

Regulatory voids and contractual folly – the evolution of competitively tendered regional rail networks in Sweden¹

Gunnar Alexandersson^a, Staffan Hultén^b and Lars Henriksson^c

^a Stockholm School of Economics Institute for Research. P.O. Box 6501, 113 83 Stockholm, SWEDEN
phone: +46 8 736 90 00, e-mail: gunnar.alexandersson@hhs.se

^b Stockholm School of Economics Institute for Research. P.O. Box 6501, 113 83 Stockholm, SWEDEN
phone: +46 8 736 90 00, e-mail: staffan.hulten@hhs.se

^c Stockholm School of Economics Institute for Research. P.O. Box 6501, 113 83 Stockholm, SWEDEN
phone: +46 8 736 90 00, e-mail: lars.henriksson@hhs.se

*Corresponding author

JEL classification:

Keywords:

Contract Complexity; Contract Completeness; Regulatory Void; Public transport; Railway Networks; Competitive Tendering

ABSTRACT

The Covid-19 crisis highlighted the prevalence of contract disruptions in Sweden's public bus transport sector and a couple of issues of more general importance. The first observation is that voids in regulatory structures give more or less leeway to open up misalignments between contract complexity and follow-up. The second observation is that contract design, in terms of complexity and completeness, has an impact on the possibilities of fulfilling a contract without major disruptions. The more complex a contract is, the more difficult it is to monitor. The third observation is that the complexity and completeness of contracts in public transport evolve over time.

In this paper we take a closer look at these three issues in the evolution of contractual relations in the market for regional trains in Sweden, using case studies from the greater Stockholm region. In these rail networks, it is evident that both the process of competitive tendering and contract design have changed from the first tenders more than twenty years ago. Nearly all changes have been initiated by the regional authorities procuring the train services. For example, there have been changes in how train operating companies are remunerated, ownership and maintenance of rolling stock, the bidding process, contract length, and rules concerning employment of train drivers.

The downside of the alterations has been a series of contract failures, resulting in cost increases, poor service quality and missed opportunities to improve the railway networks. This highlights the need to further investigate the role of regulation and regulators. If there is a regulatory void, it allows the contracting parties to enter into a contractual relation with an incomplete contract that may fail if something unforeseen happens. Stricter regulations can potentially improve the execution of contracts in such situations.

¹ Paper presented at the 18th International Conference on Competition and Ownership in Land Passenger Transport, Cape Town, 29 September–3 October 2024.

1. Introduction

A contract for a regional public transport service can vary in many different ways. In this paper we will investigate how complexity and completeness have evolved in these contracts, using the competitively tendered contracts for regional train services in the greater Stockholm region and its surroundings as case studies. We will give a lengthier explanation to the concepts complex contract and complete contract in the theoretical discussion. Suffice to say now is that complexity is about the number of variables and outcomes of the variables and completeness is about the measurement and evaluation of the variables in the contract. In Sweden, the competitively tendered contracts have gradually become more complex as the procuring public transport authorities (PTAs) have introduced a growing number of parameters in the contracts. The first tendered contracts for bus services in the late 1980s were basically gross cost contracts to run a few local bus lines or a regional bus network. Gradually, quality incentives were added to the contracts and subsequently some PTAs added passenger incentives. Moreover, regulations concerning public procurement evolved, for example affecting transfer of staff from one contractor to another and related terms of employment. In the 2010s, a new development occurred in the public bus services with the establishment of pure passenger incentive contracts with quality incentives.

The competitive tendering of regional train services started in 1989 (with the first contracts coming into effect in 1990). This was a few years after the bus services and has followed a similar development, with one noteworthy difference. While the local and regional bus companies to a high extent were owned and operated “in-house” by regional authorities or municipalities, the train services were controlled and operated by Swedish State Railways (SJ). This difference in ownership and organization of the public transport systems before deregulation had implications for how competitive tendering and marketization were implemented. Most importantly, the regions increased their control, involvement and financial commitments in the post-deregulated regional railway market and reduced their involvement and financial commitments in the local and regional bus markets.

The deregulation of the regional railway services accelerated the process to replace the earlier structure of individual local and regional railway lines with regional railway networks. The establishment of regional railway networks had started in the 1960s and 1970s with agreements between some regions and the then vertically integrated monopolist SJ. The regions gradually got greater sway over the organization of the regional railway lines and networks but at increasing costs. Finally in the 1990s the Swedish Parliament dismantled SJ's monopoly and gave the regions their own right to operate trains on the regional railway lines. The competitive tendering of regional trains in the three greater urban areas – Stockholm, Gothenburg and Malmö – commenced with the commuter trains (Pendeltågen) in the county of Stockholm in 1998 (with the contract taking effect in 2000). Subsequently, the other railway networks followed. Eventually, the interregional Mälartåg network in the greater Stockholm area was properly tendered for the first time in 2020 (taking effect in 2021).

During the more than 25 years that have passed since the first of these tenders in 1998 we can notice important changes in the clauses of the contracts and the role of incentives. The first contract for the commuter trains in Stockholm was basically a gross cost contract with quality incentive parameters that had little impact on the payments from the PTA to the

railway operator, and with non-binding rules on how the transfer from the old operator to the new operator should be made. In later contracts, more detailed quality incentives were added as well as stricter clarifications on the transfer from the old to the new operator. The resulting changes in the contractual relations between regions and train operators haven't been investigated in earlier research.

2. Research questions and aims

The competitive tendering of regional railway services in Sweden has resulted in important efficiency gains and cost reductions, in particular in the first round of tendering, but has also been plagued by numerous problems such as contract failures, legal challenges to the selection of the winning operator, and bankruptcies and other abrupt exits from the market (Alexandersson & Hultén, 2006).

The contract failures have resulted in cost increases, poor service quality and missed opportunities to incrementally improve the subsidized regional railway networks. The legal challenges have generated high costs in legal fees and disturbed the implementation of the winning contract. The bankruptcies and other abrupt exits from the market have resulted in weakened competition and the introduction of temporary emergency contracts.

The Covid-19 crisis highlighted the prevalence of contract disruptions in Sweden's public bus transport sector when an unforeseen major event puts stress on contractual relations. In particular, contracts where remuneration was heavily based on passenger-incentives, were renegotiated or amended (Alexandersson, Hultén & Henriksson, 2024). Contracts for regional train services were also affected to some extent.

These problems call for an investigation into the clout of regulation and regulators on contracting in competitively tendered markets. If the regulation is too lax it allows the contracting parties to enter into contractual relations that may fail if something unforeseen happens during the contract period. If the regulation is too strict it limits the contracting parties' ability to improve system performance. Stricter regulations can hypothetically improve the execution of contracts if it ex ante is difficult to specify all the eventualities that may occur during the contract period.

The principal aim of the paper is to assess the ability of regulations in incentivizing actors to align contract complexity with smooth completion of contracts. To fulfil this aim we will address several supporting aims. The first of these aims is to analyse the content of the contracts in the regional railway markets and to ascertain if later contracts seek to handle contract distress better than earlier contracts. The second supporting aim is to examine the changes of the regulation of railway services and their procurement, on the national and the EU level, and to determine if these changes have had an effect on the risk for contract distress. The third supporting aim consists of an analysis on the role of regulation in the different contracting issues that arise in competitively tendered markets.

3. Theoretical framework

Regulations instruct actors in public sector markets with competitive tendering on how to behave, from the advertising of the competitive tender the selection of the winning firm, the running of the contract and to the conclusion of the contract, either by forced exit or according to the initial agreement.

Depending on the goals of a contract it is conceivable that it should vary in terms of complexity. If it is easy to define the aims of a contract, a simple contract design can be considered to be the best option. An example of a fairly simple contract is a gross cost contract for a public bus network. But if carrying out a contract implies the accomplishment of multiple objectives, a complex contract design may be desirable. An example of such a contract is the passenger incentive contract with qualitative evaluations that became widely used in public bus transport in Sweden from 2010 and onwards.

Complexity in a contract refers to how many parameters that have an impact on the remuneration to the seller and how much each parameter can vary in magnitude. Complexity also refers to how complicated it is to understand the terms of the contract. Each component of complexity is measured along a continuum: contracts are either more or less complex (Eggleston, Posner & Zeckhauser, 2000).

A lot of arguments have been put forward to explain why buyers use complex contracts. One fundamental notion is that contracts should be complex because a large set of future events could influence the cost or value of a procured product or service. A complex contract could include predictions on the effects of possible future events. Perhaps more important is that more complex contracts allow buyers to better align procured goods or services with the company's goals. The increased contract complexity can be as simple as a promise to buy more from one supplier and getting a discount, or as convoluted as a contract with multiple incentive parameters.

In contracts that are more complex, several terms and parameters in the contract need to be monitored closely and more decision rules need to be formulated to clarify what will happen if the outcome deviates from the assumptions of the contract. This means that as contract complexity increases, it becomes more costly and burdensome to write a complete contract. From this follows that all complex contracts are unavoidably not perfectly complete in practice. For this reason, parties will be confronted with the need to adapt to unanticipated disturbances that arise due to of gaps, errors and omissions in the original contract (Williamson, 2002).

Although a contract can never be perfect or factor in all future eventualities, in the economics literature, a contract is theoretically regarded as complete when it differentiates among all relevant future states of the world, and a third party, such as a court, can verify, when necessary, which state has occurred. (Eggleston, Posner & Zeckhauser, 2000). A complete contract needs to include evaluations on how different outcomes for the parameters should be treated when evaluating the performance of the contract. If we envisage that all the factors can vary it becomes clear that it may be extremely costly and time consuming to monitor the contract and monetise all the possible states of a finalized contract. Because of

the high costs of writing and enforcing a complete contract it is generally assumed that contracts are incomplete (Hart & Moore, 1999). A contract can also be more or less complete as regards the demands on the supplier of a good or a service. It can for example include clauses on the supplier regarding relationships with employees, subcontractors and regulators. Furthermore, contracts can also be more or less detailed in describing the resolution of conflicts, handling of force majeure and the right for one party to impose the termination of a contract.

Intertwined with the issue of contract complexity and completeness is the interpretation of the outcome of the contract. In extensive incentive contracts each incentive type carries a specific evaluation and payment consequence. The evaluation of these incentives can often result in contradictory results for the operator. For example, if punctuality of the operator's services has been better than expected it receives a bonus. But at the same time the same operator may be obliged to pay penalties due to poor overall service quality.

3.1 A simple model

Building on the notion of a close relationship between contract complexity and contract completeness, we suggest the following simple model. On the x-axis we have contract complexity, and on the y-axis we have contract completeness. In accordance with the discussion above, a) the more parameters a contract uses and the more parameters can vary, the more complex is the contract; and b) the more of the parameters that are measured and the more the measurements are used as a basis for decisions and payments, the more complete is the contract.

	Low Complexity	High Complexity
Low degree of completeness		
High degree of completeness		

Figure 1. A simple model of contract complexity and contract completeness

From this model we can see that a contract with low complexity can also have a low degree of completeness. Imagine for example a gross cost contract for public bus transport in which the PTA doesn't evaluate the performance of the bus operator in terms of driven kilometres and/or there are no penalties for service disruptions and cancelled bus services. We may also imagine a contrasting case with a high complexity and a high degree of completeness in which the contract includes a large number of performance variables and incentives, and all these variables and incentives are measured and assigned monetary values depending on the outcome of the contract.

4. Swedish and EU regulation

4.1 Generally on publicly tendered contracts

In accordance with Regulation 1370/2007,² directive 2014/25/EU³ and the Swedish Act on Procurement in the Utilities Sector (LUF),⁴ contracts for public transport are publicly tendered by the PTAs. The rules of public procurement for transports entail as a general rule an open tendering award procedure, although in cases of *extreme urgency* special procedures including direct award of contract may be employed.⁵ Therefore, in exceptional circumstances, the rules on public procurement allow – within strict limits – for emergency contracts.

With regard to EU social policy, and although exceptions apply, pursuant to Section 6 b of the Swedish Employment Protection Act⁶ in conjunction with the *transfer of an undertaking*, a business or a part of a business from one employer to another, the rights and obligations under contracts of employment and employment relationships that existed at the time of the transfer to the new employer shall also be transferred.⁷ It is, however, uncertain whether the authority can require take-over of staff in a public procurement and this must be assessed on a case-by-case basis. This is most often done after the contract has been awarded, which most likely explains why such mandatory requirements remain scarce.⁸

² Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70, OJ L 315, 3.12.2007, p. 1–13.

³ Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC OJ L 94, 28.3.2014, p. 243–374.

⁴ Lag (2016:1146) om upphandling inom försörjningssektorerna.

⁵ See Chapter 6, section 8 and Chapter 19 a, section 4 LUF. According to the preparatory works, direct procurement for exceptional reasons is primarily intended to occur in cases of extreme urgency caused by *unforeseen circumstances* that are beyond the control of the parties and not attributable to the contracting authority or entity. Therefore, if the contracting authority or entity has found itself in a situation of urgency due to its own inadequate planning, this would not justify direct procurement.

⁶ Lag (1982:80) om anställningsskydd. The rules on transfer of an undertaking was first introduced on 1 January 1995 upon Sweden joining to the EU and are the same as laid down originally in Directive 77/187/EEC – now repealed by Council Directive 2001/23/EC of 12 March 2001 on the approximation of the laws of the Member States relating to the safeguarding of employees' rights in the event of transfers of undertakings, businesses or parts of undertakings or businesses, OJ L 082, 22/03/2001 p. 16–20.

⁷ According to settled case law, the decisive criterion for establishing the existence of a transfer is the fact that the entity in question retains its identity, as indicated inter alia by the fact that its operation is actually continued or resumed (See case C-160/14, *João Filipe Ferreira da Silva e Brito and Others v Estado português*, ECLI:EU:C:2015:565, para. 25). To determine whether that condition is met, it is necessary to make an overall assessment and to consider all the relevant facts characterising the transaction concerned. Especially the type of undertaking or business concerned, whether or not its tangible assets, such as buildings and movable property, are transferred, the value of its intangible assets at the time of the transfer, whether or not the majority of its employees are taken over by the new employer, whether or not its customers are transferred, the degree of similarity between the activities carried on before and after the transfer, and the period, if any, for which those activities were suspended. Those circumstances are, notwithstanding, merely single factors in the overall assessment which must be made and cannot therefore be considered in isolation (see case 24/85, *Jozef Maria Antonius Spijkers v Gebroeders Benedik Abattoir CV and Alfred Benedik en Zonen BV*, ECLI:EU:C:1986:127, para. 13).

⁸ The CJEU held in *Liikenne* that the rules on transfer of an undertaking did not apply because there was no transfer of significant tangible assets between the two undertakings. The case concerned bus transports in the Helsinki region. Upon not being awarded a new contract the incumbent bus undertaking operating with 26 buses, dismissed 45 drivers. 33 of them were subsequently re-engaged by the undertaking awarded the contract, Liikenne. Liikenne also engaged 18 other drivers. The former drivers were re-engaged on the conditions laid

The Swedish rules on public procurement cover one – albeit significant – part of the procurement process, whereas the processes of preparation and follow-up of contracts are not explicitly regulated. After the procurement procedure has been concluded and the contract is awarded, other rules govern the execution of the contract, e.g., the Swedish Contract Act (SFS 1915:218) and the Swedish Sale of Goods Act (SFS 1990:931). However, amendments and changes to concluded contracts are still regulated by the procurement legislation.

EU and Swedish law remain silent on the issue of following up contract performance. Nonetheless, it is an integral part of any procurement process – public or private – to make sure that the counterparty is carrying out its obligations in accordance with the contract. Also, it may be necessary to respond to changed circumstances that affect the carrying out of the contract. A particular legal challenge is that there are no explicit requirements in law for the procuring authority to obtain an overall favourable result for the taxpayers and/or passengers, i.e. there is no general value-for-money requirement. That does not mean that the legislator has no interest in safeguarding that the funds are spent wisely – on the contrary.⁹ The rules on public procurement are, however, merely procedural law requirements ultimately designed as an instrument for the realisation of the common market within the European union. As such, several fundamental principles have developed within public procurement to make sure equal treatment across member states.¹⁰ The *result* achieved in public contracts are primarily the concern of the respective Member State and the PTA. Therefore, it is primarily the national concern of Sweden as a state to ensure that publicly tendered transport contracts are discharged as envisaged and intended by the authority procuring the service.

The preparation and follow-up of contracts are – or should be – inextricable from the contract and the procurement as such is merely the procedure of how contracts are concluded, forming a part of what they concern or how they are carried out. Authorities are encouraged to follow-up contracts. The National Agency for Public Procurement has explicitly laid down recommendations for authorities that entail a whole process of the procurement, including analysis/planning, procurement, and follow-up (Upphandlingsmyndigheten, 2024). Although there are no legal requirements to follow up contracts it may be contrary to EU law not to do so. The Court of Justice of the European Union has underlined that

down by the national collective agreement in the sector, which were overall less favourable than those which applied with the former operator. However, when Liikenne replaced the former operator, no vehicles or other assets connected with the operation of the bus routes concerned were transferred. This is why the court held that there was no transfer of undertaking within the meaning of directive 77/187/EEC. See case C-172/99Oy *Liikenne Ab v Pekka Liskojärvi and Pentti Juntunen*, ECLI:EU:C:2001:59.

⁹ The 2014 procurement directives were in significant parts based on the interest to increase the efficiency of public spending (recital 4, Directive 2014/25/EU). See also Government Bill 2015/16:195, where the Swedish Government underlined that the procurement directives aim to stimulate growth and promote confidence in the internal market. Also, one of the objectives is to increase the efficiency of public spending through simpler and more flexible rules, ensuring the best possible procurement outcomes in terms of better value for money (p. 292).

¹⁰ The basic procurement principles are non-discrimination, equal treatment, proportionality, transparency, and mutual recognition. A sixth principle was introduced in 2014, whereby the design of the procurement shall not be made with the intention of excluding it from the scope of this Directive or of artificially narrowing competition. Competition shall be considered to be artificially narrowed where the design of the procurement is made with the intention of unduly favouring or disadvantaging certain economic operators (Article 36, directive 2014/25/EU).

"... where a contracting authority lays down an award criterion indicating that it neither intends, nor is able, to verify the accuracy of the information supplied by the tenderers, it infringes the principle of equal treatment, because such a criterion does not ensure the transparency and objectivity of the tender procedure." ¹¹

Disregarding the following up of contracts therefore seriously jeopardises the principle of equal treatment and may indirectly entail the acceptance of non-contractual performance, whereby the nature of the contract has substantively changed. If so, it may be tantamount to an illegal direct procurement in violation with fundamental procurement law principles. It should be recalled that award criteria and/or requirements that are impossible to assess ex post cannot be accepted in law. Whether requirements, bonuses or award criteria are mutually contradictory is not primarily a legal issue, but it opens up for speculative bidders and uncertain outcomes.

Although it appears both necessary to follow up contracts, Swedish research studies have shown that adequate competence and procedures are central to achieve a favourable end result (Arve et al, 2022).

4.2 Complex contracts and performance variables

Swedish and EU law are substantially the same regarding public procurement. The legislation does not prevent the emergence of complex contracts. However, it must always be assessed the actual effects of the procurement at hand. If the criteria laid down in the procurement documents directly or indirectly entails discrimination, favouring a certain undertaking or blocks suppliers in other member states it may be contrary to law.

Since 2014, a new competition principle has been introduced, whereby technical specifications should be drafted in such a way as to avoid artificially narrowing down competition through requirements that favour a specific economic operator, by mirroring key characteristics of the supplies, services or works habitually offered by that economic operator. Article 36(1) of Directive 2014/25/EU stipulates that contracting entities shall treat economic operators equally and without discrimination and shall act in a transparent and proportionate manner. The design of the procurement shall not be made with the intention of excluding it from the scope of this Directive or of artificially narrowing competition. Competition is considered to be artificially narrowed where the design of the procurement is made with the intention of unduly favouring or disadvantaging certain economic operators.

The design and carrying out of contracts must be assessed in the light of this and the other fundamental principles of public procurement law. However, "bad" contract design that generates uncertain contractual outcomes, inconsistent performance due to contradictory incentives, etc., do not necessarily violate the procurement principles because they may be equally difficult to ascertain ex ante for all potential tenderers. Contradictory terms and incentives in the procurement document may also result in unwanted speculative bidders that subsequent to award can exploit weaknesses in the contract.

¹¹ Case C-448/01, *EVN AG and Wienstrom GmbH v Republik Österreich*, ECLI:EU:C:2003:651, para. 51.

Notwithstanding that complex contracts may generate unexpected outcomes as a result of built-in contradictory incentives, directly or indirectly allowing a contracting party to deviate from the contract in a way that cannot reasonably be foreseen at the time of the submission of the tender would most likely be incompatible with public procurement law.¹² This is why the proper follow-up of contracts is crucial. If the procuring authority should find that there are deviations or breach of contract, it is necessary to resort to proper contractual remedies when this is called for, depending on the nature of breach, ultimately terminating the contract in case of fundamental breach of contract.

5. Data and method

The empirical material in this study consists predominantly of the documentation of the competitive tendering processes and the ensuing contracts for two regional railway systems in the Greater Stockholm region and its surroundings. This is Sweden's most populated region, and the data covers the period 1999–2024. The documentation and contracts were provided by the information office of the Stockholm region. The contracts are listed in Table 1.

For one contract awarded without a competitive tender, we use data collected in another study (Alexandersson et al, 2018). The current emergency contracts in each case are only described briefly.

The contract data is complemented with other documentation to enable a fuller picture of the competitive tenders and contracts. One example of this type of data is articles from online trade journals that for example depicts the sentiments of the contracting parties during the contract period.

Table 1. The analysed contracts of the regional railway systems

Regional railway system	Contract phase #1	Contract phase #2	Contract phase #3	Contract phase #4
<i>Pendeltågen</i>	Citypendeln contract 2000–2006	Stockholmståg contract 2006–2016	MTR Gamma contract 2016–2024	SJ Stockholmståg emergency contract 2024–
<i>Mälartåg</i>	SJ contract 2016–2021	MTR Jota contract 2021–2024	Transdev emergency contract 2024–	---

¹² From a contractual point of view, overly complex contracts may generate inefficient outcomes to the detriment of the buyer. Also, from a public procurement perspective, it follows from the principles of equal treatment and transparency that the award criteria must be formulated in such a way as to allow all reasonably well-informed and normally diligent tenderers to interpret them in the same way. After the contract has been concluded, the authority may not subsequently accept deviations from the contract terms – regardless of complexity – if that entails acceptance of other terms than those, that a tenderer would reasonably have interpreted the true meaning of. Complexity in itself does not, therefore, afford the contracting authority with full freedom to interpret or change the terms based on their intrinsic complexity.

The analysis of the contracts and the other written documentation draws on the principles from content analysis. Due to the fact that the empirical material consists of thousands of pages of legal documents we decided to limit the content analysis to the parts of the documents that deal with: a) the general goal of the contract and handover to the new train operator, b) the parameters that determine the remuneration of the train operator, c) the measurement and evaluation of the parameters, d) how payments are calculated to the operators, e) conflict resolution, and f) questions related to the termination of the contract.

6. Case studies

PTAs in Sweden have developed contracts in the regional railway markets that comprise many performance measures. First, the contracts include a payment for the main obligation to provide railway passenger services. This is the most important part of the agreement because the railway services provide the necessary means to transport passengers and earn ticket revenues. Second, quality performance incentives, for example running trains on time, cleaning trains and railway stations, and conduct of personnel, seek both to increase the number of passengers during the contract period and in the future. Third, passenger incentives attempt to increase the number of passengers during the contract period. Consequently, we have contracts with multiple or ancillary objectives: lower costs for running trains, increasing the attractiveness of railway travel in the short and long run and increasing railway travel in the short run.

A complication in the regional railway contracts is that some factors that influence the outcome are external to the contract and beyond the control of the parties: wage increases, changes in demand for public transport driven by population changes or changes in real wages and extreme weather. Also, the outcome is affected by factors internal to the contract and within the control of the train operator: measures of service quality, percentage of trains running on time, number of cancelled trains and systems for validating tickets.

The two case studies are presented in the following manner. As an introduction, the case study mentions the general setting of the transfer of the contract, from the size of the railway network when it was first tendered and how the size of the network has developed over time. Thereafter we describe the handover of the train services to the new operator and the rules for conflict resolution and contract termination. Subsequently we list the variables used in the contracts and how they are measured and evaluated. In case the variables in a contract have been amended we describe the changes in the contract and how they altered the variables.

6.1 Case study 1: Pendeltågen

The commuter trains (Pendeltågen) in the greater Stockholm region comprise of a network covering 241 kilometres of railway tracks in 2024 and transported 120 million passengers in 2019. When the first contract was awarded in 1998 the system transported 60 million passengers.

6.1.1 The Citypendeln contract

In January 2000, Citypendeln Sverige AB¹³ took over the contract for running the trains in the Pendeltågen network in the greater Stockholm region. It was the first major regional railway system in Sweden that was awarded by means of a competitive tender. The train operator would earn a gross amount of SEK 607 million for the first year, in compensation for producing 17.31 vehicle kilometres and 113.3 thousand train hours.¹⁴ Citypendeln also agreed to take over the contract for the separately tendered station contract after SJ declined to manage the railway stations. That contract was worth another SEK 95 million annually (Alexandersson, 2003).

The preceding contract between Storstockholms Lokaltrafik (SL) and the incumbent train operator SJ was very profitable for the operator, and the competitively tendered contract was expected to give SL savings of about SEK 300 million per year. The contract with SJ was a negotiated gross cost contract that had gradually evolved for many decades. In 1989 the parties agreed to introduce incentives in the existing contract. SJ was to follow the scheduled train plan concerning supply and vehicle kilometres to a guaranteed level of 99.5 per cent. SJ also accepted a system with incentives for running trains on time. A cut-off point was set at 90 per cent of trains on time at the Stockholm central station and the end station. If more trains were on time, SJ received a bonus, while a lower level would result in the company paying a penalty (Alexandersson, 2003).

The contract between Citypendeln and SL stated that the train operator was to perform the railway traffic in accordance with the long-term goals of SL: increasing travelling by public transport and contributing to the positive image of using SL's services.¹⁵

In the original contract from 1998 between SL and Citypendeln, a number of quality variables were listed (see Table 2). Despite the fact that the contract stipulated that both bonuses and penalties should be used as incentives to achieve the goals of the regional railway services, only the variable for delayed trains explicitly allowed for a bonus payment. If trains were cancelled the train operator would pay a penalty that increased threefold if train cancellations reached a threshold value. For delayed trains the train operator could earn a bonus if it improved on the existing average of trains departing on time (89.5 per cent at the start of the contract). If the percentage of delayed departures increased during the contract period, the railway operator would pay a penalty. Total bonuses or penalties for punctuality could not amount to more than SEK 160,000 per month.

A number of service quality variables, that could result in penalty payments if they were below stipulated demands, were listed in the contract: 1) trainsets that were dirty or not sufficiently cleaned, 2) proper management of information and advice to passengers in case of disruptions, and 3) handling of ticket sales and ticket validation. SL stated that it's personnel from time to time would verify these variables. In case of shortcomings the train

¹³ Citypendeln was a joint venture between the Swedish train operating company BK Tåg, the French public transport company Via GTI and the British company Go-Ahead Group.

¹⁴ 1998-11-30 Trafikavtal Pendeltågsverksamheten Via G.T.I. & BK Tåg AB., p. 15 and 1998-11-30 Anbudsunderlag Via G.T.I. & BK Tåg AB., p. 8.

¹⁵ 1998-11-30 Trafikavtal Pendeltågsverksamheten Via G.T.I. & BK Tåg AB., p. 1.

operator would pay SEK 5,000–15,000 per occurrence. No bonuses were envisaged for excellency regarding these parameters. No figure for maximum penalties per year was given but they could be assumed to be low considering the relative few occasions that performance was to be measured.

According to the contract, SL planned to verify the quality variables using several different types of measurements. Traffic flows were to be measured using operation systems, information from the train operator etc. There would be daily verification of reported events regarding for example disruptions.¹⁶ SL personnel would carry out ocular inspections of the state of the trainsets and the information messages provided on platforms. An appendix to the contract included photos of more or less dirty trainsets and railway stations, illustrating how SL regarded this on a scale from zero to ten. On one instance it is mentioned that during 2000 SL would use a consultant to carry out mystery shopper surveys to measure the cleanliness of trains and railway stations.¹⁷ As an additional source of information, surveys to passengers included questions on delayed trains, cleanliness of trains, information during traffic disruptions, behaviour of the train operator's personnel and so on. The results from the surveys were not used to estimate the payments to the operator.

In September 2000, a temporary agreement on incentives was implemented. It constituted a complete reverse of fortunes. According to this agreement, Citypendeln could never pay penalties if railway stations or trains were dirty or if trains were departing late. The train operator could instead earn up to SEK 12 million per three-month period for keeping the trains and railway stations clean¹⁸ and it could earn a bonus payment of SEK 125,000 per month if 93 per cent of the train departures were on time and SEK 333,000 per month if 94 per cent were on time. No extra bonus was paid for improving even further on punctuality.¹⁹ The incentive for keeping trains and railway stations clean was only valid during the second half of 2000.

In October 2001, a new incentive agreement was signed using a system of bonus payments for most of the quality factors.²⁰ The bonus payments were also to be substantially higher than the penalties in the previous system. Other important changes were:

- 1) the introduction of a passenger incentive bonus,
- 2) the merging of the variables cancelled trains and delayed trains into one variable, the baseline value for punctuality was set at 95.5 per cent in 2001 and 95.8 per cent in 2002,
- 3) the merging of the railway operator's management of traffic disruptions into one variable, and
- 4) the creation of a new variable from 2002 regarding the conduct of the personnel with a maximum bonus payment of SEK 4 million.

¹⁶ 1998-11-30 Trafikavtal Pendeltågsverksamheten Via G.T.I. & BK Tåg AB. Bilaga 2.1, page 11.

¹⁷ Incitamentsavtal år 2000 avseende renhet i tåg och på stationer.

¹⁸ Incitamentsavtal år 2000 avseende renhet i tåg och på stationer. The exact meaning of the agreement is unclear. On page 1 it says that Citypendeln could earn SEK 3 million for six different items per three-month period. On page 3 it says that the company can earn SEK 9 million for keeping the trains and railway stations clean and tidy, and a maximum payment of SEK 12 million without indicating if these payments refer to six months or three months.

¹⁹ Incitamentsavtal år 2000 avseende punktlighet för tåg.

²⁰ Införande av ett incitamentssystem Huvudavtal.

Table 2. Incentives in the Citypendeln contract 2000–2006

Contract	Passenger incentive	Cancelled trains	Delayed departures	Cleanliness of trainsets and railway stations	Traffic disruptions: information to passengers	Traffic disruptions: providing alternative travel possibilities	Ticket sales and control. Conduct of personnel from 2002
Original contract (2000)	No	Penalty approx. SEK 800–2,400 per train hour	Bonus or penalty no more than SEK 160,000 per month	Penalty SEK 15,000 per incident	Penalty SEK 10,000 per incident	Penalty SEK 10,000 per incident	Penalty SEK 5,000 per incident
Revised contract (2000)	No	Yes, only bonus max SEK 4 million	Yes, only bonus max SEK 9 million	0	0	0	0
Revised contract (2001)	Yes, max award SEK 3 million	Yes, only bonus max SEK 3 million	Yes, only bonus max SEK 2.5 million	0	0	0	0
Revised contract (2002)	Yes, max award SEK 6 million	Yes, only bonus max SEK 3 million	Yes, only bonus max SEK 2.5 million	Yes, only bonus max SEK 4 million	Yes, only bonus max SEK 4 million	Yes, only bonus max SEK 4 million	Yes, only bonus max SEK 4 million from 2002

If Citypendeln managed to score full points on four incentive parameters in 2001 it could earn an extra SEK 11 million in 2001, and if it scored full points on the seven incentive parameters in 2002 it could earn an extra SEK 22 million in 2002. The total bonus for 2002 had a cap, setting the maximum at SEK 22 million, while a full score on the variables would otherwise have resulted in SEK 27 million. However, the agreement also stated that in case Citypendeln succeeded in surpassing the maximum bonuses for passenger incentives and the number of tickets sold, it could earn 50 per cent of the bonus above the threshold value.

The original contract between SL and Citypendeln consisted of a document of 21 pages and the agreement on incentives from 2001 had 83 pages. Five appendices detailed among other things the planned collaboration between Citypendeln and SL to increase service quality and technical matters in the contract. Over the years the contracts were complemented with a few agreements concerning a wide range of issues.

The contract from 1998 included a list of more than twenty critical areas regarding Citypendeln's commission to run the Pendeltågen railway network from 2000. These topics covered a broad set of issues, from such diverse areas as handling relationships with the infrastructure manager to developing an environmental program and taking care of lost property. One issue that came to be critical was mentioned in the contract as being of importance but probably not problematic. It regarded the transfer of personnel from SJ to Citypendeln. The issue leading to problems was that the contract allowed Citypendeln to renegotiate the salaries and other economic compensation. The negotiations with the unions proved difficult to resolve. At the beginning of the negotiations, managers at Citypendeln believed that there existed a surplus of train drivers and that the company could impose a more effective use of the drivers' working hours. This proved to be a miscalculation because many train drivers were unwilling to sign on to the company. The result was a hold-up situation and prolonged negotiations could not end the deadlock. When Citypendeln started to operate the railway network the company didn't have enough train drivers. For nearly a year this created traffic disruptions and huge penalty payments from Citypendeln to SL.

The contract gave SL the right to terminate the relationship if Citypendeln didn't fulfil its obligations. The many cancelled trains and the extensive use of replacement bus services were clearly a breach of the agreement. However, SL chose to keep Citypendeln as the contracted train operator until June 2006.

The contract stipulated that at the end of the contract all agreements with the parties were to be ended – for example rental of rolling stock and offices – and the railway operator should assist in the smooth transfer to the new railway operator.

6.1.2 The Stockholmståg contract

In 2006, an SJ subsidiary, Stockholmståg,²¹ took over the operation of Pendeltågen. Below we will outline the key features of the contract in a similar way as was done for the contract between SL and Citypendeln. This is also summarised in Table 3.

The contract remuneration amounted to SEK 957 million per year. In reality, the contract generated revenue of SEK 1370 million to Stockholmståg in the first full year of operation in 2007.²²

The number of passengers had been stagnant during the Citypendeln years and stood at 63 million passengers per year in 2005. Customer satisfaction numbers had fluctuated between 40 and 50 per cent from 2001–2005. An index measuring passenger satisfaction stood at 26 when Stockholmståg took over as contracted train operator. Within one year the index had increased to 55, while SL's goal was 70.²³ The goal of the contract was slightly changed compared with the Citypendeln contract. The new contract stated that the train operator should perform the railway traffic in accordance with the long-term goals of SL: an increase of travelling by public transport, providing safe and high-quality railway journeys and contributing to the positive image of SL.²⁴

The contract contained one major clarification as regards the transfer of personnel from the earlier train operator. In the Citypendeln contract it was demanded that the new operator should have solved the problem with the transfer of personnel in sufficient time before the end of 1999 – the contract period commenced January 6, 2000. In the contract with Stockholmståg, the limit for negotiations was set to more than three months before the start of the traffic.

According to the original contract from 2005,²⁵ 95.5 per cent of the trains should depart on time. In 2007 a new agreement was signed,²⁶ stipulating that 96 per cent of the trains should be on time for the operator to receive a bonus. The maximum payout was SEK 16 million per year. The agreement had November 2006 as a retroactive date of validity.

²¹ Stockholmståg was jointly owned by SJ AB and Tågkompaniet at the start of the contract in 2006, but one year later SJ AB became the sole owner.

²² Bilaga 12 Betalning fakturering och index trafik; SJ AB (2009).

²³ SJ AB årsredovisning 2007.

²⁴ Trafikavtal. Signed by SL 21/2 2006 and by Stockholmståg 24/11 2005.

²⁵ Bilaga 02 Kvalitetsprogram.

²⁶ Tillägg nummer 8 till Trafikavtalet. Incitament för punktlighet. May 29, 2007.

Table 3. Incentives in the Stockholmståg contract 2006–2015

Contract	Passenger incentive	Share of X 60 train sets in traffic	Delayed departures	Cleanliness of trainsets and railway stations	Traffic disruptions: information to passengers	Traffic disruptions: providing alternative travel possibilities	Ticket sales and control. Conduct of personnel.
Original contract (2006)	No		Yes. Only bonus max SEK 16 million	No (only avoiding cost of monitoring cleanliness)			
Amended contract 2011		Bonus or penalty of max SEK 5 million		Bonus or penalty of max SEK 1.5 million each for trainsets and stations	Bonus of max SEK 8.4 million from 2011.		
Amended contracts after 2011				Bonus of max SEK 8.4 million	Bonus of max SEK 15.8 million in 2014.		

In the original contract, the incentive to keep the trains clean was that the train operator didn't have to pay for the monitoring carried out by a third party.²⁷ In 2011, a new agreement was signed that changed the incentives for cleaning of the trainsets and the railway stations. The annual maximum bonuses or penalties were set at SEK 1.5 million for each item. The annual payments were calculated based on so-called NKI (a customer satisfaction index) surveys that were carried out 10 months per year.²⁸ If the NKI was below 62 the train operator paid penalties; if the NKI was higher than 68 it received bonus payments.²⁹ SL had developed the system gradually during the previous contract. Now these customer satisfaction surveys replaced the earlier system with ocular inspections. In 2011, another incentive was introduced regarding the rolling stock that Stockholmståg operated. If the share of new train set X 60 was higher than 91.6 per cent, the operator got a bonus, if the share was lower than 89.6 per cent the operator paid a penalty.³⁰

In addition to the use of surveys to verify the quality of the railway services, SL also conducted mystery shopping investigations and reviewed complaints and suggestions from passengers. SL had also installed automatic passenger count systems in ten per cent of the fleet. These systems gave information on boarding and alighting passengers and on the runtime of the trains.³¹

The contract between SL and Stockholmståg was much more detailed and went through many more amendments than the earlier contract with Citypendeln. The contract itself was only 20 pages but it had more than 20 appendices. During the contract period at least 45 major amendments were added to the original contract.

The contract used more or less the same wordings as the Citypendeln contract concerning breach of contract obligations, conflicts and termination of the contract. During the ten-year contract period (two times five years), no major issues threatened the completion of the contract.

6.1.3 The MTR Gamma contract

In 2015, SLL undertook a new public procurement procedure for operating the commuter trains in Stockholm. The first phase of the tendering process collected bids from five operators: Abellio Pendeltåg Stockholm AB, Keolis Spår AB, MTR Gamma AB, SJ AB and Svenska Tågkompaniet Stelo AB. The two operators with the most economically attractive bids were thereafter invited to negotiations (Alexandersson et al, 2018).

The competitive tender used a combination of price and quality indicators (customer satisfaction, efficiency, revenue and cooperation) where a low score incurred a penalty on the price. The economically most advantageous offer was the incumbent's (SJ Stockholmståg, SEK 1,930 million per year). MTR Gamma submitted a bid of SEK 1,949

²⁷ Bilaga 02.3 Städtjänster pendeltåg.

²⁸ Two surveys per year were carried out during the first years of the contract.

²⁹ Tilläggsavtal nr. 31 till Trafikavtalet och Tilläggsavtal nr. 11 till Stationstjänstavtalet, February 28, 2011.

³⁰ Tilläggsavtal nr. 31 till Trafikavtalet.

³¹ Bilaga 11 Automatiska trafikräkningar.

million per year. MTR received full score on the quality indicators, while SJ had a lower score on quality. The negotiations led to SJ Stockholmståg improving its score on the quality indicators and lowering their bid to SEK 1,896 million. MTR then reduced its bid by 3.5 percent to SEK 1,880 million. The contract was then awarded to MTR Gamma with the lowest combined bid.

In 2015, SL and MTR Gamma AB – a subsidiary to the Hong Kong based company MTR Nordic – signed the contract for the Pendeltågen network for a period of ten years, with an option for four more years. The contract stated that MTR Gamma would receive SEK 1,831 million/year before the completion of the construction of the new City Line, which redirected the central part of the network to new underground tracks and stations. Following the completion of the City Line in 2017, the train operator would receive SEK 1,694 million for producing 13.4 million train kilometres and 4.3 million kilometres for multiple-coupled trainsets.³² The train operator also had the possibility of earning an extra SEK 35 million if it fulfilled a set of conditions.

The contract consisted of the contractual agreement and 60 appendices. We lack information about the number of amendments. The train operator was to gear the operation towards four principal goals:

- 1) Increase the customer satisfaction level to at least 80 per cent. This would be ascertained by an attractive, reliable and punctual railway traffic accessible to all passengers.
- 2) Cost and resource efficient carrying out of the contract.
- 3) Ascertain revenues by allowing passengers to buy tickets and by validating all passengers' tickets.
- 4) Cooperation with other actors to maintain and develop the business to fulfil the three other goals.³³

Compared with the previous contracts, the MTR contract was much more detailed both in the number of included items and explanations of the function of the items in the overall agreement. One example of an area that increased in importance was cooperation between SL and the contracted operator. This was mentioned two times in the Citypendeln contract and three times in the agreement with Stockholmståg. In neither contract did it have a headline of its own. In the MTR Gamma contract, such cooperation is mentioned fifteen times and it is discussed in a special section. Other examples of increased treatment of subject areas were issues related to conflicts, reparations, and premature ending of the contract. The last item went from a general discussion in the two previous contracts on why this could happen, to a general discussion and an itemized list of nine possible scenarios that could result in an early termination of the agreement.³⁴ The right for SL to prematurely terminate the agreement was also mentioned in a new section called "Sanctions, responsibilities and limitations of responsibilities". All the itemized nine sanctions referred to possible infractions by MTR Gamma.³⁵

³² E24 Bilaga 7B. Ersättning och incitament (2015), p.4 and p.8.

³³ Uppdragsavtal mellan Stockholms läns landsting och MTR Gamma AB (2015), pp. 7–8.

³⁴ Uppdragsavtal mellan Stockholms läns landsting och MTR Gamma AB (2015), pp. 39–40.

³⁵ Uppdragsavtal mellan Stockholms läns landsting och MTR Gamma AB (2015), pp. 29.

The MTR Gamma agreement had no passenger incentives. The importance of other incentives had increased compared with the earlier agreements and penalties could be much more substantial. In the agreement it was stated that annual penalties could never be higher than SEK 200 million. The incentives were as follows:

- 1) the train operator's own punctuality (bonus above 99 per cent and penalty below 98.5 per cent);
- 2) total punctuality including disturbances beyond the control of the train operator (bonus above 90 per cent);
- 3) cleanliness of trains and railway stations;
- 4) perceived comprehensive quality (above 70 per cent for bonus, below 67 per cent for penalty during the first year);³⁶
- 5) perceived quality of information on traffic disruptions (above 55 per cent for bonus, below 50 per cent for penalty during the first year);
- 6) perceived quality on conduct of personnel (above 70 per cent for bonus, below 65 per cent for penalty during the first year);
- 7) perceived quality on cleanliness of trains and stations (above 70 per cent for bonus during the first year);
- 8) selected focal areas;
- 9) specific case-by-case penalties

The contracted bonus and penalty payments for the first seven incentive items are listed in Table 4. The selected focal areas, if introduced, could give SEK 25 million. Examples of such areas were: increase in the perceived quality of a service on a particular railway line, or particular activities in connection with planned disruptions. The contract also envisaged that SL could increase the bonus for one existing quality incentive, but without the possibility to increase the penalties. Finally, it was also stated that SL could decide not to design a special focal area.

MTR Gamma would also have to pay penalties for undelivered train hours, by SEK 5,000 per hour, and SEK 1,024 for every undelivered station hour. The failure to run trains also resulted in reduced payments of SEK 46–60 per km and reduced payments of SEK 512 per hour if railway stations or other entrances to the platforms were closed.

If we look at the figures in Table 4, we find that SL envisaged in the contract that non-delivered train hours could be as many as 146,000 hours per year before the ceiling was reached for maximum annual penalty payments. But when the penalties reached SEK 150 million, SL had the right to terminate the contractual agreement.

³⁶ This was measured using a specific question on the general satisfaction with the railway service.

Table 4. Incentives in the MTR Gamma contract 2016–2024

Train operator punctuality	Total punctuality	Cleanliness of trainsets and railway stations	Passengers' perceived comprehensive quality	Passengers' perceived quality on information on traffic disruptions	Passengers' perceived quality on conduct of personnel	Passengers' perceived quality on cleanliness of trains and railway stations
SEK 27 million bonus to SEK 27 million penalty	SEK 30 million bonus no penalty	No bonus SEK 20 million penalty	SEK 50 million bonus to SEK 10 million penalty	SEK 40 million bonus to SEK 40 million penalty	SEK 30 million bonus to SEK 30 million penalty	SEK 20 million bonus no penalty

SL used various types of measurements and sources to verify the performance of MTR Gamma. To verify the punctuality of trains SL used information from the infrastructure manager Trafikverket. Information from the automatic passenger count (ATR) system was used to follow up some requirements in the contract. SL stressed that trains with ATR should be operated in the highest possible manner. In trains that weren't equipped with ATR, SL signalled that it could carry out manual data collection of passenger numbers and punctuality. The verification of the cleanliness of trains and railway stations would be carried out at least four times per year in a randomly selected number of trains and stations. SL also envisaged that it could conduct announced or non-announced verifications of demands in the contract. The verifications could be in the form of mystery shopping to verify i.e. that the personnel of MTR Gamma validated tickets or how the personnel behaved in general. The mystery shopper could also verify the information provided to passengers. Probably the most important data collection – which is also evident from the numeration of incentives – was the monthly survey of the passengers' opinions on how the railway network functioned.³⁷

As mentioned earlier, the contract gave SL the right to terminate the agreement with MTR Gamma if it did not perform as intended. However, MTR Gamma had no right to exit the contract if the company run into problems. In late 2023 an agreement was nevertheless reached between MTR and SL about an early exit from the contract. MTR Gamma wanted to terminate the agreement because it had become untenable from an economic point of view. The company made losses of more than SEK 100 million per year and was willing to pay an exit fee of SEK 580 million to give up the contract 33 months before it otherwise would have ended. MTR Gamma stated that the principal reason for the failure to run a profitable railway service was the lack of train drivers. The introduction of surveillance cameras (as required by SL), replacing supporting onboard staff, had upset many drivers.

According to the agreement, all personnel involved in operating the railway service should be offered employment by the new operator SJ Stockholmståg.

³⁷ E24 Bilaga 7 A Rapportering, uppföljning och avvikelsehantering, 2015-12-04, pp. 3–7.

6.1.4 The SJ Stockholmståg emergency contract

The new contract with SJ Stockholmståg is a so-called emergency contract. The rules for this type of contract are much simpler than the agreements with Citypendeln, Stockholmståg and MTR Gamma. SJ Stockholmståg will run the railway service for two years from March 2024, with an option of two more years. The company will be remunerated using an open-book arrangement. The contract value in 2023 for the competitively tendered contract was estimated at SEK 2,200 million.

6.2 Case study 2: Mälartåg

In 2021, an integrated interregional railway network was established in the greater Stockholm region and its surroundings, including cities as far away as nearly 200 km to the east, north and south. The resulting Mälartåg network provides subsidized railway travel for 4.2 million inhabitants. In 2019–2020 a competitive tender was organised to select a railway operator to run the trains on this network from December 2021. Until then, the incumbent SJ AB, operated most of the regional trains in this network on its own account, but received substantial contractual payments from the regions covered by some of the train lines.

6.2.1 The SJ AB contract

SJ AB had operated the regional trains in the greater Stockholm region and its surrounding for many decades. A long-lasting agreement between SJ and Mälab (a company owned jointly by several regional PTAs near Stockholm) expired at the end of 2016. In preparation for this the collaborating regions decided to carry out a major revamp of the railway services in the greater Stockholm region and its surroundings. Before the new system could be launched, major organizational changes had to be carried out – for example agreeing on a unified ticket system – and new trains needed to be purchased by the collaborating regions allowing for higher speeds.

The agreement on the new regional railway services in the greater Stockholm region was planned to run four years from December 2016 to December 2020, with an option for one or two more years. According to the agreement, SJ got a concession to run trains on four railway lines and initially receive an annual subsidy of SEK 179 million. The subsidy would gradually decrease to less than SEK 40 million. In addition, SJ would run three adjacent railway lines without any subsidies. Mälab's major commitment, besides paying out the subsidy and later on in the contract period provide new rolling stock, was that the organization allowed SJ to keep 90 per cent of Mälab's ticket revenues for an agreed base line number of ticket revenue. If the ticket revenues were 0-5 per cent higher SJ got 75 per cent of the increment, if the revenues were more than 5 per cent higher SJ and Mälab shared the surplus revenue 50/50. The railway undertaking would also receive a commission of 4.5 per cent for selling railway tickets in the Mälardalen ticket system. In addition to the payments from Mälab, SJ had the right to issue and sell its own tickets on these railway lines.³⁸

³⁸ Avropsförfrågan, Regional tågtrafik Mälardalen 2017. Bilaga 1 Trafikavtal.

SJ provided its own trains to operate the regional trains until they were going to be replaced by the new trains. SJ was responsible for the maintenance of its rolling stock and of providing depots to carry out the maintenance. SJ committed to increase the number of train departures during the period of the contract and to gradually introduce the new rolling stock. The railway undertaking was responsible for signing contracts and paying the charges for using railway stations. The railway undertaking was also responsible for locating and paying for replacement public transport in case of disruptions in the railway services lasting less than five days. If the disruption continued for more days, Mälardalen would pay the additional costs. In case the disruption was caused by known restrictions or changes in the network statement as provided by the infrastructure manager, Mälardalen would pay for the replacement public transport.

The contract didn't include a mission statement or stated goals. In a document that described the mission of the railway operation a couple of aims were listed that resembled goals formulated in other contracts.³⁹ One aim was to keep down the costs of running the trains by using them in an economic way. Another aim was to operate the railway traffic to realise the requisites of regional railway operations as articulated in the traffic programs of the regions.⁴⁰

The two principal documents of the agreement do not contain descriptions on how to organize the cooperation between Mälardalen and the train operator. Cooperation is mentioned in four different contexts in the document that described the mission of the railway operations. One instance referred to the interaction with Transitio, the owner of the rolling stock supplied by Mälardalen. Another referred to the marketing of the railway service, but in this case had nothing to do with cooperation because it was a list of demands on the train operator. In a third case the concept cooperation was used to outline the need for coordination between different modes of public transport. In the last example that cooperation was discussed it was about the importance of cooperating with other actors to facilitate travel for passengers with disabilities. The actual cooperation in the contract concerned consultations on various important aspects, such as the replacement traffic in case of disruptions, the planning of new timetables, and to facilitate coordination with other transport companies when planning the railway service and making changes in the railway operations.⁴¹

The contract gave Mälardalen the right to audit the train operator's execution of the railway operations and to carry out surveys to the passengers regarding the quality of the service. Mälardalen would pay for the audits, surveys and other verifications of the execution of the railway service.⁴²

If the train operator due to its own actions failed to run a departure, it would lose twice the amount it should have earned for operating that departure. This reduction would always amount to at least SEK 10,000. If the train operator for a prolonged period didn't fulfil its obligations according to the contract and failed to make corrections within one month after a written complaint from Mälardalen, it would pay a fine of SEK 500,000 SEK. If the train operator failed to make corrections in such a matter it would pay a monthly fine of SEK 500,000.

³⁹ Avropsförfrågan, Regional tågtrafik Mälardalen 2017. Bilaga 2 Uppdragsbeskrivning

⁴⁰ In Swedish: trafikförsörjningsprogram.

⁴¹ Avropsförfrågan, Regional tågtrafik Mälardalen 2017. Bilaga 2 Uppdragsbeskrivning.

⁴² Avropsförfrågan, Regional tågtrafik Mälardalen 2017. Bilaga 1 Trafikavtal.

Both parties had the right to terminate the contract if the other party to a substantial extent broke the intent of the agreement. Mälab was also given the right to terminate the contract if SJ went into liquidation or severe economic problems and if a decision by a public authority or a court order intervened against the fulfilment of the agreement. A force majeure clause – like in all other contracts discussed in this report – also gave the possibility for both parties to end the contract.

During the Covid-19 crisis in 2021, SJ threatened to stop running the trains before the handover to MTR Jota if Mälab didn't increase the subsidy. After negotiations Mälab and SJ came to agreement that SJ should receive a special subsidy for the last three months of the contract to compensate for income losses due to Covid-19.

6.2.2 The MTR Jota contract

Following the first proper tender for this network, Mälab and MTR Jota in 2020 signed a contract concerning the interregional Mälartåg trains in the greater Stockholm region and its surroundings. In addition to the network previously operated by SJ, MTR Jota added the regional trains running from Uppsala to Gävle (two cities with 300,000 inhabitants combined) in June 2022.

Compared with the network operated by SJ the new contract stipulated some important changes. All trains were to be supplied by the collaborating regions, the regions issued all tickets and got all the revenues from the ticket sales,⁴³ and many more trains would run in the scheduled services.

The bidders in the competitive tender were evaluated using a mix of price and quality parameters. It also gave the train operators options to interpret how to service trains etc. MTR Jota won the contract in competition with Arriva and SJ. According to information in the trade journals, MTR Jota offered to run the trains for SEK 498 million per year which was SEK 200 million below the bid of SJ and SEK 100 million cheaper than Arriva. Both SJ and Arriva contested the selection of MTR Jota. SJ managed to get some of the company's complains accepted by the courts, but in the end MTR Jota could start operating the trains.

The agreement period was eight years, with an option for one more year. The contract document had 35 pages and 41 appendices. It stipulated that MTR Jota would run the trains, handle information on the traffic, service to customers and communication to customers, maintain the rolling stock, run the maintenance shops, and take care of other commitments that followed from the contract. The train operator would gear the operation towards two principal goals:

⁴³ Uppdragsavtal mellan Mälardalstrafik MÄLAB AB och MTR Jota AB avseende regionalstågstrafik i Mälardalen, 2020-12-09, p. 19.

- 1) Maintain and gradually increase the customer satisfaction level to at least 95 per cent. This would be ascertained by an attractive, reliable and punctual railway traffic accessible to all passengers. Ticket validation controls would be carried out for at least 80 per cent of all passengers.
- 2) Safeguard the long-term value of the assets.⁴⁴

The issues related to cooperation, conflicts, reparations, and premature termination of the contract resembled the MTR Gamma contract for Pendeltågen from 2015. The text on cooperation was nearly identical to the one in the Pendeltågen contract. The text on conflicts and reparations was equally similar to the earlier contract, with one important change. The new contract gave Mälåb the right to withhold at least 20 per cent of the monthly payments if it considered that MTR Jota insufficiently fulfilled its obligations according to the terms of the contract. The contract gave MTR Jota two possible ways of prematurely terminating the contract: 1) if Mälåb was in breach of the terms of the contract and didn't rectify within 60 days, or 2) if Mälåb filed for bankruptcy or similar. Mälåb was given thirteen possible ways to end the agreement, including the two mentioned for MTR Jota and eleven additional options. The contract also mentioned four legal causes that could end the agreement.⁴⁵

MTR Jota probably received towards SEK 500 million (the figure is an estimate based on information in trade journals) in compensation for producing 13.8 million train kilometres and nearly 732,000 kilometres for multiple-coupled trainsets.

The contract incentives referred to bonus and malus payments. The MTR Jota agreement had no passenger incentives, but MTR Jota could earn an additional SEK 85 million annually if it managed to score maximum points on all the included incentives (see also Table 5):

- 1) punctuality that included disturbances beyond the control of the train operator (bonus above 90 per cent and malus 87 per cent and lower during the first year);
- 2) cleanliness of trains and railway stations according to the system INSTA 800⁴⁶;
- 3) perceived comprehensive quality (above 82 per cent for bonus, below 74 per cent for penalty during the first year)⁴⁷;
- 4) perceived quality in terms of punctuality (above 91 per cent for bonus, below 87 per cent for penalty during first year);
- 5) perceived quality on information on traffic disruptions (above 77 per cent for bonus, below 69 per cent for penalty during the first year);
- 6) perceived quality on the conduct of personnel (above 88 for bonus for first year);
- 7) perceived quality on cleanliness of trains and railway stations (above 78 for bonus for first year and malus below 71 per cent during the first year);
- 8) selected focal areas;
- 9) specific case-by-case penalties

⁴⁴ Uppdragsavtal mellan Mälårdalstrafik MÄLAB AB och MTR Jota AB avseende regionaltågstrafik i Mälårdalen, 2020-12-09, p. 5.

⁴⁵ Uppdragsavtal mellan Mälårdalstrafik MÄLAB AB och MTR Jota AB avseende regionaltågstrafik i Mälårdalen, 2020-12-09, pp. 27–29.

⁴⁶ INSTA 800 is a Nordic standard to measure and evaluate quality of cleaning.

⁴⁷ This was measured using a specific question on the general satisfaction with the railway service.

MTR Jota could also earn SEK 2 per controlled passenger if the company's personnel validated more than the base level of 80 per cent of the tickets. This incentive could be worth SEK 4–5 million SEK if all tickets were validated.⁴⁸

The selected focal areas, if introduced, could give SEK 7.5 million annually. Examples of such areas could be initiatives directed towards achieving the two principal goals of the contract: increase customer satisfaction and safeguard long-term value of the assets. The contract also envisaged that SL could increase the bonus for one existing quality incentive.

MTR Jota would also pay two types of penalties for undelivered train hours. The first was a reduction of the payments from Mälåb for trains that had been cancelled. The second was a quality incentive factor that was added on top of the withheld payment. We have no figures for these penalties, but they were substantial as they resulted in reduced revenue of 25 per cent from the contract when MTR Jota had to cancel more than ten per cent of the trains during the first year of the contract. The cancelled trains were caused by a lack of train drivers and after a couple of months Mälåb accepted a 30 per cent reduction of train departures.

Table 5. Incentives in the MTR Jota contract 2021–2024

Punctuality	Cleanliness of trainsets and railway stations	Passengers' perceived comprehensive quality	Passengers' perceived quality in terms of punctuality	Passengers' perceived quality on information on traffic disruptions	Passengers' perceived quality on the conduct of personnel	Passengers' perceived quality on cleanliness of trains and railway stations
SEK 20 million bonus to SEK 10 million penalty	No bonus SEK 2.5 million penalty	SEK 20 million bonus to SEK 10 million penalty	SEK 10 million bonus to SEK 5 million penalty	SEK 10 million bonus to SEK 5 million penalty	SEK 8 million bonus no penalty	SEK 15 million bonus to SEK 5 million penalty

Similar to SL in the case of the MTR Gamma contract, Mälåb used various types of measurement to verify the performance of MTR Jota. To confirm punctuality Mälåb used information from Trafikverket. Information from an automatic passenger count system were used to follow up some other requirements in the contract. The verification of cleanliness of trains and railway stations would be carried out at least four times per year in a randomly selected number of trains and stations. Mälåb envisaged that it could use mystery shopping to conduct non-announced verifications of demands in the contract. The verifications could concern ticket controls, information to passengers or the general behaviour of the personnel. MTR Jota would also deliver information on a large number of issues to Mälåb – sixteen areas were listed in an appendix to the contract. Probably the most important data collection was a bi-annual survey of the passengers' opinions on how the Mälartåg network functioned.⁴⁹

⁴⁸ During the contract period from 2020–2024 the regional trains had 10-12.5 million annual passengers. This means that if MTR Jota checked all tickets, they could earn 2-2.5 million times SEK 2 per year.

⁴⁹ Appendix 7. Rapportering, uppföljning och avvikelshantering, 2020-12-09.

The contract gave Mälåb the right to terminate the agreement with MTR Jota if it did not perform as intended, while MTR Jota had no similar right. In late 2023 Mälåb decided to start preparations for a new competitive tender. A few months later it was decided that MTR Jota was to hand over the train operations to Transdev. MTR Jota wanted to leave the contract because the company was making huge losses. Mälåb wanted to find a new train operator to improve the service quality on the railway network. According to the agreement, all personnel involved in operating the railway service should be offered employment by the new operator Transdev.

6.2.3 The Transdev emergency contract

Like the current contract for Pendeltågen, the new contract with Transdev is also an emergency contract. The rules for this contract are also very similar to the corresponding contract for Pendeltågen. Transdev will run the railway operation for two years from June 2024 with an option of two more years. The company will be remunerated using an open-book arrangement with payments according to the following model:

- 1) Costs that are directly associated with the carrying out of the railway operations.
- 2) General increment for costs connected to central functions at the train operator that are necessary to carry out the railway operations.
- 3) Profit margin as a percentage increment based on the two costs above.
- 4) Possible introduction of incentives with bonus and malus in 2025.⁵⁰

With the exception of the payment model, the contract with Transdev retains a lot of the structure from the MTR Gamma contract. As noted above, incentives can be introduced during the second year of the contract. The proposed incentive model is fundamentally different than the incentive models in the competitively tendered contracts. In this contract the bonus and malus payments would only alter the size of the profit margin. In the model the train operator could earn bonus points if it performed well in punctuality, passenger satisfaction and delivered train services, and it could pay malus payments for insufficient ticket controls, failing to keep the trains properly cleaned and non-delivery of train services.⁵¹

The goals of the contract are nearly identical to the goals in the MTR Jota contract with only minor alterations in the language. Concerning the customer satisfaction the goal is identical with the exception of a goal of 95 per cent satisfied customers. Ticket control is mentioned as important but without any mention of a minimum level. The goal to safeguard the long-term value of the assets is more or less identical.⁵²

The issues related to conflicts, reparations, and premature termination are less drastic than the formulations in the MTR Jota contract. For example, the contract includes no paragraph that gives Mälåb the right to withhold payments in case of disputes on infractions and the contract explicitly states that Mälåb cannot be compensated twice for a breach of contract. Transdev is given the same possibilities as MTR Jota to prematurely end the contract. Mälåb

⁵⁰ Upphandling Måårtåå. Bilaga 8 Ersåttning och incitament, 2024-02-21, pp. 2–3.

⁵¹ Upphandling Måårtåå. Bilaga 8 Ersåttning och incitament, 2024-02-21, p. 7.

⁵² Uppdragsavtal mellan Måårdalstrafik Mååb Aktiebolag och Transdev Sverige AB avseende regionalstååstrafik i Måårdalen, 2024-02-21, pp. 6–7.

has, in addition to these two possibilities, nine more options to end the contract. These options are differently structured than the options in the MTR Jota contract. Two new reasons for ending the contract address safety issues and two other new reasons mention national safety concerns and violations against sanctions. The contract also mentions two legal causes that could end the agreement.⁵³ Cooperation continues to be an important issue, and the contract includes a novelty in the form of a formalized model for cooperation.⁵⁴

The follow-up and measurements are similar to the MTR Jota contract. One important change is that Transdev should deliver information on five more areas than MTR Jota – 21 compared with 16.⁵⁵

6.3 Analysis of the two cases

The contracts in our two case studies have gradually evolved over time and the last two contracts (Pendeltågen and Mälartåg) share more similarities than the earlier Pendeltågen contracts, despite that they concern two very different railway networks. The procuring authorities are also different, although SL is one of the parties involved in Mälalab.

The three competitively tendered contracts for the Pendeltågen network gradually became longer and contained more appendices. The first contract consisted of 21 pages and five appendices. The second contract had 20 pages and more than 20 appendices, and the third contract had 63 pages and 60 appendices. The contracts became more complex as more items were discussed, the role of incentives became more pronounced and more requirements on the railway operator were spelled out. In some ways, the contracts became more complete in the sense that consequences were expressed more clearly or that the measurement tools became less subjective.

A source of complexity was amendments that were added to the original contract. Often these agreements were identified as planned already in the original contract, but in that context lacked detailed information about their content. This was, for example, the case with the incentives both in the Citypendeln contract and in the Stockholmståg contract. The incentive agreements in the Citypendeln contract were changed two times in the first two years and the original agreement was only valid for a short period. In the Stockholmståg contract, two major revamps of the incentive agreements were made in 2011 and 2013.

The incentive schemes and their relative importance also added to the complexity. In the first incentive scheme for Citypendeln the focus was on penalties, the year after it changed to bonuses. In the Stockholmståg case the incentives increased from SEK 16 to 45 million during the contract period. The increased impact of incentives on total payments can be seen in the Table 6. In the first contract with Citypendeln, incentives could add 2.8 percent to the gross value of running the trains. In the last contract of our study, the MTR Jota contract incentives could increase the value of the contract with 17 per cent. In addition to the growing share of incentives, the types of incentives and their relative weight changed from contract to

⁵³ Uppdragsavtal mellan Mälardalstrafik Mälalab Aktiebolag och Transdev Sverige AB avseende regionalstågstrafik i Mälardalen, 2024-02-21, pp. 27–28.

⁵⁴ Upphandling Mälartåg. Bilaga 2.E Samverkan, 2024-02-21.

⁵⁵ Upphandling Mälartåg. Bilaga 7 Rapportering, uppföljning och avvikelshantering, 2024-02-21.

contract. The only way for a train operator to learn the true value of an incentive was to run the railway operations. The only incentive that remained more or less stable – with the exception of the last years of the Citypendeln contract – was the penalties for cancelled trains.

Table 6. Contract comparison: Impact of incentives

Contract	Gross value of contract (million SEK)	Maximum incentive bonus payments (million SEK)	Incentives as share of gross value
Citypendeln	702	19.5	2.8 %
Stockholmståg 2011	1000	29.9	3.0 %
Stockholmståg 2014	1000	45.2	4.5 %
MTR Gamma	1831	197	10.75 %
MTR Jota	500	85	17 %

As the contract documents expanded, contracts also became more complex and less transparent. In the contracts with MTR Gamma and MTR Jota, a number of scenarios were used to identify possible conflicts without clearly indicating the sanctions if these conflicts of interest occurred. The contracts mentioned different possible sanctions escalating from correction of the issue to terminating the contract.

A first important change in the direction towards a more complete contract was the fact that the incentive agreements in the MTR contracts were part of the original agreement and not added after train operations had started. A second important change towards a more complete contract was the gradual movement from subjective measurement tools to more objective measurements. We are here referring to the move from ocular inspections of cleanliness, using photos as a guidance, to codified systems and surveys to passengers.

7. Conclusions

In our simple model of contract complexity and completeness we suggested that there is not a straightforward relationship between the two concepts. A contract can be simple and incomplete, and it can be complex and (nearly) complete. Factors that limit the completeness of a complex contract are the cost of writing and reinforcing such a contract. In our case studies we can notice no smooth progression towards more complete contracts.

The first aim of our study was to investigate whether later contracts were better designed to avoid contract distress than earlier contracts. That is probably not the case, given that regular long-term contracts have recently been replaced by temporary emergency contracts. To some extent, however, the PTAs in the Stockholm region have over time learned to construct systems that make the contracts more complete: replacing subjective measures for quality control with more objective measures and replacing manual counts of passenger flows with automatic systems. We have identified no example of simplification as a way to make a contract more complete, although it could be argued that the current temporary emergency contracts represent such an evolution (albeit involuntary). They are very simple gross-cost-plus contracts, where transparency is guaranteed by means of an open-book

arrangement. To some extent, these contracts mark a return of the very first tendered contracts in the industry.

One issue that has constrained the setting up of complete contracts is the incessant drive to add factors and paragraphs in the contracts that demand clarifications and rule systems. Even simple things as the goals of a contract varies from contract to contract, despite the fact that the train services remain essentially the same. The same can be said regarding the need for cooperation or how to handle sanctions in case of contract breaches. Among the more complex matters that have changed during the lifespan of some contracts are measurement systems and remunerations. Other substantial issues are handled in additional agreements. The use of scenarios and the absence of clear sanctions in case of contract breaches have become a source of significant complexity in later contracts, leaving to the train operators' imagination to guess the consequences of these contract breaches.

A possible conjecture using transaction cost theory could be that the PTAs use their accumulated knowledge in an opportunistic way to trap train operators into signing contracts that have unknown properties but are skewed to favour the buyer. A case in point is the right for the PTA to decide on sanctions on contract infractions without clearly explaining when different sanctions apply. For example, consider the unequal treatment of Citypendeln, MTR Gamma and MTR Jota. Citypendeln escaped the penalty of cancelled trains in an amendment, MTR Gamma was forced to pay reparations to get out of a contract becoming unprofitable due to cancelled trains caused by a lack of drivers, and MTR Jota could terminate a contract with an identical problem without paying anything. But that conjecture doesn't take into account the disadvantages of opportunistic behaviour in providing subsidized long-term public transport. First, when the contract fails the PTA faces substantial cost increases in the form of emergency contracts and retendering, and bad will for the public transport system as a whole, which limits the possibility to achieve the long-term goal of increasing travelling by regional trains.

Our second aim was to examine the changes of the regulation of railway services and their procurement, on the national and the EU level, and to determine if these changes have influenced the risk for contract distress. We can conclude that although much of the legislation has stayed more or less the same for the period we have studied, interpretations and case law have evolved. Bearing this in mind, it is possible that the disruptions related to Citypendeln's transfer of staff from SJ and the related terms of employment could have been avoided if this development had happened earlier. However, it should reasonably have been foreseeable for the PTAs that staffing issues could become a major cause for service disruptions, and it is therefore noteworthy that these factors were not addressed in the original procurement documents. Indeed, the procuring authority did take notice and adapted some related requirements in later tenders. Furthermore, and at a more general level, it can be argued that shortcomings in contract design entailing contradictory incentives and sanctions may risk negating the very purpose of the procurements, limit the number of potential suppliers, and ultimately endanger the efficiency of the public service.

Our third aim was to identify the regulatory voids that may need to be addressed to better handle contract complexity and to avoid the occurrence of major problems in tendered contracts. A first suggestion would be to create a clearer framework for amendments to

contracts. In the Pendeltågen system it seems as if the contracting parties have had a liberal interpretation of the right to alter a contract. According to current regulations, contracts can be modified *inter alia* as long as the overall nature of the contract does not change, and that the value of the contract is changed by less than ten per cent. In the analysed contracts, the incentive schemes have been dramatically changed, going in one case basically from penalties to bonuses, and being tripled in another. Clarifications from the regulator on how to put a value on such changes (and corresponding limits) could be useful. However, it also seems likely that some of the studied contracts were indeed changed beyond what is legally accepted. For example, some alterations of the Citypendeln contract, including the acceptance of an extensive use of replacement buses, were so substantial that the nature of the contract was probably changed. A second suggestion would be to have a regulatory framework that instructs PTAs to clearly state the consequences of contract breaches. In our case studies we have highlighted the unequal treatment of contracted train operators for the same kind of contract breach. If this issue isn't clarified, it may create uncertainties in future competitive tenders.

Another possible regulatory void concerns the follow-up of contract performance. As we have shown, EU and Swedish law remain silent on this issue, but it may still be contrary to EU law not to follow up contracts, since it could jeopardise the principle of equal treatment.

The fact that procuring authorities continue to design increasingly unbalanced contracts, i.e. contracts where they hold almost all sanction possibilities and powers, deserves some more attention. Some train operators have started to take notice already at the tendering stage and have actively chosen not to participate – for precisely the reason that the resulting contract will be unbalanced. The companies that still participate may be guilty of what we suggest calling *contractual folly*, a condition which could easily lead to *winner's curse*. Of course, the procuring authority can also be guilty of contractual folly, by signing an agreement for critical train services with an unproven operator or including tough requirements without having a well-thought-out plan for how to handle a situation where the operator fails so completely that the bonus-malus system is not possible to apply in practice. There is a clear danger that this may result in contract renegotiations done under pressure, alternatively that the procuring authority becomes forced to sign an emergency contract while preparing for a new tender. Taken to its extreme, the effect of this is that the very idea of having an open and competitive procedure can become seriously flawed.

The current prevalence of emergency contracts is an indication that the Swedish railway market, despite 25 years of procurement, is immature or unstable, possibly due to a lack of stabilizing regulations. In order to gain a better understanding of these issues, we intend to expand our research to more contracts from other regions, and possibly also look at other sectors.

Acknowledgements

The research behind this paper has benefitted from financial support from the Swedish Competition Authority (grant 447-2022). We would also like to thank Mälaby and SL for generously providing us with the contracts.

Declaration of interest

Gunnar Alexandersson has a part-time employment at the Swedish national railway operator SJ AB. This has not affected the work on this article.

References

Alexandersson, G. (2003). *Pendeltågen i Stockholms län. Historisk bakgrund och utveckling 1957–2003*. Regionplane- och trafikkontoret. Promemoria no. 24.

Alexandersson, G., Bondemark, A., Henriksson, L. & Hultén, S. (2018). Coopetition between commercial and subsidized railway services – the case of the greater Stockholm region. *Research in Transportation Economics*, 69, 349–359.

Alexandersson, G. & Hultén, S. (2006). Competitive tenders in passenger railway services: Looking into the theory and practice of different approaches in Europe. *European Transport*, 33, 6–28.

Alexandersson, G., Hultén, S. & Henriksson, L. (2024). Coping with unforeseen circumstances: the COVID-19 crisis and bus contract renegotiation in Sweden. *Journal of Industrial and Business Economics*, 51, 325–353.

Arve, M., Bergman, M., Henriksson, L. & Lundberg, S. (2022). SNS Economic Policy Council Report 2022: Public Procurement.

Eggleston, K., Posner, E. A., & Zeckhauser, R. J. (2000). Simplicity and complexity in contracts. University of Chicago Law School, John M. Olin Program in Law and Economics Working Paper, (93).

Hart, O., & Moore, J. (1999). Foundations of incomplete contracts. *The Review of Economic Studies*, 66(1), 115–138.

SJ AB (2009). Årsredovisning 2008 – Finansiell rapport.
<https://www.sj.se/content/dam/SJ/pdf/%C3%85rs-och-h%C3%A5llbarhetsredovisningar/SJ-Arsredovisning-Finansiell-Rapport-2008.pdf> [accessed 30 July, 2024].

Upphandlingsmyndigheten (2024). Inköpsprocessen steg för steg.
<https://www.upphandlingsmyndigheten.se/inkopsprocessen/> [accessed 16 July, 2024].

Williamson, O. E. (2002). The Theory of the Firm as Governance Structure: From Choice to Contract. *Journal of Economic Perspectives*, 16(3), 171–195.