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## ***Liberalisation of passenger rail services***

### ***Case Study- Sweden***

***Professor Jan-Eric Nilsson (Swedish National Road and Transport  
Research Institute)***

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## 1. Introduction<sup>1</sup>

Train services that use the state-owned infrastructure are provided under a two-tier structure: Under an open access policy, and since 2010, fit, willing and able commercial operators of both freight and passenger services are allowed to run services on a commercial basis. The second component is that railway services that are not provided under a commercial framework can be subsidised. Each county or region has a Public Transport Authority<sup>2</sup> (PTA) responsible for providing local and regional public transport. Some bus services are directly provided by the PTAs but most are tendered. In many while not all counties, this includes provision of tendered (subsidised) rail transport.

In 2014, 95 percent of all railway traffic was provided by electrified trains. Network use amounted to 153 million train-km whereof 76 percent was passenger trains. This means that there is a capacity conflict between passenger and freight services over some lines during at least part of the day.

The present paper provides an update of some of the data provided in Nash et al (2013) for Sweden.

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<sup>1</sup> I am most grateful for valuable suggestions and material from Andreas Vigen.

<sup>2</sup> Regional KollektivtrafikMyndighet (RKM).



## 2. Tendered services

The first quote for bids for non-commercial services was published in 1988 and awarded in 1989. Between 1999 and 2010, the state agency Rikstrafiken was responsible for tendering non-commercial services crossing regional borders. This included both ferry and railway services. After 2011, Rikstrafiken was expended with and its tasks made part of the new government agency Trafikverket (the Swedish Transport Administration, a merger of the previously separate Road and Railway Administrations, primarily in charge of road and railway infrastructure). Trafikverket has subsequently also been given the responsibility for tendering some financially unviable aviation services.

One given motive for merging three agencies (Rikstrafiken, Vägverket and Banverket) into one single (Trafikverket) was the possible synergies between planning and implementation of road and railway infrastructure construction and maintenance. The restructuring was also part of the incumbent government's ambition to reduce the number of central-government agencies. A complementary motive was the increases in subsidies to ferry services to the island of Gotland, crowding out subsidies to other modes.

Table 1 summarises the most tendered train services in Sweden<sup>3</sup>. Several contracts are tendered by one regional body in isolation. This is so for Stockholm, represented by the first three entries. Both Roslagsbanan and Saltsjöbanan are dedicated tracks without links to the major railway network; they are tendered separately from each other. The third, Stockholm's commuter trains, compete for track access to the main network with commercial long distance services, Stockholm being the national railway hub.

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<sup>3</sup> It is clear that some additional services are tendered, but due to the absence of comprehensive information about for instance Stångådalsbanan and Halmstad-Eksjö, these are not included in the table.

**Table 1: Non-commercial services in Sweden by 2016.**

Name	Commuter/ Regional; Proc. / Negotiations		Year	Operator	Contract length
Stockholm Roslagsbanan	C	P	2013	Arriva	8+4
Stockholm Saltsjöbanan	C	P	2012	Arriva	8+4
Stockholm Commuter trains	C	P	2016	MTR Pendeltågen	10+4
Pågatågen (Malmö)	C/R	P	2007	Arriva	8+2
Västtågen (Göteborg)	C/R	P	2015	SJ Götalandståg	9+3
Upptåget	C/R	P	2011	DSB Uppland	10,5+0.5
Östgötapendeln	C/R	P	2015	Arriva	10+4
Tåg i Mälardalen (Mälab)	C/R	?	2017	SJ AB	4+2
Värmlands regionaltåg	R	P	2009	Tågkompaniet	9+2
Arctic Circle Train (Night trains)	R	P	2013	SJ Norrlandståg	5+2
Kustpilen	R	P	2013	Transdev	5+3
Krösatågen	R	?	2014	Transdev	5+3
X-tåget	R	P	2014	Tågkompaniet	10+5
Öresundståg	R	P	2015	Transdev	5+2
Kinnekulletågen	R	P	2016	SJ Götalandståg	8,5+3
Norrtåg	R	P	2016	Tågkompaniet	9
Tåg i Bergslagen	R	P	2016	SJ AB	10+1

*Source: TED EU, Trafikanalys avtalsinsamling, pressreleaser från RKM*

The subsequent two entries represent services in Göteborg and Malmö, Sweden's second and third cities. These operations are also tendered by the responsible regions. The main contracts are for commuter trains but some contracts are also tendered for regional services.

The night trains between the south and the north of the country in table 1 is the only contract still tendered by the central government, now through Trafikverket. In addition, Trafikverket provides some central-government financial support to some of the contracts tendered by the regions. This includes Norrtåg, Öresundståg, Mälab and Tåg i Bergslagen, all providing train services through two or more counties. This provides four examples of contracts tendered either by corporations jointly owned by the respective regions, or jointly but directly by the PTAs.

SJ AB has always operated services on a commercial platform in the dense railway network in the Mälardalen region in mid Sweden. Some 20 years ago, and in conjunction with the opening of two major infrastructure improvements that added capacity, a deal was negotiated between SJ AB and Mälab, a company owned by the five counties in the region. Against a subsidy from



Mälardalen, SJ AB has delivered more frequent services than would have been operated under a purely commercial regime. Mälardalen also pays SJ AB an annual fee for making it possible for passengers with regional travel passes to use SJ AB trains. The services are marketed as Tåg i Mälardalen (cf. table 1).

In 2010, the legal monopoly for SJ AB on all commercial services was abandoned; this will be further detailed below. In addition, a complementary 2012 Act opened up the possibility of entry on non-commercial lines within counties, thereby allowing for competition with the PTAs. The idea was that commercial operators may see opportunities that the regions miss, thereby increasing supply and aggregate patronage.

One unexpected consequence of this most recent Act is that, Mälardalen has recently ordered its own trains. Rather than negotiating a deal with the incumbent, Mälardalen will operate services under its own brand and will in reality be competing with incumbent's commercial services. Beefing up ticket revenue with taxes, Mälardalen may be able to charge below cost recovery levels, meaning that it is not certain that commercial train services will be viable. While the intention of the Act was to open up for commercial entry, the outcome has come to be that PTAs start competing with commercial services.

The motive given for the shift of policy by Mälardalen's owners is to increase service supply. The new policy may also be understood as a reluctance to negotiate deals with an operator facing few actual threats of entry on this market. The new trains will not be operable until 2019. At that time, additional infrastructure will be available, reducing at least parts of the current capacity restrictions in both central Stockholm and on the approach from north-west. SJ AB has recently been awarded the contract for continuing operations based on the current platform until 2020.

Table 2 summarises the patronage and supply of the different services. The largest numbers of passengers use Stockholm's commuter trains (no. 3 in table 1, denoted SL in table 2). This accounts for almost 50 percent of all trips with tendered services.

Table 3 provides further detail about operator ownership. In the first stages of the transfer from subsidising SJ AB, to competitive procurement, the incumbent won most of the contracts. The incumbent has subsequently changed strategy and no longer submits bids for all contracts. Table 1 also indicates a change in strategy in that it sets up subsidiaries for some of the contracts, one example being Väststågen in Göteborg. Stockholm's commuter trains have been operated by SJ Stockholmståg, but SJ recently lost the contract to MTR.

**Table 2: Information about demand (number of trips) and supply (number of vehicles and train km) of some tendered services in Sweden.**

Year	Trips (*1 000 000)			No. of vehicles			Train km (*1000)		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Pågatågen (4)	18	20	20	69	69	69	8 578	9 685	9685
Öresundstågen (14)	30	30	30	109	109	109	13 000	13 000	13 000
Krösa Syd	-	1	0,5	-	6	6	-	950	950
KLT (Kustpilen) (11)	1	1	0,7	10	10	11	1 900	1 900	1720
Krösatågen (12)	1	1	1,2	17	17	17	2 565	2 429	2429
Västtrafik (5)	16	16	15,6	100	100	100	11 400	11 400	11400
Ötraf	3	3	3,4	16	22	15	2 943	3 260	3354
Värmlandstrafik (9)	1	1	1,1	13	13	14	1 680	1 799	1957
Mälåb (SJ) (8)	15	15	15,2	60	60	60	12 400	11 900	11 900
SL (3)	85	87	90	134	134	134	10 257	10 352	10 352
UL (6)	3	3	3,6	11	12	12	3 332	3 410	3227
TiB (17)	3	3	3,1	23	25	25	5 661	5 667	5771
X-traf (13)	1	1	1	6	6	6	1 823	1 872	1 965
Norrtåg (16)	1	1	1,4	19	19	19	4 800	5 100	4727
<b>Total</b>	<b>178</b>	<b>183</b>	<b>187</b>	<b>590</b>	<b>596</b>	<b>596</b>	<b>80 986</b>	<b>83 512</b>	<b>82 617</b>

Source: Svensk Kollektivtrafik, Järnvägsnätverket 2016. Number in brackets refers to the entries in table 1.

Nash et al (2013) reported about one privately-owned operator that won an early contract for non-commercial services. While TÅGAB is privately-owned, it does not run tendered services. Privately-owned firm is therefore not any longer active on the market for tendered services

**Table 3: Ownership of train operators in Sweden. T – tendered; C – Commercial services.**

Operator	Owner 1	Owner 2	Services
Arriva	Deutsche Bahn		T
DSB Uppland	DSB Sverige	DSB (Danish Government)	C
MTR Pendeltågen	MTR Nordic	MTR Corporation Ltd (Hong Kong)	T
MTR Express	MTR Nordic	MTR Corporation Ltd	C
SJ AB	Swedish Government		C/T
SJ Götalandståg	SJ AB		T
SJ Norrlandståg	SJ AB		T
Transdev	Veolia Environnement S.A (France, 50%)	(French Government, 50%)	
Tågkompaniet	NSB (Norwegian Government)		T
Snälltåget	Transdev		C
TÅGAB	Private		C

*Source: Author's own research*

### 3. Nature of tendered contracts

As indicated above, a foundation of Sweden's policy towards public transport is the devolution of demand specification, contract nature and similar issues to local and regional tiers of the public sector. While some municipalities, and at least one region, operate bus services under their own account, the bulk of the contracts in each region are dealt with by the responsible regional authority, the PTA.

Trafikanalys, another national agency in the transport sector, publishes annual data about regional public transport ([www.trafa.se](http://www.trafa.se)). Since each region tenders a number of contracts, aggregation to the regional level conceals much relevant information about the contracts. The devolved nature of the industry means that no more comprehensive depiction of activities and their precise design is available.

From an analytical perspective, a further complication is that each RKM offer customers a range of ticket alternatives. In regions with both bus and train services, a monthly pass may be used on both modes. In the wake of ticket use being registered and saved for each single trip, it is not possible to assess issues related to cost recovery for buses and trains separately.

In 2015, ticket revenue for all non-commercial bus and railway traffic provided by PTAs was SEK 21 billion while costs amounted to SEK 43 billion. The balance was covered by local and regional tax money. The share of costs covered by tax revenue has increased over a sequence of years.

Our previous joint paper (Nash et al 2013) was based on manual collection of information about many contracts up to and including year 2007. Due to a concerted effort by Trafikanalys to collect information about bus contract, and based on two research papers, the understanding about the qualities of bus services has improved; cf. Vigren (2016). Similar information about contracts for tendered railway services is, however, not available.

With this caveat in mind, Table 1 indicates that contracts for railway services last for between 4 and 11 years. Most contracts have an option clause for additional years which is typically triggered. Except for price, different dimensions of quality may also affect the rules for identifying the winner in a contest. There have been cases of appeals against the awarded contracts, inter alia questioning the way in which quality has been measured.

There have been some examples with unrealistic bids. Except of the examples given in the previous paper, Öresundståg, a train between the eastern Danish island Seeland and Sweden's southern region using the Öresund Bridge, was tendered around 2008. A consortium of the incumbent Danish operator DSB and the commercial FirstGroup won the contract. The winning bid was apparently over optimistic, and quality quickly deteriorated. DSB First was close to bankruptcy, but the joint Swedish-Danish PTA managed to tender a new and costlier contract with Veolia that took over the services in December 2011.



There is very little information available about the details of the contract that was terminated. This includes whether it was on a net or gross cost basis, the design of termination clauses etc. Since DSBFirst was a limited company that had accumulated losses and faced bankruptcy, this may in reality have been of less relevance.

Whoever wins a franchise has to set up their own organisation and recruit staff to operate train services. In practice, this typically means that the staff of the previous operator is hired, not least because train drivers are currently in short supply; training a new driver for passenger operations takes about 18 months. It is still up to the new operator to decide about staffing and organisation after having been awarded the contract.

The basic structure of contracts is tied to the idea of a public sector procurer who wants to have a particular activity delivered by a commercial operator. Since most PTAs provide rolling stock (cf. below), contracts regulate the task to operate these trains. The invitation to submit bids therefore provides a detailed account of the service to be run, and the operator is often given little latitude to make changes to the way in which operations are handled. In particular, fares are beyond the control of tendered service providers. Train operation costs typically include wages, on-board services (ticketing and catering) and vehicle maintenance.

In the same way as in our previous paper, it is still reason to believe that gross cost contracts are common. Several means for increasing flexibility have been discussed and seem to have been implemented. It is, however, beyond the scope of the present inquiry to gather information about these aspects



## 4. Rolling stock provision

All commercial train operators own all rolling stock that is required for their traffic. Although a market for leasing of freight train rolling stock is now active, no information is available about commercial leasing of passenger trains.

Each PTA tendering railway services were originally the owner of vehicles required for supplying the services. In 1999, most PTAs franchising railway services set up a jointly owned subsidiary – Transitio AB – for the purchase and ownership of rolling stock. Today, this organisation partly leases, partly purchases rolling stock by way of commercial loans. Due to the deep pockets of the ultimate (public sector) owners, interest on debt is most probably low.

Each PTA is charged for leasing the vehicles from Transitio on a cost recovery basis. Leasing charges may be adjusted if and when conditions for Transitio's debt/leasing conditions are changed. Except for benefiting from scale economies in standardisation and purchase of vehicles, the company also handles heavy vehicle maintenance, owns spare parts and holds a couple of vehicles of each brand as a backup.

## 5. Commercial services

Up to year 2009, SJ AB operated commercial train services under a monopoly franchise. The first market entry after the 2010 termination of SJ ABs monopoly franchise was the initiation of weekend services between Stockholm and Malmö by Transdev (previously Veolia). The year after, this was extended to the whole week, and what is now marketed as Snälltåget also operates other relations; cf. table 4.

The strategy of these services seem to be to target the lower end of the market, using older rolling stock, stopping at more stations and charging a lower price than the incumbent. One consequence was that any capacity conflicts with other (commercial and non-commercial) trains have been handled by giving Snälltåget low priority.

**Table 4: Commercial service operators in Sweden.**

Route	Operator	Established
Stockholm-Malmö	Snälltåget	2009
Gothenburg-Karlstad	TÅGAB	2009
Falun-Karlstad-Gothenburg	TÅGAB	2012
Stockholm-Karlstad	TÅGAB	2015
Stockholm-Gothenburg	MTR Express	2015

*Source: Author's own research*

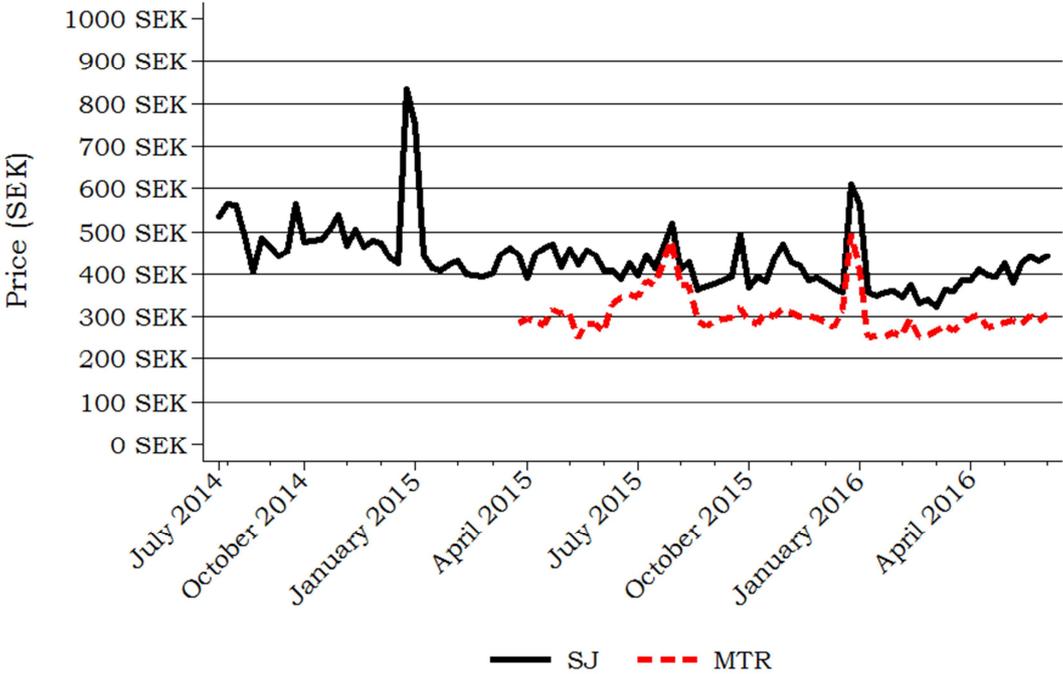
Tågab (Tågåkeriet i Bergslagen AB) is the only purely privately-owned Swedish operator. Except for freight services, many of which are feeder trains for the incumbent, Green Cargo, table 3 indicates that it since 2009 runs services that are partly complementary to, partly competing with the incumbent.

While the Swedish market has been open for entry since 2010, MTR Express' entry in March 2015 is the first instance of competition on one of the incumbent's core services. While information is never published for separate services, the common perception is that the close-to-three-hour journey between Stockholm and Göteborg, Sweden's second city, is very profitable. Sweden's version of high-speed trains, i.e. the X2 tilting trains travelling at 200 km per hour at tracks that have been only marginally upgraded, has a very strong position in this market segment.

MTR Express operates services that take slightly longer time than SJ AB trains. Vigren (2016) uses ticket price data from both the incumbent's and the operator's webpages in order to investigate the price effects of the entry. Figure 1 summarises the price trajectories of the two operators. The incumbent's prices shrunk by some 13 percent on average between March 2015 and June 2016. The price level of the competitor is below the incumbent's average price on this

market segment in the pre-entry period. The largest price reduction in percentage terms is found on tickets booked ten days before departure date, while those buying tickets 31 days before departure benefit less. The reduction of the incumbent' average price still seems to decrease, meaning that a further price descent would not be unexpected.

**Figure 1: Weekly average prices of SJ and MTR between from June 2014 and June 2016. 1 SEK=0.1€.**



Source: sj.se and mtrexpress.se, compiled by Vigren (2016).

## 6. Relations with the infrastructure manager and the regulator

Sweden's infrastructure manager Trafikverket is a not for profit state-owned organisation under the Industry Ministry. Commercial and non-commercial operators pay the same track user charges, the structure of which is based on the idea of marginal costs and based on assessment of the following components;

- Costs for wear and tear of tracks; per gross ton km.
- Emission charges; per litre diesel fuel.
- Track use charges; per train km.
- Time and location specific charges.

The expected revenue from passenger services in 2016 is SEK 1083 million and SEK 519 million from freight, altogether SEK 1602 million. Expected costs for maintenance and operations is about SEK 9 000 million. Except for this allocation, close to SEK 10 000 million will be invested. The balance is covered by the public budget.

In the wake of any type of long term track access agreement, operators of non-commercial services expect to be able to retain the slots they need to operate the service they are contracted to run. The franchising agency, i.e. the PTA, is responsible for annual negotiations with Trafikverket for the precise time table, but may be assisted in this by the franchisee.

There is an important difference between many regional trains, where capacity may be available during much of the day, and commuter services. Stockholm's commuter train system is, for instance, decisive for much of the pattern of time tables also in the rest of the country. Track capacity shortages in that region means that the supply of commuter trains may not be extended in spite of full trains during peaks. A new tunnel under central Stockholm opening up during 2017 may change this situation, but there are still bottlenecks in other parts of the network.

A performance regime was introduced in 2011, and the charging level has since this gradually increased. One part of the system is that operators are compensated by Trafikverket for delays emanating from malfunctioning infrastructure. The other part is that operators (in principle) are supposed to pay for the delays they inflict on each other. The precise design of the system however means that they in essence are paying for the delays they are experiencing themselves. This means that the system's incentivising properties is debatable.

Sweden's regulator, Transportstyrelsen, is charged with monitoring of safety and technical issues in all modes of transport. In the railway sector, it is more involved in technical matters and in hearing appeals, than in the enforcement of efficiency and performance of the infrastructure manager.

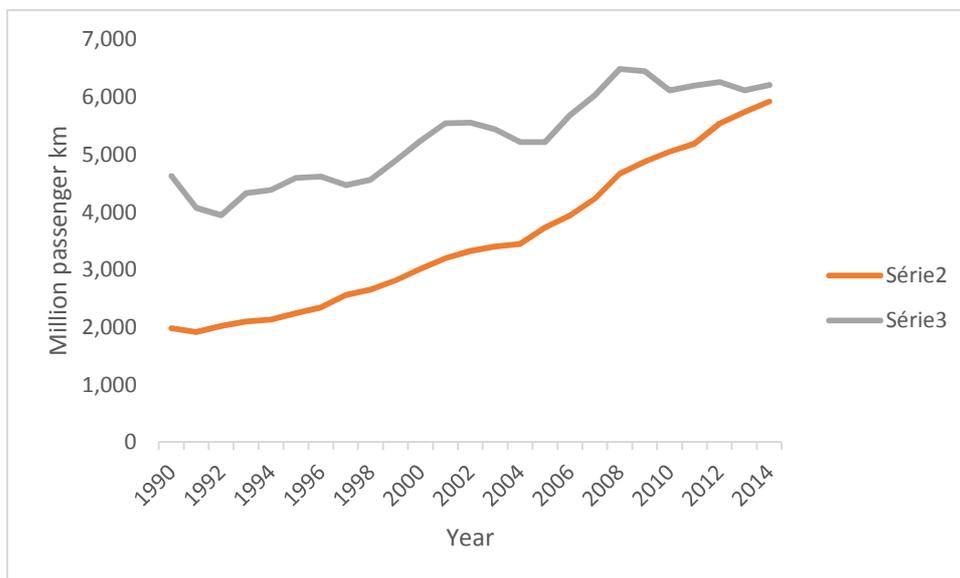


The regulator still holds a low profile towards issues related to competition. An injunction was, however, sent from the Regulator to Trafikverket during spring 2016. The regulator questions the slow introduction of the performance scheme and has asked for a response with respect to a number of specific issues in this context. A reply is expected before the end of the year. This represents the first substantial intervention by the regulator into the way in which the infrastructure provider is operating, and may signal a change of attitude.

## 7. Performance

Figure 2 demonstrates the growth in train traffic after 1990; this is the time at which the first reforms of the railway sector started to affect traffic. Although no longer-term, historic perspective is given, it is obvious that the complete revolution of the Swedish railway industry during the past 25 years has not hampered the growth of passengers.

**Figure 2: Growth of regional (2) and commercial services between 1990 and 2014.**



Source: Data available at [www.trafa.se](http://www.trafa.se).

Table 5 confirms that growth primarily has been in regional traffic. During the same period, growth in car traffic – measured in terms of vehicle km – has been clearly below rail sector growth. The increasing use of regional railway services has obviously been far higher than GDP growth.

**Table 5: Annual traffic growth, percent.**

From previous reports				
		1980-2007	1990-2007	2008-2014
Rail	Total pass km	1,5	2,6	1,4
	- thereof regional services	3,3	4,6	4,0
	- thereof long distance services	0,6	1,6	-0,7
Car	Vehicle km	1,3	0,9	0,3
	Average annual GDP growth	2,3	2,3	0,9

Source: Road and rail data available at [www.trafa.se](http://www.trafa.se)

Table 6 indicates that prices in the transport sector have increased much faster than consumer prices at large. In particular, PTAs have increased charges at a high annual rate, and in spite of this, the need for subsidise increase. This provides an additional perspective on the rapid cost increase in the industry.

It is also obvious that the use of commuter services is getting more expensive also relative to the price of commercial trains, in this period basically supplied by SJ AB. In spite of this, table 4 demonstrated that the number of passengers increase much faster on the commuter trains. The demand increase is obviously driven by something else than the pricing strategy.

**Table 6: Annual traffic growth, percent.**

	1980-2007	1990-2007	2008-2014
Consumer Price Index	4,0	3,1	0,6
- thereof local transport (bus and commuter rail)	7,8	5,5	5,3
- thereof long distance rail	5,7	3,2	3,5
- thereof domestic air	6,3	5,7	n.a.
Petrol price	5,2	3,7	1,9

Source: Official data over CPI available at [www.scb.se](http://www.scb.se), petrol price xxx.



## 8. Conclusion

In 1988 Sweden separated its infrastructure from service provision. The most recent step in the restructuring of the railway industry was concluded in 2010 and 2012 with the complete market opening of both freight and passenger services. A first observation that can be made from the facts presented in this mimeo is that patronage is constantly growing over time, in particular with respect to regional commuting. This is not least noteworthy in view of the dismal expectations for the industry, both within Sweden and in many other countries, in the early stages of the process. It was not uncommon that the forecast was for decay and ultimate demise of the railway industry.

A second observation is that the tax payer has been extremely important for the way in which the industry has been able to cope with growing demand. Spending on infrastructure has increased very fast, including a vast investment program. In the same way, the urges to retain services that are financially unviable have increased the financial burden on regional tax payers.

It is not obvious that the massive increase of public funds is caused by the separation of infrastructure from train operations. One consequence of the 1988 reform was that the sources of the deficits that had been around since several decades became clearer. The counterfactual question is therefore how much of the public funds would have been diverted to railways under a unified regime or indeed under any other organisational structure.

A third observation is perhaps more related to two features of Sweden's public sector at large. One is the low relevance of follow-ups and ex post analysis. Ministries and national government agencies have a strong forward-looking perspective with little regard for summarising the outcome of the past and even less of learning from successes and calamities. In combination with the devolution of services to regions, which is the second aspect, this means that our understanding of the nature of the industry in general, of the development of costs and revenue and of the way in which contracts work is poor.



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