative, or rather complementary, policy would be to beef up the company’s assets so that it could acquire new vehicles and have these available for commercial leasing. This type of corporation could also be set up under a sunset clause indicating that the Government sees its involvement as temporary, with a gradual sale of shares to the market.

⁵ For example, regional PTAs have been uncertain as to whether they can lease these vehicles in competition with private firms when their investments in rolling stock have depended partially on state grants.

4.4 Information and ticketing systems

The provision of information to passengers and ticketing, which is considered as essential to the realisation of the full potential of the railway market in the UK, is not given the same priority in Sweden. Although it is mandated to submit information about the supply to a common information system, no similar obligation is imposed on booking. The Government states that it is important that a passenger should be able to combine trips from several operators and modes to a single ticket and to book and pay for this in a convenient manner. For this reason it is acknowledged that it may become necessary to mandate also the participation in common systems for booking, payment and distribution of tickets. The Government intends to return to the Parliament with initiatives on this issue (2008/09:176, p. 23). The second Act provides a similar line of reasoning with respect to information about supply and prices for non-commercial services.

To succeed in the market for passenger services, new operators must be able to inform travellers of the option to use their train services. They must also make sure that it is reasonably simple to make reservations and pay for the tickets. Investment in this type of system is also an upfront cost with dubious opportunity use, albeit at lower levels than the purchase of rolling stock.

Since several years, SJ AB uses an information and reservation platform referred to as Petra. The current trend is that an increasing number of operators (including other modes than rail) are getting their departures and the possibility to buy related tickets included in SJ's booking system. Also to be addressed 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.

If Petra becomes the standard for the whole market, it will obviously facilitate entry at the same time as it restricts the possibility for competitors to streamline the system design to its own purposes. 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. Unless solved by the industry itself, it is foreseen that this problem could be treated in a future Government bill.

For all these critical issues the holding of such assets in terms of experience, grandfather rights or physical assets may convey market power both in the markets on the track and for the track, and discourage entry at least in the short run. Therefore a foreseeing legislator or regulator (like in the telecoms) will anticipate the need for institutional arrangements that will encourage such investment.

5. CONCLUSIONS

The Swedish passenger railway market has recently taken further steps towards deregulation, with full effect from 2012. Railway operators will now be given the right to compete directly on the tracks. The Government has pushed for these reforms under

the belief that competition *in* the market will make the railway system more efficient than the historical model with monopoly rights held either by firms or public agencies. This is presumed to lead to a higher level of service quality to the passengers at a lower cost for society. The new system will replace not only SJ AB's nation-wide monopoly on the commercial long-distance lines, but also make it possible for railway operators to challenge and complement the regional publicly procured services organized by the PTAs, whenever they deem a commercial service viable.

The Government clearly acknowledges the critical issues for success of a deregulated railway passenger transport market identified by previous committees. This has, however, not led it to intervene directly. Rather, it has commissioned the development of methods for capacity allocation to the infrastructure manager, it has explicitly ruled out the public ownership of rolling stock, it promises to monitor issues related to open access to maintenance facilities and terminals as well as to booking and information systems. Based on observations during the process, it may return to Parliament with new initiatives.

In this paper we have examined the four critical issues for the upcoming start of the new regulatory regime. In the near future no other European national railway system is likely to have as much rivalry for train paths as the Swedish system. This will generate considerable strain on the system for allocating capacity. With the current publicly available expert assessments it is unclear to which extent the suggested adjustments of the track user charges will be sufficient to balance demand and supply.

To the extent that the transport activities will be spread out over the railway net, the demand for terminal and maintenance services and facilities at different locations will also be spread out. There is a significant risk for exploitation of market power for both the services and the facilities. The main policy measure for controlling market power has been the appeal from the Swedish Government to the infrastructure manager and to the facilities manager to consider acquisition of possible sites.

Rolling stock is an asset for which the investment risks may be considerable. As far as we know no orders for new rolling stock by entering operators have been placed at the major suppliers of new rolling stock. The Swedish Government has banned the formation of public provision of rolling stock and has, so far, not perceived the provision of rolling stock to require any further action.

Concerning the information and ticketing systems, the policy for facilitating consumer orientation and ticket purchasing is a combination of mandate provision on timetable information and the obligation for the existing system controlled by the Swedish incumbent operator to allow new entrants to provide through ticketing in this system.

Our assessment is that, in the near future, all these critical issues will be seen as obstacles to the development of competition in the Swedish railway sector. But realizing this and knowing which the appropriate policy instruments for handling these upcoming problems are two different matters.

6. POST-SCRIPT: THE SPRING 2011 TRAIN PATH APPLICATIONS

In April 2011 the National Transport Administration revealed the submitted applications of train path applications for services beginning in December 2011, i.e. for the first new time-table based upon full market opening. In this, it can be noted that:

- *Veolia*, already a competitor to SJ between Malmö and Stockholm, has applied for an extension of its daily services to Uppsala (north of Stockholm).
- *Tågåkeriet* (a private freight and passenger operator) considers opening new services between Falun (in the north) and Gothenburg.
- The airline *Sundsvallsflyg* intends to start parallel train services from Stockholm to Sundvall (in competition with SJ).
- A new operator, *Skandinaviska Jernbanor*, intends to run services between Stockholm and Gothenburg (in competition with SJ).
- A new operator, *Swedtrack*, intends to open new passenger services on the Iron Ore Line (in the very north of Sweden).

Consequently, at least some new entrants are apparently prepared to go ahead and try to compete directly with SJ, although it is far from certain that they will have the necessary rolling stock and actually get the train paths they apply for. It can be noted that big firms like DSB, Arriva and Keolis did not apply for any train paths. Meanwhile, the incumbent SJ has applied for more or less the same amount of services as in 2010, and some PTAs for substantially more, meaning that there is certainly no decrease in the planned supply of passenger services on the Swedish network.

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