Provision of non-commercial railway services in Sweden[1]

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Abstract: Subsidised public transport patronage in Sweden has increased with 4,6 percent per year over the last 20 years in spite of fares increasing faster than inflation. The purpose of this paper is to establish possible reasons for this development. Are there, for instance, indications of that the chosen contract format – for instance the use of gross or net cost contracts – systematically affects costs or patronage? Due to patchy and partly incomparable data, definitive conclusions are difficult to draw. The paper therefore also addresses the way in which the responsibility for public transport is organised, in particular the fact that provision of non-commercial railway services is the responsibility of some 15 regional Public Transport Authorities. The tendering processes and contracting formats are not streamlined, designs differ between PTA's and follow-up information about costs and patronage is not stored in a comprehensive way, jeopardising performance benchmarking.

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1. Introduction

Since 1988, Sweden's railways have been vertically separated. The Swedish National Rail Administration (*Banverket*) supplies infrastructure and SJ AB is the provider of passenger services. This monopoly franchise will be discontinued from the end of 2010, opening for on-the-tracks competition. Freight was deregulated in 1998.

If transport services are not commercially provided, the public sector may step in to fill the gap. The country's 22 counties and regions and their respective Public Transit Authority (PTA), decides on whether this is necessary and is responsible for the costs for providing non-commercial services. This responsibility includes local and regional bus transport and in several regions also the provision of subsidised railway services. In addition, the National Public Transport Agency, *Rikstrafiken*, is responsible for interregional traffic – i.e. services which pass county borders – which is not commercially viable.

One motive for these subsidies is to handle regional equity objectives, one of Sweden's official transport policy objectives being to secure an economically efficient supply of (passenger) transport services for all parts of the country. Subsidies to public transport within cities or commuter services to and from city centres can be seen as a way to balance the under-pricing of road transport in congested cities; alternatively, it can be seen as a mechanism to balance the Mohring effect of city public transport (reference). Both motives imply that public transport in (congested) cities would not be efficiently supplied in the absence of public sector intervention.

As will be further detailed, subsidised railway services has been growing consistently over a number of years. The purpose of this paper is to seek to understand the reasons for this performance. Focus is on the provision of non-commercial railway services, in particular on the use and design of tendering processes, negotiations and contracts. Section 2 starts by drawing an overall picture of the country's non-commercial railway services. Section 3 details the use of negotiations and of the distinction between net and gross cost contracts. Section 4 then provides an analysis of regional services and section 5 of commuter services, section 6 discusses results and section 7 concludes.

2. Public transport in Sweden

55 percent of all bus and train trips made in Sweden took place in the county of Stockholm, 18 percent in the western Gothenburg region and 11 percent in the southernmost county of Skåne (Malmö). These three regions also have the shortest average journeys with trips in Stockholm and Gothenburg being on average 7 and 9 kilometers respectively.

In 2008, the costs for, and revenues from providing local and regional public transport amounted to SEK 29 billion and SEK 15.5 billion, respectively. About 53 percent of a journey is therefore paid for by users, tax revenue making up for the difference. Since 1999, costs increased by 44 percent and revenues by 36 percent. In all counties the cost of a journey by public transport was higher than the revenue. Stockholm, Uppsala and Skåne have a larger degree of cost-coverage than the country average. The lowest degree of ticket revenue relative to costs was 21,5 percent from the county of Gotland. [2]

In 1980, in total 7 million passenger kilometres were travelled by rail in Sweden, with trips shorter than 100 km – approximately what will here be labelled regional traffic – accounting for 26 percent. Table 1 shows that subsequent growth primarily has been in regional traffic, one consequence being that these services now account for 41 percent of all rail passenger km. Moreover, growth has been higher after 1990, which is a couple of years after the 1988 separation and about at the same time as the first services were being franchised. During the same period, growth in passenger car km has been below rail sector growth. Moreover, the increase in regional trips has been substantially above GDP growth.

		1980-2008	1990-2008	2000-2008
Rail	Total pass km	1,6	2,7	3,1
	- thereof regional services	3,3	4,5	4,7
	- thereof long distance services	0,5	1,7	2,2
Car	Passenger km	1,3	0,7	0,8
	Average annual GDP growth	1,9	1,8	1,6

Table 1: Annual traffic growth, percent. Sources: Road and rail data available at www.sika-institute.se

Table 2 demonstrates that prices in the transport sector have grown faster than inflation and also faster than the price of petrol. However, prices for long distance rail seem to have been

[2] This section draws heavily on SIKA's report 2009:18. It focuses traffic operated under the auspices of PTA's while not services paid for by *Rikstrafiken.*

closer to inflation than local public transport. Rail patronage in local public transport has thus been showing persistent growth in spite of substantial price increases.

	1980-07	1990-07	2000-08
Consumer Price Index	3,8	1,9	1,6
- thereof local public transport (bus and commuter rail)	6,5	5,1	4,2
- thereof long distance rail	5,4	3,0	2,0
- thereof domestic air	5,8	5,1	6,8
Petrol price	4,9	3,4	2,4

Table 2: Price growth, percent per year. Sources: Official data over CPI available at www.scb.se, petrol price at Bil Sweden (2008).

Being responsible for non-commercial services means that each PTA must review the need for intraregional road/bus and railway services from a political and administrative perspective and to choose between different procurement and contracting practices in order to meet the region's political objectives. One component of the PTAs' policy is the use of various types of ticket discount schemes. Several travel passes are valid for a time period and may be used for trips with any mode. One implication is that it is not possible to assign ticket revenue to a particular service and to identify the financial net result for busses and trains in isolation.

Rikstrafiken was established in July 1999. It was commissioned to develop and coordinate inter-regional public transport where this is not handled on a commercial basis. This includes a mapping of gaps in the long-distance public transport sector, to coordinate time tabling, ticket systems and information provision. In addition, it was to procure public transport by air, rail, sea or bus where commercially provided services are not seen to meet the overall objective of giving all citizens access to public transport. These subsidies are dealt with by *Rikstrafiken* tendering three railway services and in addition providing financial support to cooperative arrangements between PTA's to the extent that these services provide interregional transport.

3. Mechanisms for provision of subsidised services

One mechanism for providing non-commercial services is for a regional body to negotiate with the incumbent operator to use some commercial services also for travellers with regional travel passes; this is further detailed in section 3.1. The second means is to tender contracts. A

potentially important distinction in this is the use of net and gross cost contracts which is further detailed in sections 3.2 and 3.3, respectively.

3.1 Negotiated contracts

The cohabitation of counties/regions and commercial railway services is based on that there is excess capacity in existing long distance trains. The extra cost for the incumbent, SJ AB, to allow passengers with PTA travel passes on to its trains, or to let the long distance commercial trains stop at stations where they would otherwise not do so, may be small. With SJ AB until now operating under a monopoly franchise, it is obviously negotiating the deals with the respective PTAs on a strong platform. This will all change with the upcoming deregulation.

One prominent example of an agreement of this nature is *Mälardalen*, roughly the area between Örebro to the west and Stockholm to the east (cf. chart 1), a region densely populated by Swedish standards and with several railway lines. Four adjacent counties have established a jointly owned company, MÄLAB, to organise economic cooperation around interregional railway services. In cooperation with SJ AB, MÄLAB has established *Trafik i Mälardalen* (TiM) for marketing the services. The basic principle in the TiM deal is a separation of responsibilities:

- SJ guarantees a minimum supply of interregional services. This is defined in terms of a number of stations where SJ's trains stop and with respect to minimum frequency. The services are of two categories; SJ's long distance services that continue beyond the regional network but which stop at stations of interest to the regions; and trains that originate and terminate within the region, such as Västerås – Stockholm (two cities situated in different counties). While each county have their own travel-passes, TiM-cards are used for interregional trips. In 2008, SJ AB was paid SEK 29 m for admitting passengers with regional travel cards on their long-distance services. Except for this, PTA's don't pay direct subsides for these services.
- The counties have committed themselves not to organise and tender traffic of their own within or between their respective regions.

There are more examples of negotiated contracts of this nature, including the counties of Värmland and Skåne. The precise nature of these contracts with respect to annual payment, number of passengers etc is, however, not accessible.

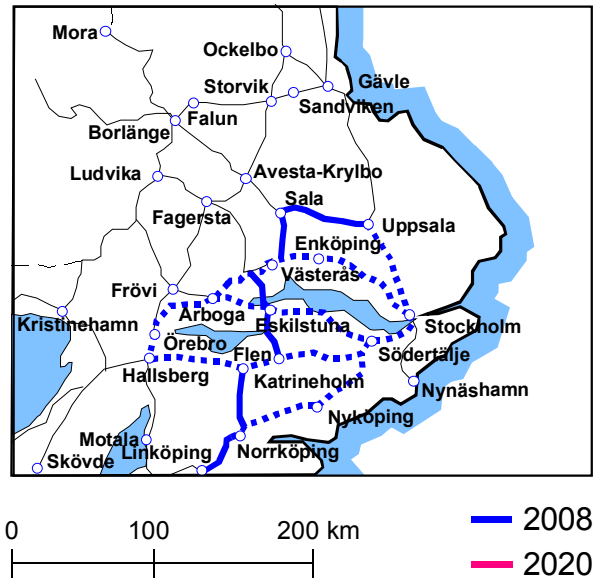

Chart 1: Railway lines in the Mälardalen region.

3.2 An example of a net cost contract

In the context of subsidised rail transport, the PTA's financial net for the net cost contract (S^n), and the operator's profit (π^n) can be summarised in the following way:

$$S^n = -B^n - f(q) - C_{stock} - C_{station}$$

$$\pi^n = p * q + B^n - C_{op}(q)$$

B^n – The winning bid for a net cost contract; $B^n > 0$

f(q) – track user charges related to volume of traffic/no of passengers (q)

p – price charged to passengers

C_{stock} = costs for rolling stock

$C_{station}$ = costs for access to and operation of stations

C_{op} = costs for operating train services

In a standard net cost contract, the procurer would buy services in a way which would give the franchisee full revenue and cost risk. In Sweden, the PTAs however own rolling stock and

have specified a minimum supply in the quote for bids. This means that the operator is circumscribed in designing services in order to maximise profits.

One example of a net-cost type of contract is operated on behalf of *Tåg i Bergslagen* (TiB). This organisation coordinates the provision of railway services which run through four counties (cf. chart 2) on behalf of the four counties' respective PTA's. While a PTA typically handles both bus and train contracts, TiB's only assignment is to represent the counties in the tendering of rail services. After that the contract is awarded, it only employs one half-time director.

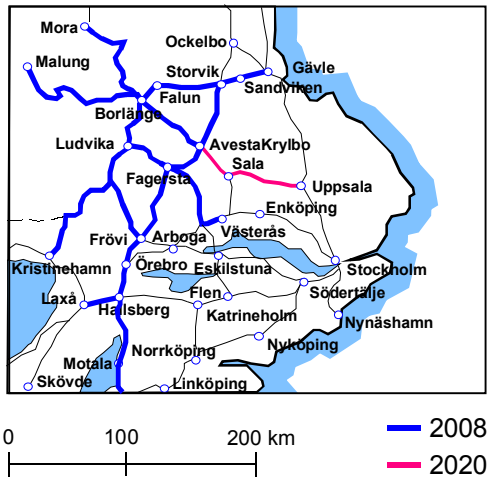

Chart 2: TiB's railway lines.

The most recent tender was announced in 2005 and traffic commenced in June 2006 on a five plus five year contract operated by *Tågkompaniet*, a Swedish subsidiary of Norway's state railways. The service package comprises most lines in the above map, in total an expected 4,5 m train km per year. An option for an extension of the services was included in the quote for bids and subsequently triggered, adding another 0,6 m train km to the contract.

The design of this particular net cost contract means that the operator is entitled to retain revenue from all tickets sold on board the trains and to establish the price for these tickets. Revenue from sales of monthly travel passes which can be used for all public transport in the four counties, including busses, is retained by the respective PTA's. However, the operator receives SEK 30 per trip up to 600 000 trips per year, corresponding to an annual payment of SEK 18 million. In addition, the operator receives SEK 10 per passenger if the number of

trips is between 600 000 and 700 000, SEK 15 between 700 000 and 800 000 and SEK 20 per passenger if the number of travel card passengers exceeds 800 000 per year.

This design means that the operator is shielded from downside risk but is given incentives to market the service both to travel card passengers in the respective counties as well as to inter-regional passengers. While the PTA has the final word on the basic supply (frequency, where to stop, etc), the operator is strongly encouraged to suggest improvements.

The PTA pays for stations and owns the rolling stock that is used.[3] The operator is therefore only responsible for costs for operating the trains (maintenance, driver, and on-board services) and for replacement services in cases of disturbances. Track user charges are paid by the operator while costs for marketing are split even between the parties. The contract also includes several performance incentives, for instance a SEK 5000 penalty per cancelled service. It is not clear whether these incentives are stringent enough to affect actual performance.

Table 3 demonstrates that costs are paid for by contribution from the four PTA's which own TiB and by money from *Rikstrafiken*. The table also establishes the significance of vehicle costs.

	2007	2008	2009*
Contribution from PTA's	84	97	91
Contribution from *Rikstrafiken*	61	64	61
Other contributions	14	7	19
Total revenue	**160**	**169**	**171**
Payment to operator	-79	-86	-89
Vehicle leasing	-68	-75	-75
Stations and other costs	-10	-3	-3
Total operating costs	**-157**	**-165**	**-167**
Marketing	-1	-1	-1
Staff (CEO and Board)	-1	-1	-1
Adm. Costs (office, consultants etc)	-2	-2	-2
Total	**-3**	**-4**	**-4**

Table 3: TiB's annual revenues and costs, m SEK. *Budget

Table 4 indicates that TiB's supply has increased by 16 percent at the same time as the number of trips has almost doubled between 2002 and 2008. Costs have also increased substan-

[3] A complicating factor is that in some other net cost contracts, costs for rolling stock are paid by the franchisee. Since these costs are specified in the original quote for bids it is, however, a cost item which passes through

tially, with payment for running the service (cost (1)) has almost quintupled. If costs for rolling stock is also included (=cost (2)), costs have increased with 142 percent, and accounting for all costs (cost (3)) indicates a 134 percent increase. Taken together this means that costs per produced train km have increased dramatically over the period, while the cost increase per passenger km is less drastic. Costs have, however, increased faster than inflation which averaged 1,4 percent over this period.

	2002	2003	2004	2005	2006	2007	2008	Average annual growth
Train km, m	4,4	4,4			4,5	5	5,1	2,1
No. Of trips, m		1,4	1,5	1,8	2	2,3	2,6	10
Cost 1/train km	4	4				16	17	21
Cost 2/train km	15	15				29	32	11
Cost 3/train km	16	16			25	30	32	10
Cost 1/pass km		13				34	33	16
Cost 2/pass km		49				64	61	3,5
Cost 3/pass km		52			57	65	63	3,2

Table 4: Train production, no. of trips and costs for operating TiB. Cost (1) = operations costs, Cost (2) = Cost (1) + costs for rolling stock, Cost (3) = all PTA costs. Empty cells indicate missing information.

3.3 An example of a gross cost contract

The bid for a gross cost contract – B^g – differs from the bid for a net cost contract in that the PTA retains all ticket revenue. The a priori expectation is therefore – ceteris paribus – that $B^g > B^n$. The comparison of costs is, however, complicated by that cost data are incomplete and differ in the specification of contracts and what is included in the payment to the operator. This is a reason for making a distinction between three different cost measures in the way demonstrated by table 4 and all subsequent cost analyses.

$$S^g = p * q - B^g - f(q) - C_{stock} - C_{station}$$

$$\pi^g = B^g - C_{op}(q)$$

Except for TiB, *Tågkompaniet* has also won a gross cost tender for *X-trafik*, comprising one service from Gävle to Ljusdal and another from Gävle to Hudiksvall and Sundsvall; see chart 3. The original contract was for 2001-2009 and an option to extend it until 2014 was triggered

directly to the procurer. It is, however, not always clear in the records whether the payment is according to costs excluding rolling stock or not.

in 2008. Payment is for costs for train operations including catering and ticketing. In addition, each bidder submitted change prices for on-board staff. Payments are indexed.

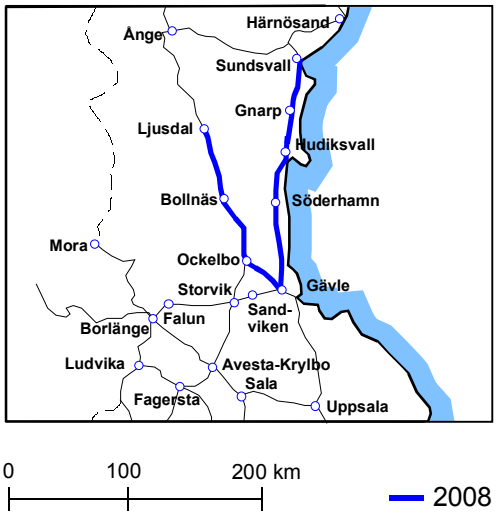

Chart 3: Lines operated on behalf of X-trafik.

Table 5 indicates that supply has increased with 63 percent, and that patronage increased with 94 percent between 2002 and 2008. The cost increase has been much slower than in the TiB contract. In real terms, costs per train km have stayed constant while the increase in patronage has contributed to a reduction in costs per passenger km.

	2002	2003	2004	2005	2006	2007	2008	Annual average growth
Train km, m	1,1	1,1	1,3	1,7	1,7	1,7	1,8	7
No. Of trips, m	0,49	0,55	0,68	0,79	0,84	0,88	0,95	9,4
Cost 1/train km	8	4	5	6	7	8	9	1,7
Cost 2/train km		29	29	27	27	28	31	1,1
Cost 3/train km	35	37	36	33	33	35	40	1,9
Cost 1/pass km	18	18	19	20	17	17	15	-2,6
Cost 2/pass km		60	56	58	53	55	58	-0,5
Cost 3/pass km	80	76	70	70	65	69	76	-0,7

Table 4: Train supply, number of trips and costs for *X-trafik*.

4. Regional services

Table 5a enumerates all contracts for regional services, i.e. trains where commuting to a specific city is relatively less important. Contracts are for three up to eight years, and the option in the contract is typically triggered. This option can be seen as a mechanism for the PTA to

signal that it is satisfied with the way in which the service has been operated, i.e. a means for dealing with non-contractible quality. There are few bidders for the relatively smaller contracts, with four tenders receiving only two bids each, but there is also an example of a tender with five bids in the final round.

Name of service (Ri – procured by *Rikstrafiken*)	(P)rocured/ (N)egotiated contract (Year of contracting)	Present operator	Contract length, years + option	No. of bidders, first/second round
Kustpilen	P (2007)	Veolia	6+2	6/4
Tåg i Bergslagen	P (2005)	*Tågkompaniet*	5+5	6/3
Tåg i Mälardalen	N	SJ		N.a.
Värmlandståg	N (2003)	*Merresor*	3+2	N.a.
Krösatåget	P (2001)	BK Tåg/ *Merresor*	5+3	?/2
Kinnekulletåget	P (2008)	Veolia	4+2	7/5
Bohuståget	P (2003)	SJ	3+3	?/2
X-tåget	P (1999)	*Tågkompaniet*	8+5	?/4
Sleeper trains (Ri)	P (2007)	Norrlandståg/SJ	5+0	3/2
Day trains Norrland (Ri)	P (2007)	Norrlandståg/SJ	5+0	?/3
Mitt-Nabo (Ri)	P (2005)	Veolia	5+2	3/2

Table 5a: Descriptive data of regional train services.

Table 5b provides complementary information about the structure of these contracts. One important message of this table is that services are heterogeneous. *TiB* is running many train km through sparsely populated parts of mid Sweden, while both *Kinnekulletåget* and *Bohuståget* runs shorter distances with more passengers since they partly operate as commuter services when trains get closer to a city, in this particular case Gothenburg. *Rikstrafiken* tenders services which run very long distances in the north, albeit with fairly few passengers.

The last column indicates that three contracts account for costs for rolling stock as if these are under the control of the operator, while the PTA in reality has established the cost in the original contract. When it comes to revenue risk (next to last column), three of the contracts are of the pure gross cost nature while the three contracts tendered by Rikstrafiken have shifted the complete revenue risk over to the operator. In another three contracts there is a split responsibility, or rather an attempt to incentivise the operator to attract passengers on to the trains.

	Contract size 2008			Contract structure	
Name of service	M train km	m pass km	*Riks-trafiken* subsidy, m SEK 2008	Revenue incentives 0 – none 1 – some Full	Costs with operator 0 – operation cost 1 – operation and train costs
Kustpilen	1,9	0,56	22	0	0
Tåg i Bergslagen	5,5	2,6	64	1	0
Tåg i Mälardalen	-	1,5	17	n.a.	n.a.
Värmlandståg	1,2	-	0	0	0
Krösatåget	2,2	1,3	30	1	1
Kinnekulletåget	1,0	16,3	8,6	1	1
Bohuståget	0,9	38,9	12,6	0	1
X-*tåget*	1,7	-	0	0	0
Rikstrafiken					
- Sleeper trains Norrland		446,3	85	Full	(0)
- *Mitt-Nabo*		33,0	7	Full	(0)

Table 5b: Descriptive data of regional train services.

Table 6 provides information about train supply and number of trips for seven regional services, four contracts with revenue incentives and three gross cost contracts.[4] In most of the services where information is available, train supply has increased and patronage has consistently increased more than train supply. It is, however, difficult to discern any difference in growth rates between the respective types of contracts.

Table 7 summarises available information about production costs per train and passenger km. Starting with the absolute level of production costs in 2008, the contract for Bohusbanan seems to be more expensive than the others. Although X-tåget is a gross cost contract, their costs including rolling stock seems to be very similar to the net cost contracts while it is cheaper than any other contract if we only look at disbursements to the operator (Cost 1/train km). X-tåget indeed comes out as cheap irrespective of which measure of cost used.

The overall pattern of the cost comparison in terms of costs per passenger is very similar, the prime difference being that patronage grows faster than supply, the percentage cost growth

[4] We have deleted night train services tendered by Rikstrafiken since their nature differs from standard day train services. Värmlandståg is another gross cost contract where we can not disentangle payment for the dedicated PTA service from the payment to SJ for admitting PTA passengers onto the commercial service.

therefore being lower. Costs for Krösatåget and X-tåget seem to have shrunk in both real and nominal terms.

		2002	2003	2004	2005	2006	2007	2008	Average annual growth, %
Lines with revenue incentives									
Kinnekullebanan	Train km, m	0,82	0,89	0,95	0,96	0,97	0,98	1	2,8
	Trips, m	0,23	0,25	0,26	0,27	0,29	0,33	0,34	5,6
Krösatåg	Train km, m	1,83	2,06	1,95	1,95	1,99	2,09	1,99	1,2
	Trips, m	0,81	0,86	0,9	0,97	1,06	1,17	1,26	7,4
Rikstrafiken	Train km, m								
	Trips, m		0,17	0,18	0,2	0,2	0,25	0,32	10,6
TiB	Train km, m	4,4	4,4			4,5	5	5,1	2,4
	Trips, m		1,37	1,5	1,81	2	2,3	2,64	10,9
Lines with gross cost contracts									
Bohusbanan	Train km, m	0,88	0,88	0,88	0,88	0,88	0,9	0,91	0,5
	Trips, m	0,65	0,69	0,75	0,79	0,73	0,73	0,83	3,5
Linköping - Kalmar/Västervik	Train km, m	0,55	0,56	0,54	0,46	0,43	0,48	0,54	-
	Trips, m	0,58	0,27	0,49	0,49	0,49	0,55	0,56	-
X-tåget	Train km, m	1,1	1,13	1,34	1,7	1,65	1,73	1,78	6,9
	Trips, m	0,49	0,55	0,68	0,79	0,84	0,88	0,95	10,9

Table 6: Train supply and patronage for regional train services. Empty cells indicate missing information.

When it comes to comparing cost increases, TiB has seen production costs km balloon over the 2002 – 2008 period but this may at least to some degree be due to a below-cost bid submitted by the previous operator, SJ AB. It has thus been alleged that the commercial monopolist won that contract on a bid below costs. Without success, it sought to come out of the contract before termination. If this background is correct, it is obvious that the PTA's costs were bound to increase when the new contract was awarded in 2005 based on a more realistic bid.

During a period with an average inflation rate of 1,4 percent per year, X-tåget comes out as having a stable cost pattern over a period of time. In contrast, both Bohusbanan and Kinnekulletåg, both procured by the same PTA, have seen production costs increase dramatically. The latter contracts have now been retendered, but we don't have information about the new costs.

	2002	2003	2004	2005	2006	2007	2008	Annual average growth, %

Lines with revenue incentives									
Kinnekullebanan	Cost 1/train km		24	25	25	28	27	30	3,7
	Cost 3/train km	27	30	35	37	47	51	54	9,9
	Cost 1/pass km		86	92	88	94	79	87	0,1
	Cost 3/pass km	97	109	129	134	156	151	159	7,1
Krösatåg	Cost 1/train km				29	30	32	36	5,5
	Cost 3/train km								
	Cost 1/pass km				59	75	58	57	-0,8
	Cost 3/pass km								
TiB	Cost 1/train km	4	4				16	17	20,7
	Cost 3/train km	16	16			25	30	32	11,5
	Cost 1/pass km		13				34	33	15,5
	Cost 3/pass km		52			57	65	63	3,2
Lines with gross cost contracts									
Bohusbanan	Cost 1/train km			35	32	34	41	39	2
	Cost 3/train km	49	48	67	86	87	90	98	11,5
	Cost 1/pass km			41	36	41	51	43	0,8
	Cost 3/pass km	66	62	79	95	104	110	108	7
X-tåget	Cost 1/train km	8	9	10	9	9	9	8	-
	Cost 3/train km	35	37	36	33	33	35	40	1,9
	Cost 1/pass km	18	18	19	20	17	17	15	-2,6
	Cost 3/pass km	80	76	70	70	65	69	76	-0,7

Table 7: Costs per train and passenger km for regional services. Empty cells indicate missing information.

5. Commuter train services

Table 8 provides information about contracts which have been defined as commuter services. The contracts in southern Sweden – Pågatågen and Öresundstågen – can be seen as providing also regional services but the majority of passengers use them for going to and from city centres.

Three of the contracts have since long been operated by SJ AB on a negotiated contracts. Since these contracts have expired they have now been tendered. The last column points to that there seems to be healthy competition for the contracts, with three bidders only in one instance and four and more in the others. Contracts are for between 5 and 9 years with options for another couple of year's extension.

Comparing tables 9 and 7, it is obvious that both supply and ridership is much larger for commuter than for regional services, and that Stockholm's commuter trains is the by far largest system. With two exceptions, the table also indicates that train supply has been fairly constant over the period. One exception is Uppsala's Upptåget which has doubled train kilome-

tres compared to 2002. The other is Öresundståg, the train service over the Öresund straight. The Öresund bridge was opened in 1999 meaning that the train services have gradually been upgraded during this period.

Name of service	Procurement/ Negotiated contract (Year of contracting)	Present operator	Length of contract years + option	No. of bidders, first/ second round
Östergötland commuting	N	SJ	25	N.a.
Malmö – Pågatåg	P (2005)	Arriva	9+2	9/5
Malmö – Öresundståg	P (2007)	Öresundståg	7+2	12/5
Stockholm commuter trains	P (2005)	Stockholmståg	5+5	?/6
Stockholm – Roslagsbanan	P (2002)	Roslagståg	5+5	?/4
Upptåget (Uppsala)	P (2005)	SJ	5+5	6/3
Gothenburg – Alingsås	N	SJ	25	N.a.
Gothenburg – Kungsbacka	N	SJ	25	N.a.

Table 8: Descriptive data of for commuter services.

		2002	2003	2004	2005	2006	2007	2008	Annual average growth, %
Gothenburg -	Train km, m	1,22	1,2	1,19	1,13	1,11	0,96	1,17	-0,7
- Alingsås	Trips, m	2,19	2,28	2,39	2,43	2,01	2,03	2,39	1,3
Gothenburg -	Train km, m	0,93	0,95	0,95	0,91	0,91	0,72	0,91	-0,4
- Kungsbacka	Trips, m	2,44	2,63	2,74	2,7	2,3	2,3	2,75	1,7
Skåne -	Train km, m	4,8	4,52	4,12	4,3	4,4	5,1	5,44	1,8
- Pågatåg	Trips, m	8,8	9,03	9,57	10,26				3,8*
Skåne -	Train km, m	3,04	3,48	4,11	4,44	4,66	5,76	5,53	8,5
- Öresundståg	Trips, m	2,81	3,92	4,15	4,87				13,8*
Stockholm -	Train km, m	6,32	6,5	6,78	6,88	7,44	7,6	7,52	2,5
- commuter	Trips, m	64	63	62	63	64	66	68	1,1
Stockholm -	Train km, m	2,18	2,25	2,25	2,29	2,39	2,45	2,32	0,9
- Roslagsbanan	Trips, m	8,57	8,91	9,38	9,57	9,57	10,39	10,11	2,3
Uppland -	Train km, m	0,93	0,93	0,93	0,93	2,63	2,64	2,81	15,8
- Upptåget	Trips, m	0,81	0,83	0,84	0,85	1,39	2,83	3,2	19,6
Östergötland -	Train km, m	2,2	2,53	2,61	2,65	2,63	2,66	2,62	2,5
- Östgötapendeln	Trips, m	1,95	2,06	2,15	2,19	2,34	2,43	2,64	4,3

Table 9: Train supply and patronage for commuter train services. Growth refers to the 2002 – 2008 period except for entries with *. Empty cells indicate missing information.

Patronage on the Uppsala and Öresund services has increased even faster than supply. With the exception for Stockholm's commuter trains, patronage on all services has indeed increased faster than supply. We don't have an explanation for the development in Stockholm.

The only comprehensive specification of train supply available for the present study is train km. This may be a spurious measure when commuter trains operated in the three larger cities are compared with other commuter and regional services. The reason is that a city train often comprises more motor car units and more seats than a regional train. Moreover, increases in travel demand can be accommodated by increasing the number of motor car units – the number of seats – which is typically not necessary for regional services which often operate with substantial excess capacity. This observation may in particular distort the subsequent comparison of unit production costs. It would be straightforward to correct for this by using seat km instead, but this measure is not available.[5]

Table 10 provides information about production costs per train km and per passenger for the commuter services. The problem with incomplete data is even more pronounced than for the regional services. The table however suggests that commuter services in Stockholm and Gothenburg may be more expensive to produce than in Uppsala and Östergötland. As indicated above, the comparison may be distorted by insufficient control over seat km. The number for Malmö is difficult to interpret and may not include vehicle costs.

One way to bypass the (possible) problem with longer and more costly trains in metropolitan areas is to perform the comparison in terms of costs per passenger rather than per train km. It is thus reasonable that operators adapt their purchase of rolling stock to expected demand. The table indicates that there is less variation in costs per passenger kilometre. One of the Gothenburg services is more expensive than the others, and the service in Östergötland is also on the high side. This may provide an indication of that the three negotiated contracts are more expensive than contracts preceded by a tendering procedure. Production costs, possibly excluding Upptåget, seem to be clearly higher for commuter than for regional services discussed in the previous section.

		2002	2003	2004	2005	2006	2007	2008	Growth, %
All trains Skåne	Cost 1/train km			58	57	58	60		0,9
	Cost 3/train km			72	70	74	78		2
	Cost 1/pass			35	33	30	28		-5,5

[5] In the 2008 Annual Report from SL, Stockholm's PTA, it seems as if the average number of seats per train set has increased from 620 to 645 during the period.

	Cost 3/pass			43	41	39	36		-4,5
Gothenburg -	Cost 1/train km	60	64	64	69	73	92	75	3,2
- Alingsås	Cost 3/train km	78	81	81	87	91	127	106	4,3
	Cost 1/pass	33	33	32	32	40	43	36	1,3
	Cost 3/pass	44	42	41	41	50	60	52	2,4
Gothenburg -	Cost 1/train km	39	40	41	44	46	61	49	3,3
- Kungsbacka	Cost 3/train km	92	92	90	88	81	113	92	0
	Cost 1/pass	15	14	14	15	18	19	16	0,9
	Cost 3/pass	35	33	31	30	32	35	31	-1,8
Stockholm -	Cost 1/train km	151	155	147	152	161	188		3,6
- commuter	Cost 3/train km	173	171	156	165	173	201		2,5
	Cost 1/pass	15	16	16	17	19	20		4,8
	Cost 3/pass	17	18	17	18	20	21		3,5
Stockholm -	Cost 1/train km				77	77	80		1,3
- Roslagsbanan	Cost 3/train km		76	78	115	116	115		8,3
	Cost 1/pass				18	19	19		1,8
	Cost 3/pass		19	19	28	29	27		7
Uppland -	Cost 1/train km					10	18	18	19,6
- Upptåget	Cost 3/train km					18	33	33	20,2
	Cost 1/pass					18	17	16	-4,1
	Cost 3/pass					35	30	29	-6,2
Östergötland -	Cost 1/train km	19	20	23	25	26	26	27	5,1
- Östgötapendeln	Cost 3/train km	37	27	34	37	45	45	43	2,2
	Cost 1/pass	21	24	28	30	29	28	26	3,1
	Cost 3/pass	42	33	41	44	50	49	43	0,4

Table 10: Costs per train and passenger km for commuter services. Empty cells indicate missing information.

6. What do we see?

As we have seen, subsidised railway services in Sweden are provided by two mechanisms. First, public sector representatives – i.e. PTA staff – in some regions negotiate with the (current) monopoly provider of commercial railway services, in order to utilise the long distance trains also for regional trips. In addition, PTAs and Rikstrafiken tender some 15 services. Quotes for bids are based on the PTA's specification of departure frequency and which rolling stock is to be used. The subsequent contracts are designed in different ways. Gross cost contracts where the assignment is to run services at lowest cost, and where all ticket revenue is retained by the PTA, dominate. There are, however, also contracts with more or less revenue risk, i.e. where the operator retains parts of the ticket revenue and also is given scope to influence prices.

The purpose of the present paper has been to provide a comparison of the different mechanisms used: Which form of assignment provides the most cost efficient means for providing

subsidised services? Are there differences between contract types with respect to their impact on patronage? And which are the properties of negotiated payments for multiple uses of existing commercial services? The analysis is done against a background of sustained and substantial growth in rail traffic, in particular the non-commercial services.

This study has sought to answer these questions by asking PTA's for information about the services they operate and their costs for doing so. The following observations can be made:

- No information is available to assess the negotiated deals between PTAs and SJ AB.
- For three regional contracts with revenue risk, the supply of services has increased with between 10 and 20 percent at the same time as patronage increased with between 50 and 100 percent between 2002 and 2008.
- Three gross cost contracts have seen a huge supply increase over the period, making the quantity of the respective services different at the end as compared to the first year of the period. One of these three cases, X-trafik, is for a rural service while the other two – Uppsala and Öresund – are basically commuter trains. Moreover, patronage has increased faster than the increase in supply.
- For another seven gross cost contracts, most of them commuter services, supply has increased with between zero and 20 percent over the period. With one exception, the increase in patronage has been higher than the supply increase. It has not been possible to establish why the largest service, Stockholm's commuter trains, has seen patronage increase slower than supply.
- Three contracts of a net-cost type are in use for rural services. Comparing rural net and gross contracts, there are no indications that the cost per train km differ. The cost per passenger indeed seems to be higher for the net than for the gross cost contract. This is surprising, since the procurer's costs should go down when the operator retains revenue. Moreover, the material provides no indications of that net cost contracts are better to incentivise operators to attract passengers beyond supply increases than gross cost contracts.
- There is less variation in costs per passenger than in costs per train km across contracts. One of the Gothenburg services seems to be more expensive than the others, and also Östergötland is on the high side. This may indicate a cost disadvantage for negotiated contracts.

- Costs per passenger seem to be higher for commuter trains than for regional services.

The work reported in the paper is based on an attempt to gather data from each PTA according to a draft template. While some procurers have been providing swift answers with relevant data, the process has basically been long and tedious and we have occasionally had to invoke Sweden's strict openness-of-public-information legislation. A fairly comprehensive set of data about train km has been assembled but information about seat km is not available and it is therefore not feasible to control for that trains differ in length and seat capacity. It has also been feasible to get access to information about number of passengers using the services.

Information about costs for producing the services is incomplete and partly difficult to compare across PTA's, first and foremost because of differences with respect to how costs for rolling stock is being handled. Information about Skåne, down south, is uncertain due to an inability to account for costs, supply and patronage for the three services – Pågatåg, Öresundståg and negotiated agreements with the incumbent – separately from each other. Although the initial purpose of the project was to create a panel, the resulting product is incomplete and possibly based on different specifications of costs. At best, it provides a preliminary indication of what the situation looks like.[6]

This outcome does by itself warrant a brief policy discussion. A hallmark of this market is thus that since more than 20 years, the responsibility for all non-commercial railway services is completely delegated to the respective PTA's. The interpretation of this remit with respect to what it means for the overall level of (subsidies to) non-commercial public transport and with respect to contract design lies in the hands of the PTA. There is, furthermore, no centralised responsibility for compiling comprehensive information about these activities.

The project has established that PTAs don't keep records to facilitate follow-up comparisons of contracted and actual costs. One consequence is that it is difficult to understand how invoices from operators for services rendered can be verified before disbursements are made. Although the material does not lend itself to an assessment of any such problems, it is obvious

[6] Information about bids submitted for the contracts, the different types of mechanisms used for identifying the winning bid and other aspects of the tendering process has also been documented, but his material has not yet been analysed.

that the absence of data leaves the door wide open for corruption.[7] It is furthermore obvious that compilation of appropriate data for benchmarking purposes would be simple and cheap if it was being done as an ingredient of the procurement process.

A PTA comprises two parts. A board is assigned based on the outcome from the election result in the region. The board can therefore include representatives for four to eight political parties and business competence is not a merit for membership. This board is supposed to decide on policy matters. One criterion for its decisions seems to be demand for equity within the different parts of their region and another to hold back cost increases. The civil servants, headed by a director, make up the second part of the PTA with prime responsibility for implementing the policy. The absence of independent and professional monitoring of the activities provides the director with substantial degrees of freedom.

Several countries have a discussion about whether responsibilities for local and regional issues should be dealt with by local or central government, and devolution has become an issue; cf. (Transport Policy). In Sweden, local self government dates back to the Middle Ages and is since 1974 also formally part of Sweden's constitution.

The Swedish version of local self government means that elected representatives for local communities and regional bodies are entitled to decide over the responsibilities given to them independently from the national government. Tasks include health and elderly care, social services, schools and also public transport. The third and second tiers of government are moreover delegated control over local and regional taxation to pay for these costs, and these taxes today make up the lion share of the income tax. Local self government is therefore fundamentally a concept close to what has come to be known as subsidiarity.

The down side of self government is that there is no economic subject with responsibility for ex post assessment and benchmarking. In reality, a huge and ongoing natural experiment takes place in so far as different bodies interpret and implement their mandate in different ways. In the wake of a centralised responsibility for registration of costs and outcomes, it is not possible to benchmark and identify good or bad examples. In particular, and as demon-

[7] When this is written, the newspapers have headlines about a major operator of tendered bus services in Stockholm which for several years is alleged to have invoiced the PTA for extra tours which have never been operated.

strated by the present paper, it is not feasible to establish which procurement and contracting practices deliver low cost and patronage growth. For local and regional public transport this is all the more unfortunate in view of the industry's ambitious policy to double patronage until year 2020; the target is clear but no-one knows what works better or worse today so there is a substantial risk that development will not go in the right way.

It is also relevant to underline that there is no inherent conflict between local self government and the comprehensive compilation of information about costs and outcomes. A common framework to facilitate performance assessment would, however, cap the degrees-of-freedom for PTAs and their elected representatives.

7. Conclusions

A consequence of a highly decentralised public transport sector is that no common knowledge exists about which contracts work better or worse. Since prices for non-commercial railway services have increased well above inflation, lower prices can not explain the substantial growth in regional railway patronage. Supply growth may at least be one reason for the increase in patronage; this is indeed the reason behind a huge expansion in two regions, Uppsala and Skåne. Supply does, however, grow at a slower pace than patronage and it has not been possible to answer the eternal question of what comes first, supply or demand.

Contrary to many expectations, a very simple version of a gross cost contract has been demonstrated to function well compared to more complex contracts with revenue incentives. The available material is, however, much too incomplete to facilitate any generalisations from this observation.